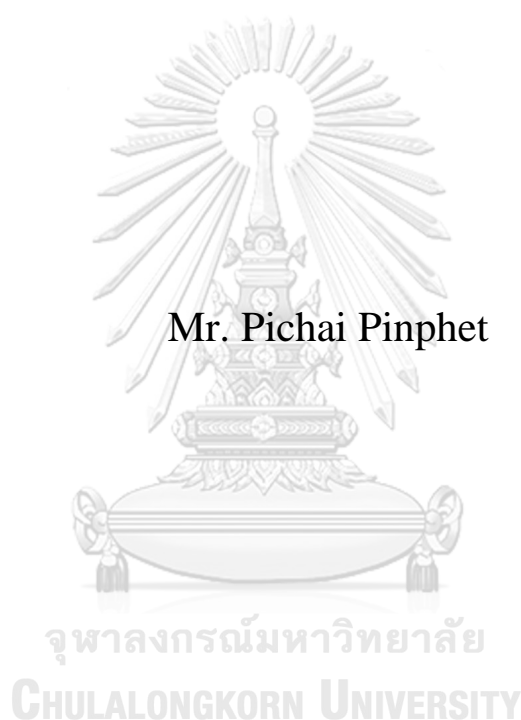


THE EFFECTS OF A PROJECT-BASED BLENDED  
LEARNING WITH COMMUNICATION STRATEGY  
INSTRUCTION ON ENGLISH ORAL COMMUNICATION  
ABILITY AND LEARNER AUTONOMY OF  
UNDERGRADUATE ENGINEERING STUDENTS



Mr. Pichai Pinphet

A Dissertation Submitted in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy in English as an International  
Language

Inter-Department of English as an International Language  
GRADUATE SCHOOL  
Chulalongkorn University  
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ผลของรูปแบบการเรียนรู้แบบผสมผสาน โครงงานเป็นฐานโดยใช้  
การสอนกลวิธีการสื่อสารต่อความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและ  
ความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนของ  
นักศึกษาวិชากรรมศาสตร์ระดับปริญญาตรี



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต  
สาขาวิชาภาษาอังกฤษเป็นภาษานานาชาติ สหสาขาวิชาภาษาอังกฤษเป็นภาษานานาชาติ

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

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By	Mr. Pichai Pinphet
Field of Study	English as an International Language
Thesis Advisor	Associate Professor PUNCHALEE WASANASOMSITHI, Ph.D.

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Accepted by the GRADUATE SCHOOL, Chulalongkorn University in Partial Fulfillment of the Requirement for the Doctor of Philosophy

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พิชัช ปิ่นเพชร : ผลของรูปแบบการเรียนรู้แบบผสมผสาน โครงงานเป็นฐาน โดยใช้การสอนกลวิธีการสื่อสารต่อความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนของนักศึกษาวิศวกรรมศาสตร์ระดับปริญญาตรี. ( THE EFFECTS OF A PROJECT-BASED BLENDED LEARNING WITH COMMUNICATION STRATEGY INSTRUCTION ON ENGLISH ORAL COMMUNICATION ABILITY AND LEARNER AUTONOMY OF UNDERGRADUATE ENGINEERING STUDENTS) อ.ที่ปรึกษา  
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นักศึกษาวิศวกรรมศาสตร์ไทยระดับปริญญาตรีมักจะมีปัญหาเกี่ยวกับความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน การวิจัยนี้ศึกษาผลของรูปแบบการเรียนรู้แบบผสมผสาน โครงงานเป็นฐาน โดยใช้การสอนกลวิธีการสื่อสารต่อความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนของนักศึกษาวิศวกรรมศาสตร์ระดับปริญญาตรี ในการศึกษาครั้งนี้ นักศึกษาวิศวกรรมศาสตร์ระดับปริญญาตรีจำนวน 20 คน เรียนกลวิธีการสื่อสาร 4 กลวิธี ได้แก่ กลวิธีการถามเพื่อต้องการความชัดเจน กลวิธีการถามเพื่อยืนยัน กลวิธีการถามเพื่ออธิบายคำที่ ต้องการ และกลวิธีการใช้คำเติมและแสดงความล้มเหลวเพื่อขอเวลาคิด รวมถึงวิธีการต่างๆ ในการทำโครงงานโดยอิสระ โดยนักศึกษาทำงานออนไลน์และโครงงานโดยอิสระ โดยใช้แพลตฟอร์มทางสังคม (เช่น Facebook, Skype และอื่นๆ) มีการเก็บข้อมูลทั้งเชิงปริมาณและเชิงคุณภาพ เปรียบเทียบคะแนนการทดสอบก่อนเรียนและหลังเรียนของนักศึกษาโดยใช้ Wilcoxon signed rank test เพื่อศึกษาการพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารใน 6 ด้าน ( ได้แก่ ขอบข่ายของคำศัพท์ ความถูกต้องของ ไวยากรณ์ ความคล่องแคล่วในการใช้ภาษา การมีปฏิสัมพันธ์ ความสัมพันธ์เชื่อมโยงของเนื้อหา และการออกเสียง) ตามกรอบมาตรฐาน ความสามารถทางภาษาอังกฤษของประเทศในกลุ่มสหภาพยุโรป (CEFR) ปีพ.ศ. 2560 นอกจากนี้ยังเปรียบเทียบคะแนนจากแบบสอบถามความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนก่อนเรียนและหลังเรียนโดยใช้ Wilcoxon signed rank test เพื่อศึกษาการพัฒนาความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนใน 3 องค์ประกอบสำคัญ ( ได้แก่ ความรับผิดชอบ โดยส่วนตัวของผู้เรียน ความสามารถโดยส่วนตัวของผู้เรียน และการเรียนรู้โดยอิสระ ) ซึ่งองค์ประกอบแต่ละด้านประกอบด้วย การ กำหนดเป้าหมายและวัตถุประสงค์, การกำหนดความก้าวหน้าของการเรียนรู้, การทำสิ่งริเริ่ม, การตัดสินใจเลือกวิธีการหรือเทคนิค กลวิธีการสื่อสารและแหล่งทรัพยากร, การตรวจสอบขั้นตอนของงานออนไลน์และโครงงานโดยอิสระ, และการประเมินงานออนไลน์ และโครงงานโดยอิสระ ผลของงานวิจัยแสดงให้เห็นว่ามีการเปลี่ยนแปลงในความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนหลังจากที่นักศึกษาได้รับการสอนกลวิธีการสื่อสารในสภาพการเรียนรู้แบบผสมผสาน และความคิดเห็นของนักศึกษาต่อรูปแบบการเรียนรู้แบบผสมผสาน โครงงานเป็นฐาน โดยใช้การสอนกลวิธีการสื่อสารอยู่ในระดับสูง ดังนั้นแสดงให้เห็นว่ารูปแบบการเรียนรู้แบบผสมผสาน โครงงานเป็นฐาน โดยใช้การสอนกลวิธีการสื่อสารสามารถใช้ส่งเสริมความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนได้

สาขาวิชา ภาษาอังกฤษเป็นภาษานานาชาติ  
 ปีการศึกษา 2563

ลายมือชื่อนิติดี .....  
 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

## 5887793520 : MAJOR ENGLISH AS AN INTERNATIONAL LANGUAGE

KEYWORD: English oral communication ability, Project-based language learning,

Blended learning, Communication strategy instruction, Learner autonomy

Pichai Pinphet : THE EFFECTS OF A PROJECT-BASED  
 BLENDEDLEARNING WITH COMMUNICATION  
 STRATEGYINSTRUCTION ON ENGLISH ORAL  
 COMMUNICATIONABILITY AND LEARNER  
 AUTONOMY OFUNDERGRADUATE ENGINEERING STUDENTS. Advisor:  
 Assoc. Prof. PUNCHALEE WASANASOMSITHI, Ph.D.

Thai undergraduate engineering students seem to have difficulty mastering English oral communication ability and learner autonomy. This study investigated the effects of a project-based blended learning with communication strategy instruction model to develop English oral communication ability and learner autonomy of undergraduate engineering students. Four communication strategies, namely asking for clarification, asking for confirmation, circumlocution, and use of fillers and hesitation devices, and the ways to conduct the independent project, were taught to 20 undergraduate Engineering students in a face-to-face environment. The students carried out their online tasks and an independent project via social platforms (e.g., Facebook, Skype, etc.). Quantitative and qualitative data collection and analyses were conducted. Students' pretest and posttest scores were compared using the Wilcoxon signed rank test to examine their English oral communication ability development in six aspects (i.e., range, accuracy, fluency, interaction, coherence, and pronunciation) based on the Common European Framework of Reference Languages (CEFR) 2017. Moreover, students' pre-learner autonomy questionnaire and post-learner autonomy questionnaire scores were compared using the Wilcoxon signed rank test to investigate their learner autonomy development in three main components (i.e., personal responsibilities, personal capabilities, and independent learning), each of which was divided into six aspects, namely determining the goals and the objectives, defining the learning progressions; taking the initiative; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion procedures; and evaluating the completed tasks and the project. Qualitative data of learner autonomy were obtained from student logs, observation checklists, and semi-structured interviews. The findings revealed that changes in English oral communication ability and learner autonomy took place after the students were taught communication strategies in a blended learning environment and their opinions toward the PBBCSI were at the high level, thus indicating that the project-based blended learning with communication strategy instruction model could be used to promote English oral communication ability and learner autonomy of language learners.

Field of Study: English as an International  
 Language

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Student's Signature .....

Advisor's Signature .....

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Pichai Pinphet

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# CHAPTER I

## INTRODUCTION

### 1.1 Background and significance of the problems

In this 21st century, English has become an international language which plays a crucial role in many fields such as business, commerce, entertainment, education, science, and technology. Through its spread, the English language is used between native-to-native (L1-L1), native-to-non-native (L1-L2), and non-native-to-non-native (L2-L2) speakers of English to serve their communicative needs (Jindapitak & Teo, 2013). In 2019, English is spoken as a first or second language over one billion people (Eberhard et al., 2019) and around a billion people speak English as a foreign language (Ives-Keeler, 2014). This suggests that English is widely used in different countries and contexts with several varieties of the language spoken by different speakers in different interactional acts.

In Thailand, the importance of English for the educational system, business, science, and technology is acknowledged. English is regarded as a key to success in education as well as in the profession (Rajprasit & Hemchua, 2015). However, most Thai learners fail to achieve global English language standards compared with learners in many other countries. Based on the EF English Proficiency Index by Education First (2015), learners' English language proficiency in Thailand is very low and dropping relative to that of learners in other countries, scoring the third lowest in Asia and ranking the 62nd out of 70 nations included in the index. Moreover, average scores on the international TOEFL in 2015 fell at 77 out of 120, or the 21<sup>st</sup> rank out of a total of 30 nations in Asia, and the seventh out of ten nations in the AEC countries, higher only than Cambodia and Laos (Educational Testing Service, 2016). As for International English Language Testing System (IELTS) average scores in 2015 (International English Language Testing System, 2016), Thai general training test takers' scores were rated at 5.2 out of the 9-band scale, categorized as a modest user, and ranked the 38th out of 40 nations surveyed. In addition, Thai academic test takers' scores were rated at 6.0, categorized as a competent user, and ranked the 22nd out of 40 nations surveyed.

Unfortunately, TOEFL and IELTS scores of Thai test takers indicate that Thai learners have difficulty in all four language skills, including English oral communication ability. Such a failure may result from the constraints on the development of English oral communication ability derived from traditional instruction in Thailand as well as a lack of learner autonomy, which prevent learners striving to develop the English language skills on their own.

According to Sermsongswad and Tantipongsanuruk (2013), Thai teachers employ traditional teaching methods that focus more on prescriptive grammar devoid of context than on communicative use of English. This causes learners to focus on language accuracy, not fluency, in their communication. In addition, Thai teachers adamantly adhere to teaching styles that emphasize test-taking strategies, rote-learning, use of Thai in the English classroom, and teacher-centeredness, all of which are at the expense of developing learners' ability to communicate fluently and appropriately in various contexts. Therefore, Thai learners of English should develop their English oral communication ability for effective communication, including undergraduate engineering students.

Studies in the area of workplace communication have suggested that it is necessary for professional engineers including computer engineers to show excellent soft competencies such as effective oral communication ability, an understanding of ethics, teamwork, and leadership besides achieving their mastery in technical skills (Rainey et al., 2005, as cited in Radzuan & Kaur, 2010). In Thailand, although computer engineering departments at a university level have produced a large number of computer engineering staff with varied career paths such as programmers, software developers, software test engineers, hardware design engineers, system analysts, computer network architects, information security analysts, etc. to workforce markets, Mala (2016) has pinpointed out that the demand for computer engineering staffs will continue to rise in Thailand. This is because advanced technologies such as artificial intelligence, robotics, nanotechnology and 3D printing will be widely used in all industries. However, previous studies have reported that language proficiency levels and communication skills of engineers as well as computer engineers are in urgent need of improvement (Rajprasit & Hemchua, 2015; Rajprasit et al., 2015).

Concerning learner autonomy, recent studies have revealed that Thai students encounter constraints on the development of learner autonomy (e.g., Duong, 2014; Rungwaraphong, 2012). According to Swatevacharkul (2014), major constraints that prevent Thai university students from developing learner autonomy include the following: 1) students' lack of self-confidence, laziness, irresponsibility, learning inability, and lack of motivation, 2) Thai culture influencing the Thai educational system that emphasizes the belief that teachers are authoritative figures in the classroom, and 3) teachers employing traditional teaching methods with spoon-feeding and rote memorization, and exam orientation. In addition, Rungwaraphong (2012) points out that Thai university students are not ready for the implementation of learner autonomy in the learning process, since students perceive their teachers' roles in a traditional approach that teachers should be the people who direct their learning and give all the knowledge to students; students do not take on an active part in the learning process; and students do not sufficiently use learning strategies beneficial for autonomous learning.

For these reasons, schools and universities should introduce ways to improve students' learner autonomy while promoting their English proficiency, especially English oral communication ability, to meet the global English language standards. One of the well-recognized global standards is the Common European Framework of References for Languages: CEFR (Council of Europe, 2017). For Thai university undergraduates, they should reach CEFR level B2 as determined by the Office of the Basic Education Commission (OBEC) (2011). This simply means that their English proficiency including English oral communication ability should be improved.

One way to enhance English oral communication ability and learner autonomy is to incorporate technology into language teaching. Nowadays, it is undeniable that technology plays an important role in all aspects of modern-day society, such as in business, commerce, education, entertainment, etc. Technology is also highlighted in the Thailand 4.0 policy which emphasizes a Creative Economy highlighting creativity and innovation, and the development of new technologies (Buasuwan, 2018). For higher education towards Thailand 4.0, the Office of the Higher Education Commission is in the process to develop the 3rd Framework of the 15-year long range plan (2017-2031) which gives prominence to University 4.0 (Buasuwan, 2018). Buasuwan also

pinpoints that future generations of Thailand 4.0 as well as University 4.0 should be “be knowledgeable, highly skilled, socially responsible; maintain their Thai identity; and be able to use technology” (p. 7). This suggests that technology should be integrated into new teaching and learning paradigms for quality future generations.

At present, computer technology also plays a crucial role in educational development. Computer-mediated communication involves technology to facilitate interaction between people. Computer-mediated communication tools can be used without or with very little limitation of time and place, face-to-face and online classrooms, and through appropriate tools like computers in classrooms, mobile phones, iPads, Facebook, Skype, Google Docs, YouTube, blogs, etc. Additionally, computer-mediated communication tools enable teachers to integrate traditional face-to-face instruction in class time with learning outside of class in the online environment, referred to as blended learning (McCarthy, 2016).

Many recent studies have focused on the advantages of blended learning using computer-mediated communication tools to improve oral communication ability, because it is believed that blended learning can improve learners’ English oral communication ability effectively (Campbell, 2015; Rodrigues & Vethamani, 2015). In addition, several studies have suggested that “technology-mediated tasks may support increased language production during task performance in online environments” (Thomas, 2017, p. 28).

According to Campbell’s (2015) study which investigated the effects of ICT blended instruction on students’ English language achievement, the results have indicated that the ICT blended instruction positively affected students’ performance in English including English oral communication ability when compared with that of students in traditional face-to-face classes.

Moreover, blended learning can enhance learner autonomy in that it encourages learners to have high ability to control over and responsibility for their own learning which is a very important element to be autonomous learners (Banditvilai, 2016).

To date, a number of studies (e.g., Kintu et al., 2017; Saengsawang, 2013; Sanprasert, 2010; Yang et al., 2013) have been carried out to determine the effects of blended learning on English oral communication ability and learner autonomy of EFL learners. However, few studies have focused on the effects of blended learning on

English oral communication ability and learner autonomy of computer engineering students, especially in Thailand.

Researchers have utilized many teaching methods to better support the use of blended learning in order to effectively develop learners' English oral communication ability and learner autonomy. Communication strategy instruction and project-based language learning have been implemented in many English language teaching classrooms to develop learners' English proficiency, but few studies have reported the effects of blended learning with integration of communication strategy instruction and project-based language learning on development of English oral communication ability and learner autonomy.

As for communication strategy instruction, previous studies have found that the use of communication strategies can improve learners' oral communication ability (Nakatani, 2010, 2012) and learner autonomy (Gökgöz, 2008; Machón, 2000; Salehi et al., 2015). Such findings have led to a conclusion that communication strategy instruction should be integrated into English language teaching to develop learners' English oral communication ability and learner autonomy, especially in blended learning environments.

Regarding project-based language learning, it has been discovered that the use of projects can help EFL learners significantly improve their oral communication ability and enable them to apply content knowledge in their professional field to complete their projects (Kovalyova et al., 2016). Project-based language learning can effectively enhance autonomous learning and collaborative problem-solving through the learning process (Dooly & Masats, 2011). Like communication strategy instruction, project-based language learning should therefore be integrated into English language teaching to enhance learners' English oral communication ability and learner autonomy, particularly when it is implemented in a blended learning environment.

Based on the aforementioned discussion, it is evident that there is a gap that needs to be filled. That is, the effects on the improvement of English oral communication ability and learner autonomy of computer engineering students in Thailand when it is implemented with communication strategy instruction and project-based language learning should be further investigated.

As previously discussed, like computer engineering students at King Mongkut University of Technology North Bangkok (KMUTNB) encounter different constraints when struggling to achieve mastery of the English language, including their English oral communication ability, as well as learner autonomy.

According to Pinphet's (2017a) case study of computer engineering students' needs for problems in English Conversation courses, the findings from the questionnaire revealed that students had the highest level of problems with English oral communication because they could not understand listening texts or speeches in interactions effectively due to limited or no understanding of related vocabulary. In addition, the listening texts or speeches were too fast, and they lacked confidence to communicate in English. Such findings have confirmed that computer engineering students' English oral communication ability need to be improved. In addition, learning materials should be developed to meet computer engineering students' specific needs and problems found in the study.

Furthermore, the results from Pinphet's (2017b) case study on the effects of multimedia-based instructional material to improve English oral communication ability of computer engineering students have shown that the students only had a fairly good (CEFR B1) level of English communication ability in the aspects of fluency, coherence, range, accuracy, and interaction, respectively. The results have implied that these computer engineering students at KMUTNB need improvement when it comes to their English oral communication ability, since university students at an undergraduate level are required to achieve the CEFR level B2 as set by Office of the Basic Education Commission (OBEC) (2011).

Moreover, it is deemed crucial for universities and educational institutions to make sure that computer engineering graduates "have the capacity to meet the needs of employers...[and] are prepared to move into employment with skills and expectations that benefit their employers," as mandated by the Association for Computer Machinery (ACM) and the Institute of Electrical and Electronics Engineers Computer Society (IEEECS) (2016, p. 37). The ACM and IEEECS develop Computing Curricula Guidelines for Computer Engineering Programs, known as CE2016 with a particular purpose to "[support] a group of professionals who are responsible for developing and teaching a range of degree programs in computer engineering worldwide" (Association

for Computing Machinery & Institute of Electrical and Electronics Engineers Computer Society, 2016, p. 11). The Computer Engineering Curriculum 2016 of KMUTNB is also constructed based on CE2016 developed by ACM and IEEECS.

With regard to English oral communication ability, communication skills are considered one of the five domains of complementary skills that engineering graduates should master, namely, communication skills, teamwork skills, soft or personal skills, experience, lifelong learning, and business perspectives (Association for Computing Machinery & Institute of Electrical and Electronics Engineers Computer Society, 2016). In addition, English is considered an international language in Thailand, “[e]mployers identify communication [skills including oral communication] as one of the basic competencies every graduate should have, asserting that the ability to communicate is valuable for obtaining employment and maintaining successful job performance” (Chairat, 2016, p. 39). This suggests that EFL computer engineering students are expected to be proficient in communicating with native and non-native colleagues and customers in their line of work.

Concerning learner autonomy, engineers are required to work both in a team and on their own. As such, they should possess abilities to take responsibility as professionals for their work; plan and organize working procedures; evaluate procedures, products, and work; make initiatives, choices, and decisions to create innovations, etc. These abilities are related to strategies for promotion of learner autonomy. In addition, teamwork and lifelong learning skills are considered complementary skills that computer engineers should be equipped with so as to be able to fully function as professionals in their fields (Association for Computing Machinery & Institute of Electrical and Electronics Engineers Computer Society, 2016). Therefore, it is necessary for EFL and computer engineering students to be trained to possess learner autonomy, thereby being able to apply those strategies and abilities for their professional development.

As previously pointed out, besides learner autonomy, English oral communication ability of computer engineering students at KMTUNB needs to be enhanced in accordance with Computer Engineering Curriculum 2016 of KMUTNB, emphasizing five domains of objectives:



Students should “be able to communicate with other people effectively; work in group or team; possess communication ability in Thai, international and computer languages” (King Mongkut's University of Technology North Bangkok, 2016, p. 8) with specified learning outcomes: students should “be able to communicate with people in Thai and foreign languages effectively; apply knowledge of their profession to communicate with society in appropriate issues” (p. 80).

Concerning learner autonomy, in one of the specified learning outcomes: it is stated that students should “be able to retrieve resources and search for additional knowledge themselves for life-long learning and in line with changing body of knowledge and technologies” (p. 80).

Despite clearly specified learning objectives and outcomes and despite instructors' attempt to achieve such objectives and outcomes, most of the computer engineering students still encounter problems with English oral communication ability and learner autonomy as previously mentioned earlier. In the English conversation course, most instructors seem to employ exam-based teaching, rote-learning, and memorization to make sure that students will be able to pass four main tests: midterm speaking, final speaking, final listening, and final language tests. In addition, commercial textbooks supplemented with additional online materials in the course are not authentic, since most of the contents and materials are particularly created for the purpose of teaching, not for exposing the students to authentic communication to enable them to deal with real-world tasks effectively. As Reinders and Balçikanli (2011) suggest that commercial textbooks insufficiently enhance learner autonomy and that when they do, they provide limited opportunity for practice to students, since strategies to foster learner autonomy provided in commercial textbooks are not arranged in a structural way and “there appears to be no attempt to draw learners' attention to the learning process in a way that gradually gives them more responsibility for their learning. Occasionally, some information or an activity may be included but this is not connected to previous or subsequent content” (p. 207).

Apart from limitations of commercial textbooks to develop English oral communication ability and learner autonomy, there are factors that hinders computer engineering students from acquiring English oral communication ability—time constraint and a lack of sufficient exposure to English in authentic communication

inside and outside classrooms. Moreover, there is a mismatch between the content of the English conversation course focusing on everyday situations and students' needs to have the skills to deal with real-world tasks at their workplaces and in real-world situations related to their work.

In addition, through years of the researcher's personal observations, computer engineering students seem to lack confidence in their own ability to orally communicate in English. As for learner autonomy, most of the students tend to passively wait for their instructors to feed them the information on what to do, administer learning materials and resources, and plan learning process for them. In other words, students do not actively perform the learning tasks both inside and outside the classroom, hence limited capabilities to control and manage their own learning well. Therefore, the intervention of new instructional model is expected to help computer engineering students develop their English oral communication ability and learner autonomy they seriously need.

With the utilization of the project-based blended learning with the communication strategy instruction (henceforth PBBCSI) model, computer engineering students at KMUTNB should be able to improve their English oral communication ability to interact with other people in authentic, real-world situations related to their work and workplace effectively, after developing English oral communication ability by doing face-to-face activities, online tasks, and the independent project. In addition, the PBBCSI model is also guided by the concept of learner autonomy. Accordingly, computer engineering students should be able to gradually develop their learner autonomy after learning with the PBBCSI model, which allows them to set their learning directions, make plans for doing online tasks and the project, organize available learning resources, and make choices and decisions about their own learning to finally achieve their learning goal.

## **1.2 Research objectives**

1. To investigate the effects of the PBBCSI on English oral communication ability of undergraduate engineering students.
2. To investigate the effects of the PBBCSI on learner autonomy of undergraduate engineering students.
3. To investigate undergraduate engineering students' opinions toward the PBBCSI.

## **1.3 Research questions**

1. What are the effects of the PBBCSI on English oral communication ability of undergraduate engineering students?
2. What are the effects of the PBBCSI on learner autonomy of undergraduate engineering students?
3. What are undergraduate engineering students' opinions toward the PBBCSI?

## **1.4 Statements of Hypotheses**

Recent studies (e.g., Campbell, 2015; Kintu et al., 2017; Rodrigues & Vethamani, 2015; Sanprasert, 2010; Yang et al., 2013) have suggested that blended learning can improve learners' English oral communication ability and learner autonomy effectively. In addition, previous studies have revealed that the use of communication strategies can enhance learners' oral communication ability (Nakatani, 2010, 2012) and learner autonomy (Gökgöz, 2008; Machón, 2000; Salehi et al., 2015).

To investigate the extent to which the PBBCSI model can improve English oral communication ability and learner autonomy of undergraduate engineering students, the following hypotheses have been formulated based on a review of previous studies:

1. After implementation of the PBBCSI model, there would be changes in the posttest mean scores of English oral communication ability of undergraduate engineering students.
2. After implementation of the PBBCSI model, there would be changes in the posttest mean scores of learner autonomy of undergraduate engineering students.

## **1.5 Scope of the study**

In order to find of the effects of the PBBCSI model on English oral communication ability and learner autonomy, the present study was conducted with an intact class of computer engineering undergraduate students attending an elective English course entitled “English conversation” at King Mongkut’s University of Technology North Bangkok during the first semester of the academic year 2019. The PBBCSI model was conducted in 15 consecutive weeks during which the students were taught four communication strategies. The instruction was divided into six phases of project-based language learning in a blended learning environment. The independent variable of the study was the PBBCSI model; the dependent variables were students’ English oral communication ability and learner autonomy.

## **1.6 Definitions of terms**

### **1.6.1 Project-based language learning**

Project-based language learning is “a language teaching method which organizes instructional activities around projects and is promoted as an effective way of facilitating students’ language learning, content learning and integrated skills’ development” (Xu et al., 2017, p. 235).

In this study, project-based language learning refers to a teaching method that incorporates both face-to-face teaching and online tasks that were designed to promote students’ English oral communication ability and learner autonomy. The concept of project-based language learning employed in the present study was adapted from Larmer’s (2015, 2019) essential project design elements which consisted of the following: challenging problem or driving question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and public product. These seven elements were developed to construct the instructional model of this study.

### **1.6.2 Blended learning**

Blended learning has been defined by Garrison and Vaughan (2008) as an approach that combines the strengths of both face-to-face classroom instruction with community and online instruction “to go beyond the capabilities of each separately” (p. 6). By the same token, according to Sharma and Barrett (2007), blended learning refers

to “a language course which combines a face-to-face (F2F) classroom component with an appropriate use of technology” (p. 7).

In this study, blended learning refers to a learning system which combines the face-to-face with online instructions with the use of technology such as the Internet and computer-mediated communication to assure that the students can gain the benefits of both face-to-face instruction in class as well as online instruction. Also, the weaknesses of each type of instruction are compensated for. The blended learning instructional model used in the present study was adapted from Lam’s (2015) blended learning model in order to optimize students’ learning process with both face-to-face and online learning, hence more likelihood to achieve the learning goals to develop both English oral communication ability and learner autonomy.

#### 1.6.3 Communication strategies

Communication strategies refer to the strategies employed by the speakers to “solve communicative disruptions and enhance interactions in the target language” (Nakatani, 2010, p. 116). Simply put, they are strategies used by language learners to make sure that their communication acts can be sustained until their communicative purposes can be achieved. In this study, communication strategies refer to the strategies used by the students to deal with communication problems and achieve target purposes of face-to-face activities, online tasks, and an independent project. The four communication strategies taught in this study were selected from three categories adapted from Cohen’s (2010) taxonomy of communication strategies, namely: circumlocution selected from the category of achievement or compensatory strategies, use of fillers and other hesitation devices selected from the category of stalling or time-gaining strategies, asking for clarification, and asking for confirmation selected from the category of interactional strategies.

#### 1.6.4 English Oral Communication Ability

Canale and Swain (1980, as cited in Sanguangarm, 2010) define oral communication ability as communicative competence that comprises grammatical competence, sociolinguistic competence, discourse competence, and strategic competence. For Bachman (1990, as cited in Sakulprasertsri, 2014), oral

communication ability refers to communicative ability that consists of knowledge or competence in an appropriate and contextualized communicative context.

In this study, English oral communication ability refers to students' individual capacity to use English orally in different communicative situations with the use of taught communication strategies to overcome communication problems so as to achieve their communicative purposes.

English oral communication ability in this study was assessed by the English oral communication ability test and the test rubric adapted from CEFR (Council of Europe, 2017) to assess six aspects of English oral communication ability, namely range, accuracy, fluency, interaction, coherence, and pronunciation.

#### 1.6.5 Learner autonomy

According to Holec (1981, as cited in Benson, 2001) learner autonomy refers to “the ability to take charge of one's own learning [and] responsibility for all the decisions concerning all aspects of learning...” (p. 48).

In this study, learner autonomy refers to the extent to which the students are able to take control on their responsibilities (students' willingness to take responsibilities), capabilities (students' confidence in abilities), and independent learning (individual students' control of their own responsibilities and capabilities to carry out the assigned tasks). Learner autonomy was divided into six aspects of determining the goals and the objectives; defining the learning progressions; taking the initiative; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion procedures; and evaluating the completed tasks and the project. In so doing, students learned to be more independent and work with instructor and peer support rather than direct instruction and control of the instructor. The autonomy questionnaire was used to measure students' learner autonomy.

### **1.7 Significance of the study**

The investigation of the effects of the project-based blended learning with communication strategy instruction on English oral communication ability and learner autonomy was the objective of this study. It was anticipated that the findings of this study would shed more light on how project-based language learning could be

integrated with oral communication strategy instruction in a blended learning environment as project-based learning and communication strategy instruction had been found to be effectively utilized singlehandedly in language classrooms with face-to-face instruction, but not many studies have been conducted to explore the effects when both of them were implemented together, particularly in a blended learning environment. Moreover, language instructors and other related persons would develop better understanding how this type of instruction could be implemented not only to enhance language acquisition but also promote learner autonomy of language learners, both of which are considered important language learning goals of Thai EFL learners, computer engineering students included.

In addition to theoretical significance, the findings of this study could be utilized as guidelines for Thai instructors who desire to implement the project-based blended learning with communication strategy instruction in order to develop learners' English oral communication ability and learner autonomy in their conversation or speaking courses. Instructors would more clearly understand how communication strategies can be taught with online tasks and projects at different learning phases according to their learners' interests in the problems or questions set for their projects. Moreover, instructors would also have a reference on how to provide their learners the opportunity to make choices regarding social platforms, resources, and technology to carry out their tasks and projects to gradually develop English oral communication ability and learner autonomy, which are seen as the ultimate goal of instructors of English. Finally, the institution would have more effective instructional model to help their students achieve mastery of English oral communication ability and also became autonomous learners of English who have responsibilities and capabilities to deal with their works and learning directions independently.

## CHAPTER II

### LITERATURE REVIEW

This research aimed to investigate the effects of the project-based blended learning with communication strategy instruction (PBBCSI) on English oral communication ability and learner autonomy of undergraduate engineering students. The theoretical framework of the PBBCSI is related to four guiding principles comprising English oral communication ability, learner autonomy, project-based language learning, and blended learning.

#### **2.1 English oral communication ability**

Researchers have proposed various definitions of English oral communication ability (Jarupan, 2013). For example, Jarupan (2013) defines English oral communication ability as “an individual’s ability to form abstract [utterances] that are produced and adapted to circumstances at the moment of speaking, by making rapid decisions and contributions that adequately fit the given situation” (p. 1). In addition, Sakulprasertsri (2014) defines English oral communication ability as “the ability to use the language orally and appropriately in any circumstances as well as shared sociocultural or pragmatic suppositions” (p. 23). These definitions suggest that English oral communication ability involves communicative competence, since learners who possess communicative competence can use language communicative purposes (Richards, 2015b).

##### **2.1.1 Concept of oral communication ability**

Many scholars (e.g., Canale & Swain, 1980; Hymes, 1972) have investigated the concept of oral communication ability in relation to the “communicative competence.” According to Canale and Swain (1980), their communicative competence model includes the four main components: *grammatical competence*, which refers to knowledge of grammatical rules, vocabulary, pronunciation and spelling; *sociolinguistic competence*, which refers to knowledge of appropriate use of language in context—appropriate use of vocabulary, politeness, register and style in



particular situation; *discourse competence*, which refers to ability to attain coherence and cohesion in written and oral communication; and *strategic competence*, which refers to knowledge of verbal and non-verbal communication strategies.

According to CEFR (Council of Europe, 2017), communicative competence comprises linguistic, sociolinguistic, and pragmatic competence. As for *linguistic competence*, it includes general range, vocabulary range, grammatical accuracy, vocabulary control, phonological control, and orthographical control, while *sociolinguistic competence* refers to sociolinguistic appropriateness. *Concerning pragmatic competence*, it consists of flexibility, taking the floor, thematic development, coherence, propositional precision, and spoken fluency.

According to Kanchai (2019), the CEFR, or the Common European Framework of Reference for Languages, has been widely implemented in many countries including Thailand since 2014. Since the CEFR communicative competence serves the expected learning outcomes of the “English conversation” course in which the present study would be conducted, as well as Canale and Swain’s (1980) definition of communicative competence, the CEFR was adapted into practice in this present study. The relationship between the CEFR communicative competence, the learning outcomes of the existing course, and Canale and Swain’s (1980) concept of communicative competence was illustrated in Table 1.

*Table 1: The Relationship among the CEFR Communicative Competence, the Learning Outcomes of the Existing Course, and Canale and Swain's (1980) Concept of Communicative Competence*

<b>Communicative competence CEFR (Council of Europe, 2017)</b>	<b>Learning outcomes of the existing course “English conversation” (1/2019)</b>	<b>Concept of Communicative competence (Canale &amp; Swain, 1980)</b>
- Sociolinguistic competence	1) Converse on a broad range of common topics that occur in everyday conversations	- Sociolinguistic competence
- Pragmatic competence	2) Use various speech functions such as greeting and acknowledging people, opening and closing feelings, making requests, and offering suggestions and recommendations	- Sociolinguistic competence
- Sociolinguistic competence	3) Respond to and initiate questions on situations, events and activities during social interactions and conversations in English	- Sociolinguistic competence
- Linguistic competence	4) Acquire sufficient vocabulary not only to be able to recognize what is said, but also to have something to say or add in response	- Grammatical competence
- Sociolinguistic competence	5) Understand the relationship between the speaker and hearer is and select sufficiently polite or casual language for the situation or adjust his/her conversational choices accordingly, and	- Sociolinguistic competence

- Pragmatic competence	6) Share the responsibility of maintaining the flow of talk and making their contributions both comprehensible and relevant.	- Discourse competence - Strategic competence
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The relationship among the CEFR communicative competence, the learning outcomes of the existing course, and the Canale and Swain's (1980) concept of communicative competence implies that the essential components of the rubric adapted from CEFR (Council of Europe, 2017, pp. 155-156) were also relevant to the learning outcomes of the experimental course and the concept of communicative competence suggested by Canale and Swain (1980).

In this study, the English oral communication ability test rubric, and the task and project rubric of English oral communication ability were adapted from the qualitative features of spoken language (expanded with phonology) of the Common European Framework of Reference for Languages (CEFR) (Council of Europe, 2017, pp. 155-156).

When communicating with other people, learners of English tend to produce errors which affect their English oral communication ability. According to Arakkitsakul (2008) "errors" refer to ungrammatical usage of a word or form produced by language learners in their spoken or written production due to the lack of necessary proficiency. (Dulay et al., 1982) have pointed out that errors are produced when the surface structures are changed with the form by means of specific and systematic ways, namely omission, addition, misformation, and misordering that can be described as follows:

#### 1) Omission

Omission errors can occur when the speakers omit a word that needs to be in a grammatically correct utterance or sentence. Dulay et al. (1982) highlight that the language learners tend to leave function words rather than content words. In addition, content words are omitted because of the absence of vocabulary knowledge, and "learners usually indicate their awareness of the missing constituent" (p. 155) such as using gestures to make the meaning clearer.

Example:

Vivian **\*(is the)** teacher **\*(at)** this school.

(Adapted from Dulay et al., 1982)

The speaker omits the words “is” (main verb), “the” (article), and “at” (preposition) in the sentence.

## 2) Addition

Addition errors can be produced when speakers incorrectly insert an item of morpheme or word that needs to be in a grammatically correct utterance or sentence. There are three types of addition errors: double marking, regularization, and simple addition.

2.1 Double marking errors occur when the semantic feature is marked twice (in two components) to construct an utterance or sentence.

Example:

She didn't **\*swam** in the river last week.

(Adapted from Dulay et al., 1982)

The past tense is marked twice in the auxiliary “didn't” and the verb “swam” when it is needed only once in the auxiliary “didn't.” Therefore, the well-formed utterance should be said “She didn't **swim** in the river last week.”

2.2 Regularization errors occur when the rules are applied to the places where they do not take.

Example:

They **\*meeted** again yesterday.

(Adapted from Dulay et al., 1982)

The rule of making the regular past tense verb by adding <-ed> after the regular verb is incorrectly applied to the irregular verb “meet.” The irregular past tense verb should become “**met**” not “meeted.”

2.3 Simple addition errors occur when additions cannot be identified as a double marking nor a regularization.

Example:

The **\*sheeps** **\*doesn't** eat meat.

(Adapted from Dulay et al., 1982)

The singular present tense marker <-s> is marked in the auxiliary verb “doesn’t” that should be used with the singular subject “sheep,” but the regular plural noun marker <-s> is applied to the irregular noun “sheep” to become “sheeps,” so it is very difficult to determine exactly if the addition error is categorized as the doubling marking from the error “doesn’t” or the regularization from “sheeps.”

It is noticeable that when two or more different features are applied or marked in different components, they can cause the error called simple addition.

### 3) Misformation

Misformation errors can be produced when speakers use the incorrect form of a feature or structure. There are three types of misformation as follows:

3.1 Regularization errors occur when the rules are applied to the components when they are not need toed. This type of errors is very similar to the regularization errors of the addition errors. Therefore, in this study, the regularization errors are categorized into misformation errors.

Example:

I **\*drinked** orange juice this morning.

(Adapted from Dulay et al., 1982)

The rule of making the regular past tense verb by adding <-ed> after the regular verb is incorrectly applied to the irregular verb “drink.” The irregular past tense verb should become “**drank**” not “drinked.”

3.2 Archi-form errors occur when speakers use one form to represent the entire other forms.

Example:

“that bird” and “**\*that** birds”

(Adapted from Dulay et al., 1982)

The demonstrative adjective “that” is used in the two phrases to represent the entire class of demonstrative adjectives. The latter phrase “that birds” should be “**those** birds” because the demonstrative adjective “that” is grammatically used with singular nouns while “those” is used with plural nouns.

3.3 Alternating form errors occur when the speakers use various forms interchangeably with each other when producing utterances.

Example:

“\*those house” and “\*this cars”

(Adapted from Dulay et al., 1982)

It is observed that the plural demonstrative adjective “those” incorrectly used with the singular noun “dog” is interchangeably produced with the singular demonstrative adjective “that” incorrectly used with the plural noun “cats.”

However, there are partially overlapped concepts between addition and misformation errors based on the surface structure taxonomy proposed by Dulay et al. (1982). In this study, the *addition errors* occur when the speakers incorrectly insert a word that needs to be in a grammatically correct utterance or sentence, while the *misformation errors* occur when speakers use an incorrect form of a feature or structure.

#### 4) Misordering

Misordering errors are produced when speakers arrange grammatical forms of utterances in a wrong order. Misordering errors often occur with the arrangement of adverbials, interrogatives, and adjectives (Phetpongkam, 2017). In addition, this type of errors is related to word-for-word translations of native language surface structures (Dulay et al., 1982).

Example:

“Design \*computers complex”

Misordering error occurs when an adjective is placed after the noun after the noun “computers” because in the Thai language adjectives come after a noun they modify.

When being engaged in communication, speakers are likely to employ communication strategies to serve their communicative needs and solve their communication problems. Therefore, to develop students’ English oral communication ability for effective communication, communication strategies should be taught and practiced.

#### 2.1.2 Communication strategies

Communication strategies are considered one of the key components of communicative competence. Communication strategies involve strategic competence

(Canale & Swain, 1980). Studies show that communication strategies can enhance English oral communication ability (e.g., Kongsom, 2009, 2016; Somsai & Intaraprasert, 2011; Thu & Thu, 2016) and learner autonomy (e.g., Gökgöz, 2008; Machón, 2000; Salehi et al., 2015).

According to Nakatani (2010), communication strategies refer to the strategies employed by speakers to “solve communicative disruptions and enhance interactions in the target language” (p. 116). In this study, communication strategies refer to the strategies used by the speakers to deal with communication problems or breakdowns and difficulties, as well as to enhance their communication to achieve the target purposes of the conversations in classrooms and real-life communicative situations. Students employed target communication strategies which included the strategies of circumlocution, asking for clarification, asking for confirmation, and use of fillers and hesitation devices to compensate for the lack of English oral communication ability when having to cope with communication problems and difficulties in different contexts. The relationship between communication strategies and English oral communication ability is clarified in the following section.

#### 2.1.2.1 Communication strategies and English oral communication ability

Communication strategies can help students improve English oral communication ability. This is because they support students when they are dealing with communication problems or breakdowns to keep the conversation flowing and to maintain their interaction with their interlocutors (Kongsom, 2009, 2016; Nakatani, 2010; Somsai & Intaraprasert, 2011; Thu & Thu, 2016).

Researchers have investigated the effects of communication strategies on students' English oral communication ability. According to Kongsom (2016), after Thai undergraduate students received the ten-week communication strategy instruction, their level of strategic competence increased in the post-speaking tasks in all five strategic competence components: goal setting, use of verbal communication strategies, use of non-verbal communication strategies, achievement of communicative goals through production, and achievement of communicative goals through comprehension, especially the use of verbal communication strategies as it was found that the students could extensively employ verbal communication strategies to express their ideas when they encountered communication problems. The increase in the use

of strategic competence components indicated that communication strategy instruction can improve EFL learners' English oral communication ability.

Likewise, Nakatani (2010) has reported that communication strategy instruction could enhance students' English oral communication ability after examining whether the use of specific communication strategies could enhance students' oral communication. The study participants attended a 12-week course with oral communication strategy training which comprised: review, presentation, rehearsal, performance, and evaluation. The conversation pretest and posttest were used to examine whether and how the participants improved their oral communication ability. Discourse data from videotaped interactions in the posttest were transcribed and analyzed in terms of production rates, the number of errors, and strategy use. An oral communication strategy inventory was used to investigate the participants' variety and frequency of specific oral communication strategy use through a self-report questionnaire. Results from discourse data and oral communication strategy inventory were triangulated with the participants' retrospective think-aloud protocol data. The findings suggested that communication strategy instruction improved students' English oral communication ability, particularly in 1) the response for maintenance strategies (i.e. providing active response and shadowing) which helped participants keep the conversation smooth and make their speech more fluent, and 2) negotiation of meaning (i.e. confirmation checks, comprehension checks, and clarification requests) which enabled participants to obtain opportunities to check, clarify, and react to utterances during their interaction.

In another study, Puripunyanich (2017) examined a study to examine the effects of learning and communication strategies instruction on EFL undergraduates' oral communication ability and their attitudes toward the instruction in an attempt to improve their informative presentation and informal meeting skills. Twenty-three economics undergraduates at a public university in Thailand studying in an English oral communication course were taught 13 learning and communication strategies in class following the three-stage instruction: pre-stage, while stage, and post stage. Both quantitative and qualitative revealed that students' oral communication ability improved after implementation of learning and communication strategies instruction. In addition, students also had positive attitudes toward the instruction as they reflected



that the instructed strategies were useful in both learning activity and test tasks and could also be applied to other courses. The data from the interviews, students' journals, and teacher's observation notes suggested that students used 12 learning and communication strategies to perform the oral assessment and posttest tasks. Moreover, students employed more communication strategies in the informal meeting posttest due to the nature of the task that required asking questions during the discussion.

Besides this, communication strategies have also been found to have a relationship with learner autonomy. It is believed that communication strategies support EFL learners' development of their autonomy (Gökgöz, 2008; Machón, 2000; Salehi et al., 2015), as can be shown in more details in the next section.

#### 2.1.2.2 Communication strategies and learner autonomy

Previous studies (e.g., Gökgöz, 2008; Machón, 2000; Salehi et al., 2015) have suggested that communication strategies can help develop learner autonomy. For instance, Faerch and Kasper (1983, as cited in Gökgöz, 2008) suggest that "by learning how to use communication strategies appropriately, learners will be more able to bridge the gap between pedagogic [classroom] and non-pedagogic [real-life] communicative situations" (p. 35). They also posit that "*learner autonomy* can be thought of as the *ability* to bridge that gap, instruction can be thought of as the means to develop *that ability*" (p. 65). In this way, when students possess the ability to apply communication strategies that they have studied in class to perform real world tasks, learner autonomy occurs. These suggestions are in line with what Wenden (1991) has pointed out. According to Wenden, learner autonomy encompasses personal responsibilities and personal capabilities. With respect to personal capabilities, after learners acquire communication strategies in class, they should be confident in their capabilities and willing to take responsibilities for their learning, as well as their real-life communication, and this enables them to become autonomous learners.

In addition, Machón (2000) also agrees with Faerch and Kasper's (1983) argument that communication strategy instruction can bridge the gap between classroom and real-life communication leading to development of learner autonomy in that communication strategy can raise learners' awareness of the factors that help them select appropriate strategies when coping with various communicative situations. The argument in support of communication strategy instruction is in accordance with the

goal of strategy instruction discussed by Machón (2000, p. 20) which is to help learners to “1) regulate their own learning, 2) approach new learning tasks with confidence, and 3) develop their knowledge about strategies in order for them to select the most appropriate strategies for completing a given task and monitor such strategy use.”

In brief, communication strategies can be taught to improve English oral communication ability and learner autonomy of EFL students, so they should be instructed in EFL classrooms so that EFL students will be equipped with communication strategies necessary for overcoming communication problems or breakdowns and difficulties in their interactions of different communicative situations. This eventually leads them to develop their English oral communication ability as well as learner autonomy.

The selection of communication strategies implemented in the PBBCSI in this study was important because the selected communication strategies were aimed to enable the students to develop their English oral communication ability and learner autonomy simultaneously. Therefore, communication strategy selection is discussed in the following section.

#### 2.1.2.3 Communication strategy selection for the communication strategy instruction

Researchers have classified communication strategies into different categories. Table 2 summarizes well-known communication strategies with descriptions and examples. The categories of communication strategies presented are based on Cohen's (2010) taxonomy of communication strategies.

Table 2: Some Commonly Used Communication Strategies

Categories and Communication Strategies (Cohen, 2010)	Descriptions (Cohen, 2010)	Examples (adapted from Cohen, 2010; Dörnyei & Scott, 1997)
<b>1. Avoidance or reduction strategies</b>		
1.1 Message abandonment	Leaving a message unfinished because of some language difficulty  (Faerch and Kasper (1983) suggest that learners employ this strategy because they want to avoid making errors or they want to increase their fluency by using this strategy).	<i>It is a person er... who is responsible for a hotel, for suggesting ....</i>
1.2 Topic avoidance	Avoiding topic areas or concepts which cause language difficulty	<i>I was looking for the book. ... [then the speaker has changed the topic because he/she does not know the target word or is not familiar with the topic in the conversation]... er... technology is very important for everyday life.</i>
1.3 Message replacement	Substituting the original message with a new one because of incapability of executing it	Saying that ' <i>the pipe was broken in the middle</i> ' instead of " <i>the screw thread was broken</i> ". (The speaker does not know "screw thread," so he/she says a new word instead.)
<b>2. Achievement or compensatory strategies</b>		
2.1 Circumlocution	Describing or exemplifying the target word they cannot remember	<i>'the thing you open bottles with'</i> for "corkscrew"
2.2 Approximation	Using an alternative term which expresses the meaning of the word they cannot remember as closely as possible	<i>'ship'</i> for "sailing boat"

2.3 Use of all-purpose words	Extending a general, “empty” lexical item to contexts where specific words are lacking	The overuse of “ <i>thing, stuff, make, and do</i> ”, e.g. I can’t work until you repair my <i>thing</i> .
2.4 Word coinage	Creating a non-existing L2 word based on a supposed rule	‘ <i>vegetarianist</i> ’ for “vegetarian”
2.5 Use of non-linguistic means	Using mime, gesture, facial expression or sound imitation to deliver the meaning (As for sound imitation, it is considered ‘use of similar-sounding words’ as stated in Dörnyei and Scott (1997) as compensating for a lexical item whose form they are unsure of with a word, either existing or non-existing, which sounds more or less like the target item).	Regarding sound imitation, the speaker uses ‘ <i>cap</i> ’ for “pan” because the speaker thinks that ‘ <i>cap</i> ’ sounds similar to “pan” that the speaker wants to say.
2.6 Literal translation	translating literally a lexical item, an idiom, a compound word or structure from L1 to L2	Saying this computer model is ‘ <i>torn</i> ’ instead of “out of stock”.
2.7 Foreignizing	Using an L1 word by adjusting it towards the L2 phonologically (that is, with a L2 pronunciation) and/or morphologically	Saying ‘ <i>a krok</i> ’ (Thai word) for “mortar” or ‘ <i>muaning</i> ’ (Thai word with English present participle morpheme “-ing”) for “rolling”
2.8 Code switching	Switching to L1 /the native language	<i>Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines</i> ซึ่งทำงานและโต้ตอบคล้ายกับมนุษย์ (that work and react like humans).
<b>3. Interactional strategies</b>		
3.1 Appeal for help	Turning to the conversation partner for help when encountering language difficulty	Either saying directly (e.g., <i>What do you call ...?, What’s the name?</i> ) or indirectly (e.g. <i>I don’t</i>

		<i>know the name .... [with rising intonation, pause, eye contact, puzzled expression])</i>
3.2 Asking for repetition	Requesting repetition when not hearing or understanding something properly	'Sorry,' 'Pardon,' 'What?'
3.3 Asking for clarification	Requesting explanation of an unfamiliar meaning structure	'What do you mean?,' 'The what?,' 'You saw what?'
3.4 Asking for confirmation	Requesting confirmation that one heard or understood something correctly	'You said .....?,' 'You mean .....?,' 'Do you mean .....?'
3.5 Expressing non-understanding	Expressing that one did not understand something properly either verbally or nonverbally	'Sorry, I don't understand,' and 'I think I've lost the thread.'
3.6 Interpretive summary	Extended paraphrase of the interlocutor's message to check that the speaker has understood correctly	'So what you are saying is ....., ' and 'Let me get this right; you are saying that .....
<b>4. Stalling or time-gaining strategies</b>		
4.1 Use of fillers and other hesitation devices	Using filling words or gambits to fill pauses and to gain time to think	'well,' 'now let me see,' 'as a matter of fact,' 'you know,' 'actually,' 'okay,' 'this is rather difficult to explain,' 'well, actually, it's a good question.'
4.2 Repetition	Repeating a word or a string of words immediately after they are said either by the speaker or the conversation partner without intention of emphasis	It was made... it was made of fiberglass.

According to Cohen's (2010) taxonomy of communication strategies, avoidance or reduction strategies are employed by speakers to leave a message unfinished, avoid the problem due to their language difficulty, and change the

communicative goal. Accordingly, speakers may not achieve their communicative goal when using avoidance or reduction strategies.

In this study, students were encouraged to use communication strategies to achieve their communicative goal in conversations. The communication strategy instruction of the present study included three categories: 1) achievement or compensatory strategies, 2) interactional strategies, and 3) stalling or time-gaining strategies. There were four communication strategies selected from the three categories, namely 1) *circumlocution* selected from the achievement or compensatory strategies, 2) *use of fillers and other hesitation devices* selected from the stalling or time-gaining strategies, 3) *asking for clarification*, and 4) *asking for confirmation* selected from the interactional strategies. Those four communication strategies have been reported to be more frequently used in communication, they are teachable, and they are useful for coping with oral communication difficulties (Dörnyei & Scott, 1997; Kongsom, 2016; Pinweha, 2010). The definitions and examples of those four communication strategies can be seen in Table 3.

Table 3: Communication Strategies of the Present Study

Categories and Communication Strategies (Cohen, 2010)	Definitions	Examples (adapted from Cohen, 2010; Dörnyei & Scott, 1997; Pinweha, 2010)
<b>Achievement or compensatory strategies</b>		
1. Circumlocution	The speaker or interlocutor describe or exemplifies the target word he/she cannot remember.	<i>'the equipment that you connect to a computer to copy and store information'</i> for "a handy drive"
<b>Interactional strategies</b>		
2. Asking for clarification	The interlocutor asks the speaker to explain the previous utterances	<ul style="list-style-type: none"> <li>- <i>What do you mean?</i></li> <li>- <i>What does it mean?</i></li> <li>- <i>Could you explain the meaning?</i></li> <li>- <i>Could you explain that word?</i></li> </ul>

3. Asking for confirmation	The interlocutor asks the speaker to check if the interlocutor understands what the speaker has said (e.g. Right?, OK?) or the interlocutor repeats what the speaker has said to confirm whether what he/she has heard or understood is correct (e.g. You mean..., Do you mean ...)	<p>- <i>Right?, OK? Do you understand?</i></p> <p>- <i>'You said .....?'</i>, <i>'You mean .....?'</i></p> <p>- <i>'Do you mean .....?'</i></p> <p>- <i>(Oh), really?</i></p>
<b>Stalling or time-gaining strategies</b>		
4. Use of fillers and other hesitation devices	The speaker uses filling words to fill pauses and to gain time to think in the conversation	<p><i>Lexical words:</i></p> <p><i>'well,' 'now let me see,' 'as a matter of fact,' 'you know,' 'actually,' 'this is rather difficult to explain,' 'well, actually, it's a good question'</i></p> <p><i>Non-lexical words:</i></p> <p><i>'Uhm/ Hm/ Er/ Ah'</i></p>

### 2.1.3 Frameworks for the communication strategy instruction

Many frameworks have been introduced to equip students with communication strategies and to enable them to become independent and autonomous learners through their increasing command of a variety of communication strategies useful for their learning.

There are two well-recognized frameworks for communication strategy instruction: the Cognitive Academic Language Learning Approach (CALLA) framework (Chamot et al., 1999) and Nakatani's (2010) framework.

#### 2.1.4.1 CALLA framework

The CALLA framework for communication strategy instruction is an effective way for teaching and learning strategies which "emphasizes explicitness, metacognitive knowledge, and scaffolded support as the teacher or instructor and students work through these phases" (Chamot et al., 1999, p. 44) as illustrated in Figure 1.

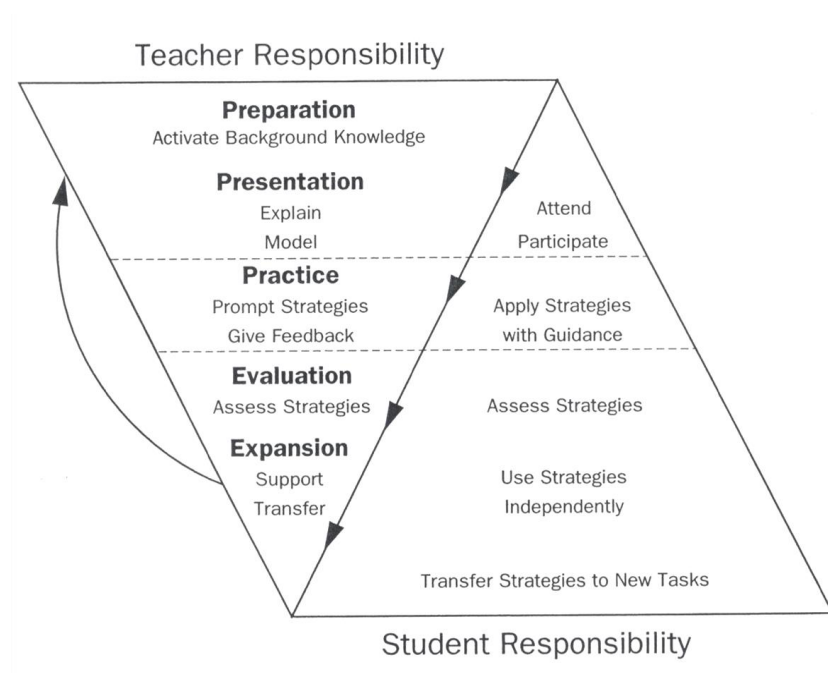


Figure 1: CALLA Framework for Strategy Instruction  
(Chamot et al., 1999)

The CALLA framework comprises five stages: 1) *preparation* which involves activating students' background knowledge of strategies, 2) *presentation* which deals with modelling the use of new strategies for a particular task and explaining how and when to use them, 3) *practice* which is about practicing the strategies in class activities, 4) *evaluation* which focuses on evaluating students' use of strategies and their effectiveness for the task, and 5) *expansion* which extends students' use of strategies into new situations or tasks.

According to the CALLA framework, teachers or instructors begin explicit instruction, gradually reduce prompts and cues as their scaffolding in the instruction, and increase opportunities for students to participate in doing activities, so the students become more responsible for their learning and expand their learning experiences they have learned and practiced in class to new contexts. Therefore, the CALLA framework can be applied to other forms of language instructions to help develop students' English oral communication ability and learner autonomy.

The other well-known framework for communication strategy instruction for EFL students is proposed by Nakatani (2010).



#### 2.1.4.2 Nakatani's (2010) framework

This framework is composed of five stages as follows:

##### 1. Review

At this stage, students conduct the previous task with a different partner from the last lesson. They can have chances to review their previous performance and make use of feedback for oral communication strategies used in the previous lesson. By practicing interaction in the first task, students are also given time to warm up for the new task.

##### 2. Presentation

The teacher or instructor presents a new task topic and explains the goal and procedures. The teacher or instructor chooses some communication strategies and suggests students that they use strategies explicitly. Students also discuss requested linguistic resources for the task through brainstorming sessions.

##### 3. Rehearsal

Students are divided into two groups and each group is given a different role card which deals with the simulated communicative context. They prepare agendas to fulfill the roles assigned to them. They practice their roles with pairs in the same group.

##### 4. Performance

Each student from different role groups makes a pair and operates the task. After finishing the simulation task with the first pair, they change the partner and carry it out again with the next partner.

##### 5. Evaluation

After actively practicing the task, students check and reflect on their own learning. They review their strategy use.

It can be seen that Nakatani's (2010) framework is a framework that is distinguished from the CALLA framework in that Nakatani's framework is aimed at developing students' communication ability using communication strategies via five stages with its emphasis being placed on planning and practicing taught communication strategies in target situations. On the other hand, the CALLA framework is aimed at applying taught strategies to new situations. For these reasons, the two frameworks were applied in this study so that the students could develop their English oral

communication ability by means of planning and practicing communication strategies in both target and new situations as shown in Table 4.

*Table 4: Communication Strategy Instruction Steps*

<b>CALLA framework</b> (Chamot et al., 1999)	<b>Nakatani's framework</b> (Nakatani, 2010)	<b>Communication strategy instruction steps of the present study</b> (Chamot et al., 1999; Nakatani, 2010)
1. Preparation 2. Presentation 3. Practice 4. Evaluation 5. Expansion	1. Review 2. Presentation 3. Rehearsal 4. Performance 5. Evaluation	<b>1. Preparation</b> <b>2. Presentation</b> <b>3. Rehearsal</b> <b>4. Performance</b> <b>5. Feedback</b> <b>6. Expansion</b> <b>7. Evaluation</b>

These adapted communication strategy instruction steps were integrated with the blended learning environments and project-based language learning as the learning and teaching steps in the communication strategy instruction in the PBBCSI as follows.

1) Preparation

The instructor activated students' background knowledge to prepare them for the following topics of the study unit.

2) Presentation

The instructor presented new topics, language use, communication strategies, as well as activities for developing learner autonomy.

3) Rehearsal

The students applied what they learned in the previous steps to rehearse in carrying out the communication activity.

4) Performance

The students practiced the communication activity again to correct their mistakes and increase their speaking fluency.

#### 5) Feedback

The students gave feedback and comments on their peers' performances against the task and project rubric which was similar to the test rubric in the part of English oral communication ability.

#### 6) Expansion

The students extended the use of taught communication strategies and the ways to do the project via their online tasks.

#### 7) Evaluation

The students gave feedback and comments on their peers' online tasks posted on the Facebook group. Then, they also rated their online tasks against the task and project rubric and reflected on their tasks onto the student log to improve them in the following phases.

Apart from the communication strategy instruction, collaborative learning should be taken into account in order to improve students' English oral communication ability and learner autonomy as clarified in the next section.

#### 2.1.4 Collaborative learning

The broad concept of collaborative learning is proposed by Dillenbourg (1999) as "a situation in which two or more people learn or attempt to learn something together" (p. 1).

Likewise, Chang (2012) defines collaborative learning as the situation in which the learner engages in a learning task with more capable others such as teachers or more proficient learners who can provide assistance and guidance.

As can be seen from the concepts of collaborative learning pinpointed by Dillenbourg (1999) and Chang (2012), all members of a group with different language proficiency levels help each other in a way that more proficient individuals such as their teacher or peers scaffold less proficient ones, to complete a task.

In addition, Barkley et al. (2014) also point out that the one of the outcomes of collaborative learning for learners is that collaborative learning help prepare them for careers by providing them opportunities to learn and practice the teamwork skills valued by employers and develop skills to collaboratively address the common problems facing a diverse society. Collaborative learning can engage all students by

valuing the perspective each student can contribute from his or her personal academic and life experience to others.

Another subset of collaborative learning is cooperative learning which also helps students develop their language ability in the learning process. More crucial details about cooperative learning are given in the following section.

#### 2.1.5 Cooperative learning

Cooperative learning occurs when students promote and facilitate each other's efforts to learn (Brewer & Klein, 2006). It is believed that instructors should promote cooperative learning in learning contexts so that individual students are aware of their responsibilities for learning the assigned materials and also for ensuring that all members of the group learn it.

For cooperative learning, success is related to the contribution of an individual responsible for completing the assigned part to the group activity and integrating the assigned part to achieve the group activity as well as the learning goal. Collaborative learning, on the other hand, success is associated with the contribution of all group members working together as a team to achieve the group activity and the learning goal. In brief, all group members work together as a team for group achievement.

In the present study, both collaborative learning and cooperative learning were encouraged in the learning process to support students who were trying to develop their English oral communication ability and learner autonomy while they were working together to complete their task and achieve the learning goals. It was believed that eventually the students would be able to carry out their independent projects successfully.

#### 2.1.6 Zone of proximal development and scaffolding

The concept of zone of proximal development (ZPD) plays an important role in both collaborative learning and cooperative learning. This concept was first introduced by Vygotsky (1978) who defines ZPD as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86).

Scaffolding has become an essential concept in many educational areas. Scaffolding refers to “the variety of ways in which teachers and others help or support

learners to move beyond their current level of understanding [or proficiency] by giving them *cues, suggestions or even direct guidance* at appropriate moments in their investigations or activities” (Westwood, 2004, p. 23). After “students become more proficient, the scaffold is gradually removed” (Diaz-Rico & Weed, 2002, p. 85) until eventually they can deal with the task independently.

According to Verenikina (2002), scaffolding techniques vary such as demonstration, dividing a task into simpler steps, providing guidelines, keeping attention focused, providing examples and questioning, and breaking content into manageable pieces.

In this study, the concept of scaffolding was applied in the learning process to enable less capable students to learn from more capable peers so that they could “move beyond their current level of understanding [or proficiency]” (Westwood, 2004, p. 23). Assistance came in the form of cues, suggestions, or even direct guidance given at appropriate moments when students were doing oral communication activities, which meant that when less capable students were scaffolded in the learning process by either their more capable peers or instructors or both, they would develop their English oral communication ability as well as learner autonomy.

#### 2.1.7 Assessment of English oral communication ability

There are different types of speaking tests that can be used to assess English oral communication ability. For example, Clark (1979) suggests that there are three types of speaking tests: indirect, semi-direct, and direct tests which can be explained as follows:

*Indirect tests* refer to the procedures in which the test taker does not actually speak, but gives responses to the prompts on paper or computer such as responding to conversation cloze tests or pronunciation tests (e.g., phoneme discrimination, stress and intonation identification, etc.).

*Semi-direct tests* refer to the procedures in which the test taker speaks and gives responses to the prompts rather than to face-to-face conversation with a live interlocutor such as responding to recorded questions, imitating a voice model, or describing pictures aloud. The test taker’s performance is audio- or video-recorded and later rated by one or more trained assessors. Clark (1979) points out that the test taker’s responses in the semi-direct tests represent artificial language use in non-real-life situations.

*Direct tests* refer to the procedures in which the test taker actually speaks and interacts with one or more live interlocutors. The examples of direct tests are a face-to-face interview and a role play. Clark (1979, as cited in O'Loughlin, 2001) also points out that the use of direct tests is “the most valid procedures” (p. 6) to measure speaking proficiency of students because the test contexts are closely related to real-world tasks.

In addition, Clark also states that face-to-face interviews seem to have the greatest degree of validity as a measure of global speaking proficiency though acknowledging that the language produced in the interview seems not to reflect real-life communication due to the fact that the interviewer controls the interview through questioning. To make the interview reflect the real-life communication, the interviewer can challenge the interviewees to take turn and interact rather than merely answering questions.

### **Types of assessment**

Assessment can be divided into analytic and holistic assessments, both of which are used to evaluate student's performance on tasks. According to Richards (2015b), *analytic assessment* refers to the scoring method which reflects the student's performance on individual criteria that are assessed, while *holistic assessment* refers to the scoring method which gives a single score representing an overall impressionistic assessment of the student's performance on the task as a whole. Hughes (2003, as cited in Richards, 2015b) comments on the selection of analytic and holistic assessments:

The choice between holistic and analytic scoring depends in part on the purpose of the testing. If diagnostic information is required directly from the ratings, then analytic scoring is essential. The choice also depends on the circumstances of the scoring. If it is being carried out by a small well-knit group at a single site, the holistic scoring, which is likely to be more economical of time, may be the most appropriate. But if scoring is being conducted by a heterogenous, possibly less well-trained group, or in a number of different places, analytic scoring is probably called for (p. 688).

In the present study, the students took the English oral communication ability pretest and posttest which required them to interact with live interlocutors (examiners) in different three test tasks which were non-scripted role-plays and face-to-face interviews in real-life communicative situations. The students' performance was video-

recorded and rated by two raters (the researcher and another experienced and trained instructor) using the English oral communication ability test rubric with analytic assessment. The English oral communication ability test rubric comprised six aspects of spoken language: *range, accuracy, fluency, interaction, coherence, and pronunciation* adapted from the qualitative features of spoken language (expanded with phonology) of the Common European Framework of Reference for Languages (CEFR) (Council of Europe, 2017, pp. 155-156) in terms of *range, accuracy, fluency, interaction, coherence, and phonology* (see Appendix B).

In addition to the aforementioned test tasks, online tasks and an independent project were also used, and the students' performance was graded using the task and project rubric (see Appendix C).

#### 2.1.8 Related studies on English oral communication ability in EFL classrooms

A large number of researchers have investigated students' development of English oral communication ability in classrooms. To begin with, Jarupan (2013) examined the levels of English oral communication competency of civil engineering students at a Thai university of technology. The findings revealed that the participants had problems with grammatical errors, pronunciation, and the use of L1 in communication. The participants' problems were as follows: 1) pronunciation: they had problems with the omission of final sounds in the final consonant clusters and plural "s" ending, mispronunciation of /l/ and /r/, and putting stress on wrong syllables, 2) vocabulary: they lacked vocabulary knowledge in choosing correct words in the interview, and 3) fluency: they showed difficulties of fluency in forms of speech rate, long pauses and silence fragment, broken words, and use of L1 during the tasks.

Regarding grammatical errors, Phettkongkam (2017) found that the most frequent types of errors based on the surface structure description that Thai students faced problems with were omission errors because they were unaware of grammatical components when producing utterances, followed by misformation errors since they employed the wrong forms of target words. Based on the linguistic description of errors, the three most frequent types of errors that the students encountered were plural form, article, and verb form. Phettkongkam pointed out that these errors occurred due to students' lack of target language knowledge and the complexity of the English structures. Phettkongkam also suggested that students were required to focus more on

problematic areas and they should practice continuously over time to improve their oral communication ability.

With respect to pronunciation, Sahatsathatsana (2017) conducted a study on the pronunciation problems of Thai students learning English phonetics in order to investigate the students' opinions on problems in phonetics learning and find out the factors causing the problems in phonetics learning of students. The data were collected from twelve undergraduate English for international communication students studying an English phonetics course in the first semester of the academic year 2013. To gather the quantitative data, the questionnaires were contributed to all of the students to complete. Of the twelve students, six of them were purposively selected for the semi-structured interview in Thai. The findings showed that consonant cluster articulation and linking sound were very serious problems, while consonant articulation, intonation, and final sound with -d and -ed were serious problems. Based on the qualitative results from the semi-structured interview, there were two main types of pronunciation problems: the problems with the differences of the sound systems between English and Thai, and the factors that negatively affect students' pronunciation.

Likewise, Yangklang (2013) conducted a study on improving English stress and intonation pronunciation of 40 first-year students of Nakhon Ratchasima Rajabhat University after using an e-learning program in order to examine their improvement of English stress and intonation pronunciation. Their satisfaction with the e-learning program for improving their stress and intonation pronunciation was also explored. Results from the pronunciation test revealed that the students developed their stress and intonation pronunciation after taking the e-learning program. However, the students had stress pronunciation problems with some words such as "bio'graphy," especially the three-syllable words. In addition, the students also had intonation pronunciation problems with uttering "yes-no questions" with rising and falling intonation patterns that were used with the utterances.

As for students' satisfaction with the e-learning program, most of the students reflected that the content of the e-learning program was good, but some features of the program should be developed to be more interesting, attractive, and relevant to the objectives.



In summary, EFL students had problems with the development of their English language skills including English oral communication ability. However, they showed their satisfaction with integration of technology in the classroom. Therefore, technology should be employed in EFL classrooms in order to make the English courses more interesting and attractive, and relevant to the objectives and students' needs.

## **2.2 Learner autonomy**

One of the most frequently cited definitions of learner autonomy is seen in Holec (1981, as cited in Benson, 2001) in which "autonomy" is described as "the ability to take charge of one's own learning" (p. 48). Holec elaborates on the definition, stating that taking charge of one's own is to have, and to hold, the responsibilities for all the decisions, which are related to five aspects of learner autonomy which can be divided into determining the objectives, defining the contents and progressions, selecting methods and techniques to be used, monitoring the procedure of acquisition properly speaking (rhythm, time, place, etc.) , and evaluating what has been acquired.

Another term discussed in relation to learner autonomy is "autonomous learning." According to Benson (2001), autonomous learning refers to learning modes, tools, or methods through which learners can exercise and show their ability, and can be "characterized by particular procedures and relationships between learners and teachers" (p.111) in order to develop their learner autonomy. The learning modes, tools, and methods for autonomous learning include, for example, computer-assisted language learning (CALL), computer-mediated communication, self-access, distance learning, social platforms, activities, etc. that help learners improve their learner autonomy.

Holec's (1981) definition (as cited in Benson, 2001) reflecting five aspects of learner autonomy previously mentioned seems to cover main aspects of learner autonomy, it is therefore applied in this study. However, to get more insights into learner autonomy, other scholars' perspectives on learner autonomy should be further examined.

### **2.2.1 Proactive and reactive autonomy**

The concept of proactive and reactive autonomy was introduced by Littlewood (1999). *Proactive autonomy* refers to the form of autonomy "that is usually intended

when the concept [of LA] is discussed in the West” (p. 75) in which students take charge of their own learning, determined their objectives, select learning methods and techniques, and evaluate what they have learned. In this way, learners construct a personal agenda for their own learning which “affirms their individuality and sets up directions in a world” for their own learning (Littlewood, 1999, p. 75). This means that learners have a greater degree of choice to set up directions for their own or learner-directed learning (Benson, 2001; Littlewood, 1999). Western learners seem to possess proactive autonomy (Littlewood, 1999).

As for *reactive autonomy*, it is the form of autonomy in which learners do not set up directions for their own learning, “but once a direction has been initiated [normally by the teacher as teacher-directed learning], it enables learners to organize their resources autonomously in order to reach their goal” (Littlewood, 1999, p. 75). East Asian learners, for example, are more likely to possess reactive autonomy (Littlewood, 1999).

Benson (2001) pinpoints that national culture is an important factor in fostering autonomy. Pennycook (1997) states that the notions of student-centered education, individualism, and autonomy are developed from a particular context, and structured and valued differently across cultural contexts. He also suggests that fostering learner autonomy without an awareness of social, cultural and political contexts may cause inappropriate language teaching and cultural problems to learners. Therefore, fostering learner autonomy should be practiced appropriately with students’ social and cultural contexts.

### 2.2.2 Fostering learner autonomy in Western and Asian contexts

Littlewood (1999) explains that cultures can be distinguished according to whether they are individualism-oriented or collectivism-oriented. An individualistic orientation or individualism, it encourages individuals to believe in their own identity. Triandis (2001) points out that people in individualistic societies or contexts are autonomous and independent from their groups, and they prioritize their personal or self-oriented goals over their group-oriented goals. Western countries or contexts seem to possess the characteristics of individualistic cultures or individualism (Littlewood, 1999). It can be seen that individualistic orientation or individualism suits proactive

autonomy that emphasizes individuality and encourages students to set up individual learning direction.

As for a collectivistic orientation or collectivism, it encourages individuals to see themselves as an inseparable part of the group, and they prioritize their group-oriented goals over their self-oriented goals (Littlewood, 1999). Mills and Clark (1982, as cited in Triandis, 2001) also pinpoint that people in collectivistic cultures are interdependent within groups. Asian countries seem to possess the characteristics of collectivistic cultures or collectivism (Littlewood, 1999). In addition, Asian learners seem to have a clear view of differences in power and authority between themselves and a person with high power and authority—their teacher or instructor (Littlewood, 1999). In this regard, compared with Western learners, Asian learners are more likely to perceive the teacher or instructor as an authority figure who have more knowledge and more control of the classroom. This suggests that proactive autonomy is more applicable and relevant to Western learners, meaning that learners are required to initially set their own learning directions, while reactive autonomy is more applicable and relevant to Asian learners, indicating that learners regulate their own learning once direction has been set by the instructor.

### 2.2.3 Fostering learner autonomy in Thai contexts

Like other Asian countries, Thailand possesses collectivism and acceptance of power and authority (Littlewood, 1999). This suggests that reactive autonomy should be promoted among Thai students once the learning direction has been set by their instructor, Thai students gradually develop their learner autonomy until they finally are able to initiate their own learning without instruction from the instructor. This can be done by

Researchers have introduced many ways to develop learner autonomy. There are six stages to foster learner autonomy, namely determining the goals and the objectives; defining the learning progressions; taking the initiative; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion procedures; and evaluating the completed tasks and the project.

As for determining the objectives, it is important for students to make their decisions for taking charge of their own learning. Benson (2001) points out that

students should be able to direct the course of their own learning by making the important decisions on management and organization, which means that they should be encouraged to formulate their goals and objectives to help them make efforts in correct directions to control their own learning and achieve their learning effectively.

With regard to defining the contents, Holec (1981, as cited in Benson, 2001) states that students should accept responsibilities for defining learning contents. In this regard, Little (1991) suggests that designing the learning content for developing learner autonomy needs negotiation between instructors and students since instructors have more expertise in learning contents while students know better their own preferences on what contents and materials are really relevant to them and truly serve their needs, which means that instructors and students should discuss and negotiate the appropriate learning contents of the course. In addition, Benson (2001) emphasizes that the learning content should be decided by students according to their learning contexts.

As for defining the progressions, it helps the students develop their learner autonomy (Littlewood, 1999). When the students define the progressions, they make efforts to learn something (Scharle & Szabó, 2000). In this way, they also put their efforts to achieve the learning tasks as best as they can.

With regard to selecting methods and techniques to be used, students should be encouraged to make decisions to select appropriate choices, methods, techniques, language use, and resources to facilitate their learning process and achieve learning tasks according to Benson's (2016) suggestion that choices and decision making is central to the development of learner autonomy.

With respect to monitoring, learners monitor to assess their effectiveness while working on the task (Chamot et al., 1999). Wenden (1991) argues that learners identify difficulties or problems in learning process when monitoring, they "assess their knowledge and skills to seek the cause..." (p. 27).

Regarding to evaluating, students should reflect on how well they have performed the tasks and how well evaluating helps and if they do not, what prevents them from achieving the task goals and what they can do differently next time (Chamot et al., 1999).

Apart from the five aspects of learner autonomy previously mentioned, taking

the initiative also plays an important role in fostering learner autonomy. Feryok (2013) points out that taking the initiative “is related to both choice and responsibility, and also control, since taking [the] initiative demonstrates being able to decide on and potentially take action... learner autonomy will be defined as showing initiative in taking charge or control, making choices, and bearing responsibility” (p. 214). In addition, Le (2013) supports Feryok’s definition of the initiative that it “is the awareness of their own roles and responsibilities. In other words, students must be aware that they are the main agent who have the power and means to direct their own learning” (p. 244). In this way, taking the initiative is related to starting actions or new actions, or making new choices or ideas for the learning process.

According to Feryok (2013), learner autonomy can be developed when students learn how to take the initiative of learning. This refers to the extent to which students self-initiate or self-start to take a common action that is necessary to complete the work with or without guidance from the instructor and peer. They make new choices, different from instructor’s and peers’ initiation for their learning process.

Students’ taking the initiative can be divided into three main categories: 1) self-initiation without instructor-or-peer initiation, 2) self-initiation with instructor-or-peer initiation to take common action, and 3) self-initiation with instructor-or-peer initiation to take new actions, which can be elaborated as follows.

1) *Self-initiation without instructor-or-peer initiation* refers to the extent to which students start taking new actions, or make new choices, or ideas *without* the instructor’s or peers’ initiation. The instructor may or may not have control them.

2) *Self-initiation with instructor-or-peer initiation to take a common action* which refers to the extent to which students self-initiate or self-start to take a common action that is necessary for completing the activities after receiving encouragement from their instructor or peer.

3) *Self-initiation with instructor-or-peer initiation to take a new action* which refers to the extent to which students self-initiate or self-start to take a new action or make new choices because of the instructor’s or peers’ initiation, with or without instructor’s control.

The concept of taking the initiation is embedded in reactive autonomy, which is believed to be more appropriate for Thai students since Thailand seems to possess the

“acceptance of power and authority” (Littlewood, 1999, p. 81) where Thai students are more likely to perceive their teacher or instructor “as an authority figure” (p. 85) who have more knowledge and control over the classroom. In other words, they are more likely to wait for their teacher or instructor or even their peers to give knowledge and suggestions, control or manage the class, and initiate any learning directions or plans for their learning.

Scholars have researched into learner autonomy for over decades. However, there are some misconceptions about learner autonomy. Little (1991) argues what learner autonomy is not involved in, suggesting that learner autonomy is not confined to learning without a teacher or instructor. As such, any intervention from the teacher or instructor is permissible. In addition, the development of learner autonomy should be facilitated or scaffolded to promote students to become autonomous in the learning process. Moreover, Little also points out that the permanence of learner autonomy cannot be guaranteed and “the [student] who displays a high degree of autonomy in one area may be non-autonomous in another” (p. 4) which means that learner autonomy is not a constant state when achieved by students.

According to Little’s (1991) arguments on misconceptions of learner autonomy, teachers or instructors should support learners to become autonomous in the learning process. This is in agreement with Sheerin’s (1997) assertion that “all learners need to be prepared and supported on the path to greater autonomy by teachers” (p. 63). To promote learner autonomy, major components of learner autonomy should be considered.

#### 2.2.4 Main components of learner autonomy

Concerning the development of learner autonomy, Wenden (1991) suggests that there are two main constructs based on the attitudes toward learner autonomy that help foster autonomous learners as follows:

1) *Personal responsibility* refers to students’ willingness to take responsibilities for expressing capabilities for learning. The students “see themselves having a crucial role on their language learning” (Wenden, 1991, p. 53), suggesting that the learners attempt to do the tasks and do whatever ways to carry out and complete the tasks. Therefore, it can be said that the autonomous learners are willing to do whatever they have to take responsibilities completing the learning tasks.

2) *Personal capability* refers to students' confidence in their own abilities to learn and manage their learning. Simply put, autonomous learners are confident in their learning. As such, this suggests that learner autonomy highlights the ability of learners to take responsibilities for expressing capabilities for their own learning process.

With respect to learner autonomy, the concepts of ZPD proposed by Vygotsky (1978) and Westwood's (2004) scaffolding that adult guidance and collaboration with more capable peers can help learners move beyond their current proficiency level until they become more proficient to deal with the task or learning independently imply that learner autonomy can be fostered through the transition from interdependence (collaborative learning) to independence (independent learning). Such a proposition is supported by Khabiri and Lavasani (2012) who further elaborate that "the development and internalization of autonomy within learners will consecutively move from interdependence to independence at each ZPD stage and when moving to the next stage the learner will gain move from interdependence to independence but at a higher level" (p. 1294).

As previously discussed, when considering the effects of communication strategies on the improvement of learner autonomy, it can be seen that after the students are equipped with knowledge and ability to use communication strategies they have acquired through collaborative and cooperative learning when doing activities in class, they possess the fundamental component of learner autonomy—the capabilities. Therefore, they are confident to take control over their responsibilities for doing online works to achieve the mastery of using communication strategies, English oral communication ability, and learner autonomy in completing their tasks. Eventually, they should be able to manage materials, resources, and learning process independently from their instructor to complete their independent project.

Wenden's attitudes towards learner autonomy (*personal responsibility and capability*) can be considered two main components that lead students to achieve learner autonomy. In addition, Breen and Mann (1997, as cited in Benson, 2001) suggest that autonomous learners should "have a capacity to learn that is independent of the educational processes in which they engaged" (p. 85). This suggests that autonomous learners should be independent from their instructors, materials, and resources provided by instructors and the program.

As such, the other key factor in development of learner autonomy is independent learning, which can be described in the next section.

### *3) Independent learning*

The term ‘independent learning’ and ‘autonomous language learning’ can sometimes be used interchangeably (Benson, 2001, p. 14). This implies that independent learning is related to the teaching and learning process that enables students to become autonomous learners. This is in line with Breen and Mann’s (1997, as cited in Benson, 2001) suggestion on eight qualities of autonomous learners, one of which is “independence.”

Lamb and Reinders (2006, as cited in Najeeb, 2013) elaborate about independent learning through independence or autonomy that there are two strands of independence or autonomy, one is concerned with language learning as essentially an independent process, while the other concerns organizing learning to make sure that it can take place independently without teacher’s control. This means that teachers or instructors should gradually shift their responsibilities to students who will therefore learn how to take control of their own learning in order to develop students’ learner autonomy.

However, it is noteworthy that the concepts of learner autonomy and independent learning can differ to a certain extent. Learner autonomy includes the notion of interdependence which implies working in collaboration and cooperation with other people such as instructors and other learners to accomplish the same learning goals (Kohonen, 1992, as cited in Benson, 2001). In so doing, students have to rely on the independent learning process that is independent of the teacher’s or instructor’s control while simultaneously working with peers.

As previously discussed, Little (1991) and Sheerin (1997) argue that teachers or instructors should facilitate or scaffold learners in learning processes to achieve learner autonomy. One of the teacher’s and instructor’s essential roles for enhancement of independent learning is the change in their role from being a ‘teacher’ or ‘instructor’ to being a ‘counsellor.’



### 2.2.5 Teacher as a counsellor

The role of the teacher or the instructor has been widely discussed when it comes to the development of learner autonomy. According to Voller (1997), the term “counsellor” refers to “to whom learners turn for consultation and guidance,...” (p.103). Kongchan (2008, as cited in Alonazi, 2017) points out that the counsellor helps learners to talk about their achievements, problems, and the ways to solve those problems. Riley (1997, as cited in Alonazi, 2017) has differentiated the teacher and the counsellor as shown in Table 5.

*Table 5: Teacher and Instructor Roles in Teaching and Counselling*

<b>Teaching</b>	<b>Counselling</b>
1. Setting the objectives	1. Eliciting information about aims, needs, and wishes
2. Determining course content	2. Giving and clarifying information
3. Selecting materials	3. Suggesting materials and sources
4. Deciding on time, place, and pace	4. Suggesting organization procedures
5. Deciding on learning tasks	5. Suggesting methodology
6. Initiating and managing classroom interaction	6. Listening and responding to students
7. Monitoring the learning situation	7. Interpreting information
8. Keeping records and assigning homework	8. Suggesting record-keeping and planning procedures
9. Presenting vocabulary and grammar	9. Presenting materials
10. Explaining	10. Analyzing techniques
11. Answering questions	11. Offering alternative procedures
12. Marking and grading	12. Suggesting self-assessment tools and techniques
13. Testing	13. Giving feedback on self-assessment
14. Motivating	14. Being positive
15. Rewarding or punishing	15. Supporting students

According to Riley (1997, as cited in Alonazi, 2017), the teacher or instructor should support students when they need suggestions for their learning so that they are able to apply their knowledge and capabilities they have been equipped during class to

work independently and accomplishing tasks that they are required to do in face-to-face or online environments on their own later.

#### 2.2.6 Measurement of learner autonomy

The measurement of learner autonomy has been investigated and discussed intensively in EFL and EIL environments. To begin with, Lin and Reinders (2017) discuss how learner autonomy can be assessed by mentioning Benson's notion as follows:

Autonomy is a multidimensional construct (Benson, 2005, p. 51) ... But this does not mean that “we should not attempt to measure it. If we aim to help learners to become autonomous, we should at least have some way of judging whether we are successful or not (p. 54).

When investigating learner autonomy, Lin and Reinders (2017) state that “the most commonly used method of eliciting data in the autonomy-related empirical research is the survey questionnaire” (p. 309). However, Dixon (2011, as cited in Lin & Reinders, 2017) suggests that the data derived from the questionnaire should be viewed in context and in consultation with learners. As such, the qualitative data from students' voice such as observation and interviews should be utilized to triangulate with the data from the questionnaire so that a clearer picture could be obtained.

#### 2.2.6 Related studies on learner autonomy

Borg and Alshumaimeri (2017) carried out the study investigating beliefs about learner autonomy of 359 teachers working in an English Preparatory Year Program at a university in Saudi Arabia. The findings of the questionnaire revealed that fostering learner autonomy was a desirable goal of their teaching. They believed that learner autonomy facilitated success in L2 learning. Moreover, metacognitive skills in the sense of learning how to learn, self-monitoring, and self-assessment were the key elements to become autonomous. They also pointed out that independent study contributed positively to the development of learner autonomy, but opportunities to work with and learn from others were also important.

The findings also indicated that the teachers preferred involving learners in course decisions, and developing learner autonomy and ability than putting these desirable predispositions into practice. Learners possessed a fair degree of autonomy

with some evidence of autonomy such as completing work independently, making decisions about their own learning, studying outside the classroom, etc. Three major factors limiting learner autonomy were found: learner characteristics, curriculum and prior education. Key learner characteristics showing the lack of autonomy were the lack of motivation, the lack of independence, a focus on products of learning, and low English proficiency, respectively. Finally, the factors limiting development of learner autonomy were exam-oriented curricula, lack of flexibility in task completion, etc. Such findings suggest that instructors need to make sure that curriculum, course objectives, and teaching and learning materials promote students' motivation and independence for their own learning, as well as applicability for their real-world tasks. Learning assessment should not be exam-oriented, but should include products and processes of learning as well.

### **2.3 Project-based language learning**

Project-based language learning is “a language teaching method which organizes instructional activities around projects and is promoted as an effective way of facilitating students' language learning, content learning and integrated skills' development” (Xu et al., 2017, p. 235). In addition, project-based language learning enables students to develop their language skills effectively as Ertmer and Glazewski (2015) point out that it is a “powerful means for facilitating students' attainment of the higher-level competencies and transferable skills” (p. 89).

Larmer (2015, 2019) proposes essential project design elements for the gold standard project-based learning (see Figure 2) as follows:



Figure 2: Essential Project Design Elements for the Gold Standard Project-based Learning

*Challenging problem or driving question:* Teachers (sometimes with students) identify the heart of the project—what it is about, a problem to investigate and solve, or a question to explore and answer.

*Sustained inquiry:* Inquiring means seeking information to find answers or solutions for the *driving question* emerging from the key problem. Larmer (2015, 2019) gives one example of the driving question; that is, “How can we teach letter sounds to preschoolers?” This activates the students to ask more questions such as “What are letter sounds?,” “How can we teach the preschoolers?,” and “When will we teach the preschoolers?” It can be seen that the students are challenged to ask deeper questions to find answers to the driving question.

Inquiry is iterative, when the students face a challenging problem or driving question, they ask more questions, find resources to find answers and solutions to the driving question, and then ask more deeper questions again if the answers or solutions are not enough to answer the driving question. The process occurs repeatedly until satisfactory solutions or answers are achieved.

The fact that the inquiry is iterative implies that students also *monitor* what they do in the project. When students ask more questions (to find answers and solutions for the driving question) in corporation with finding information via many resources and data collection such as textbooks, websites, interviews, etc., they monitor the

information and the procedure whether they help them find answers or solutions for the driving question. If not, or if they encounter more problems and questions, they make further inquiries to find answers and solutions to the driving question again by formulating deeper questions. This process occurs iteratively.

In this study, *inquiry* refers to asking deeper questions to seek information to find answers or solutions to the driving question emerging from the key problem. In addition, students should monitor the obtained information and the procedure or what they do in the project. If they encounter more difficulties and problems to find answers and solutions to the driving question, they perform further inquiry iteratively.

To encourage students to monitor the procedure as mentioned above is considered a monitoring strategy which is one of the metacognitive strategies promoting learner autonomy (Chamot et al., 1999).

*Authenticity:* Teachers should relate the learning or the task to the real-world experiences or situations for students.

*Student voice and choice:* Teachers should give opportunities to students to have a say, use their judgment when solving a problem and answering driving questions as well as give them choices to control over many aspects of their project for their learning process. This implies that students should have opportunity to *plan* a set of directions for controlling over their project. Planning strategy is considered one of the metacognitive strategies which help promote learner autonomy (Chamot et al., 1999).

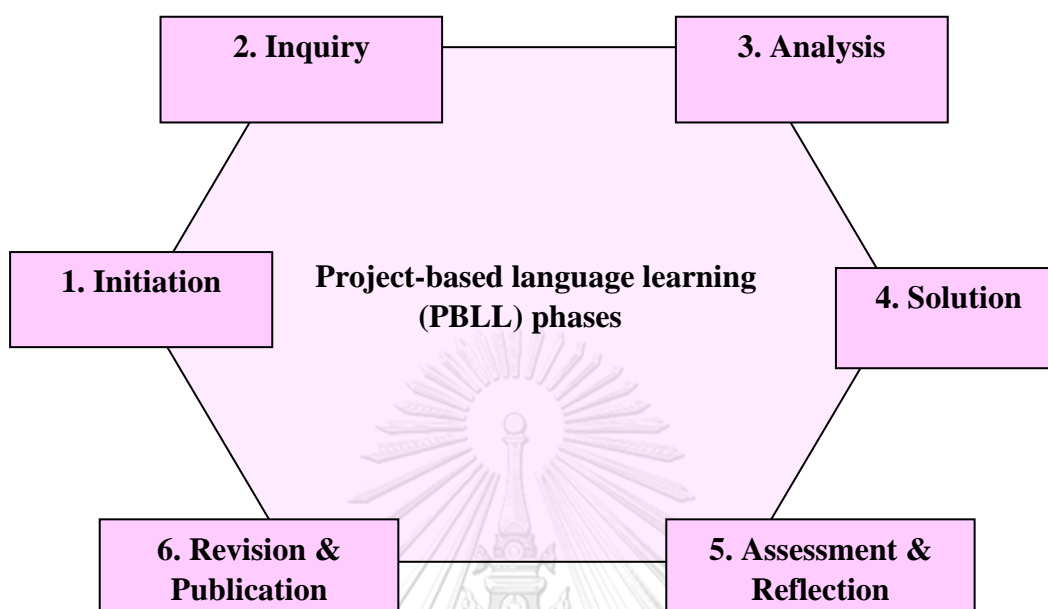
*Reflection:* Students should reflect on what, how, why they are learning. Reflection can occur informally as part of classroom culture and dialogue and discussions at project checkpoints. In this way, students should be encouraged to reflect on their weak and strong points, as well as how to make their work better.

*Critique and revision:* Students should be taught how to give constructive peer feedback and improve or revise project processes and products, guided by rubrics, models and formal feedback/critique protocols.

*Public product:* Students are encouraged to present or display their work to an audience beyond the classroom.

In this study, the essential project design elements for the gold standard project-based learning (Larmer, 2015, 2019) previously illustrated in Figure 2 was adapted as

project-based language learning phases for further synthetization of the final framework of this study as shown in Figure 3.



*Figure 3: Project -based language learning (PBL) phases  
(adapted from Larmer, 2015, 2019)*

### 2.3.1 Related studies on project-based language learning in EFL classrooms

Dooly and Masats (2011) examined the development of a project-based teacher-training unit implemented with the trainees stated above. They were engaged in experiential learning, called ‘loop input’ to obtain experiences, gain knowledge and develop materials for students. The unit was aimed at helping the trainees understand pedagogies that enhanced autonomous learning and collaborative problem-solving through the learning process. The instructional framework originated from the researchers’ belief that schoolteachers should help learners to develop 1) audiovisual and linguistic competences (and the content knowledge in relation to both language systems), 2) information, communication, and technology (ICT) competences (and the associated procedural knowledge), and 3) inter- and intra-personal competences (and the skills necessary to learn in collaboration with others). During the eight sessions, the trainees undertook key steps through peer interaction, self-reflection, and teacher feedback to complete tasks and the main project as follows: planning (sketching the

whole product including steps with brief details), project presentation to project participants (presenting sketched product, activating background, and defining goals and procedure), implementation (elaborating storyboard, editing video), presentation of project product(s), and assessment (reflection on learning experience and assessment of work).

Within the framework previously mentioned, the project goal had to be authentic and interesting. In addition, the project development had to lead to the final product that corresponded to the project goal and the addressees of the final product (target learners) had to be specified before the planning stage.

The findings revealed that the project-based language learning gave many advantages to EFL classrooms since the student-teachers were exposed to authentic materials and received opportunities to use the target language meaningfully. In addition, they learned how to use media technology to implement projects by themselves, so they could develop their linguistic, technical, and pedagogical knowledge through this practice.

Moreover, Dooly and Masats (2011) also reported that learners' reflection on their learning experience was an essential part of project-based language learning. In addition, the project-based language learning of the study could foster learner autonomy from the evidence that the student-teachers realized that they could share some of the responsibilities of teaching with their students. They assigned self-directed tasks and allowed their students to choose the tasks by themselves. In so doing, students were given freedom to choose the content and type of the materials that they wanted to produce. Giving students freedom to choose which actions to take is consistent with Benson's (2016) notion that giving students choices and decision-making for their learning can promote learner autonomy effectively.

Another study on the effects of project-based language learning in EFL classrooms was undertaken by Oranpattanachai (2018) who investigated 42 engineering students' perceptions of video projects at a university in Thailand. The findings revealed that the students had positive perceptions of video projects in four categories of perceptions: English language improvement, teamwork, learning experiences, and challenges. In terms of English language improvement, the students perceived that their English language improved at a high level in aspects of speaking

and listening skills, vocabulary, grammar, and English phrases used in the workplace. As for teamwork, they had high to very high levels of perceptions as they perceived that the video project helped them develop their spirit of teamwork. With respect to learning experiences, the students had high to very high levels of perceptions since the video project was seen as a useful teaching tool that promoted their creative thinking. Finally, when it came to challenges, they had highly positive perceptions of project work that was creative and fun, involved teamwork, and offered them a chance to practice English speaking, vocabulary, and grammar.

## **2.4 Blended Learning**

Technology plays an important role in English language learning and teaching, when it is incorporated into language instruction inside and outside the classroom as Richards (2015a) has pointed out. When technology can be used both inside and outside the language classroom, the emergency of blended learning can take place.

According to Bonk and Graham (2006), blended learning systems integrate face-to-face classroom instruction with computer-mediated instruction. The emergence of technological innovations has facilitated the possibilities for learning in the computer-mediated instruction (i.e. computer-mediated communication) across the four dimensions—space (technologies facilitate both online and face-to-face classroom interaction), time (technologies facilitate synchronous and asynchronous interaction), fidelity (technologies facilitate showing rich senses), and humanness (technologies facilitate human interaction via computer-mediated collaboration, virtual communities, etc.) which were once possible only in face-to-face classroom instruction.

Based on Bonk and Graham's (2006) definition of blended learning, technological innovations have a huge impact when computer-mediated and online instruction are integrated into traditional face-to-face classroom. Technology enables classroom instructors to optimize online learning experiences of their students, as well as their interaction and collaboration across the four dimensions (space, time, fidelity, and humanness).

Murphy (2002) who defines blended learning as instruction that integrates face-to-face classroom instruction with online instruction so as to maximize the advantages of both online and face-to-face classroom instruction, reduce faculty and teaching



assistant workloads, lessen classroom contact hours, support various students' learning styles and personalize their learning experiences. In short, blended learning can optimize individual learning styles and learning experiences of students in addition to facilitating independent and collaborative learning experiences (Garrison & Kanuka, 2004).

In agreement with Murphy's (2002) definition, Garrison and Vaughan (2008) point out that blended learning is a design approach that combines the strengths of both face-to-face classroom instruction and online instruction "to go beyond the capabilities of each separately" (p. 6) in order to enhance student engagement, reduce traditional class contact hours and attain the goals of specific courses or programs. In other words, blended learning combines the strong properties of both kinds of instruction to strengthen each other and compensate for their weaknesses. For example, in face-to-face classroom instruction, a group discussion takes a long time, cannot have all students participate in, nor meet various learning styles and self-paced learning requirements, but can encourage social interaction and a sense of community well. In online instruction, all students can take part in the discussion at the time and place most convenient to them. However, Kirkup and Jones (1996, as cited in Miliszewska, 2007) "students need dialogue with their teachers and with other students in order to consolidate and check on their own learning" (p. 5) in the face-to-face classroom instruction. Therefore, the strengths of both types of instruction can be maximized with blended learning to optimize learning and teaching, so that goals of courses and programs can be achieved.

In addition, Sharma and Barrett (2007) define blended learning as a language course which combines a face-to-face classroom component with an appropriate use of technology. In this definition, the term *technology* encompasses a wide range of recent technologies, such as the Internet, CD-ROMs and interactive whiteboards. It also includes the use of computers as a means of communication (i.e., computer-mediated communication tools via chatting platforms and email), and a number of environments which enable teachers to enrich their courses such as VLEs (virtual learning environments), blogs, and Wikis.

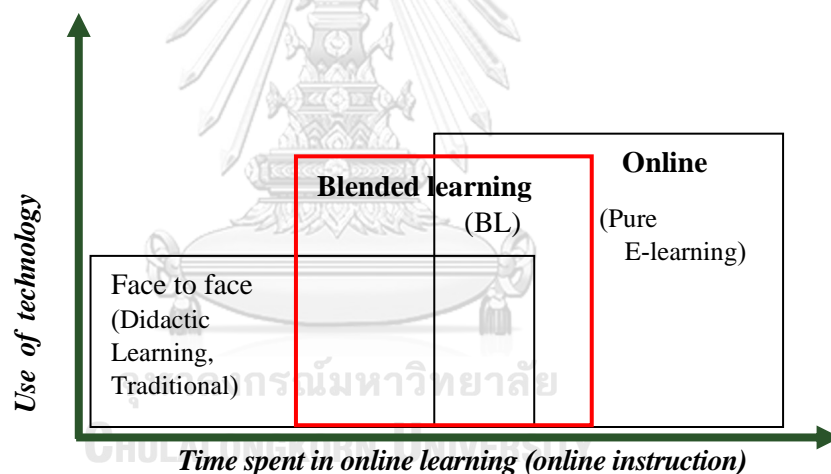
Thus, blended learning can refer to a learning system which combines face-to-face classroom and online instructions with an appropriate use of technological

innovations such as the Internet and computer-mediated communication to take advantages of the strengths of both instruction and compensate for weaknesses of each. Accordingly, the activities administered in face-to-face classroom and online instructions should be designed to maximize the advantages of blended learning.

#### 2.4.1 Concepts of blended learning

As previously reviewed, blended learning is composed of face-to-face classroom and online instructions with the use of technology to take advantages of the strengths of both instruction in order to help students achieve learning outcomes and goals of the course.

Heinze and Procter (2004) propose the concept of blended learning based on the relationship of the use of technology and the time spent on online instruction to deliver activities and content, as illustrated in Figure 4.



*Figure 4: The Concept of Blended Learning  
(Heinze & Procter, 2004, p. 1)*

As seen in Figure 4, blended learning is the overlapped area between pure face-to-face classroom instruction and pure online instruction. As a result, in a blended learning, the time spent on online instruction is proportional to the use of technology in online instruction. This suggests that the more the time is spent on online instruction, the more the use of technology is integrated.

However, it is worth nothing that Heinze and Procter's (2004) concept of blended learning does not give specific details about the activities and content delivered online.

Allen et al. (2007) introduce the indications for blended learning continuum with the proportion of content, type of instruction and typical description, which enable instructors to make decisions on which proportion is appropriate for their instruction and material selection as shown in Table 6.

*Table 6: Indications for Blended Learning Continuum*

<b>Proportion of content delivered online</b>	<b>Type of course</b>	<b>Typical description</b>
0%	Traditional	No online technology used with content being delivered in writing or orally
1 to 29%	Web facilitated	Instruction with web-based technology to facilitate what is essentially a face-to-face course, with a course management system (CMS) or web pages for assignments and announcements
30 to 79%	Blended/Hybrid	Instruction blending online and face-to-face delivery with substantial proportion of the content being delivered online, typically uses online, with some face-to-face meetings
80% up	Online	Instruction with most or all of the content being delivered online with typically no face-to-face meetings

Concerning the aforementioned indications, Chew et al. (2008) explain that Allen et al.'s (2007) continuum may emphasize technology rather than pedagogy such as instructional activities, social interactions and roles of teachers and learners which are not directly described in the continuum. Nevertheless, their continuum provides some flexibility for practitioners to make decisions on which point can best suit their teaching methods, proportion of content delivered in face-to-face classrooms and online instruction, and students' learning styles and needs so as to achieve students' learning outcomes and goals of the course.

#### 2.4.2 Blended learning design

To maximize the potential of blended learning, its design should promote students' learning experiences. Different designs of blended learning have been proposed by different scholars and researchers, some of which are worth discussing in detail below.

##### 2.4.2.1 Carman's (2005) model of five key ingredients

Carman (2005) introduces the model of five key ingredients for a blended learning process as follows:

First, live events: students should be encouraged to participate in learning events at the same time. In addition, blended learning courses should engage learners' attention for learning and be relevant to their real-life situations. Learning experiences in blended learning should enhance learners' confidence in their skills and abilities to achieve course objectives.

Second, self-paced learning: students should be exposed to their learning experiences at their own speed and on their own time.

Third, collaboration: designers should create environments where learners and instructors can collaborate synchronously in chat rooms (i.e., social network platforms such as Skype, Facebook Messenger, Line, etc.) or asynchronously using e-mail and threaded discussions" (p.5). There are two types of collaboration: peer-to-peer collaboration which can help learners discuss topics or issues with other learners, and peer-to-mentor (or learner-to-teacher) collaboration which allows instructors to field questions and tailor responses to individual students, and give additional guidance to students using emails, suggested practice items, and resources.

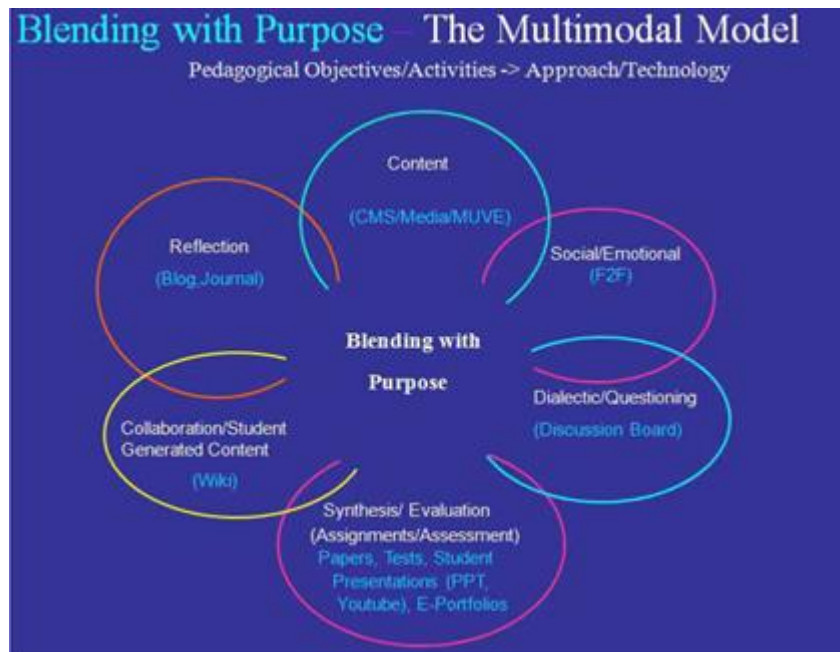
Fourth, assessment: assessment is one of the most important ingredients of blended learning because it can show how much content learners already know after being exposed to learning experiences in blended learning. In addition, it can measure the effectiveness of blended learning on learners' learning.

Fifth, performance support materials: blended learning materials should promote learning retention and transfer to work situations. For example, students should be able to download or print documents such as charts, graphs, summaries, clips, multimedia materials anytime and anywhere to support their learning and work performance.

#### 2.4.2.2 Picciano's (2009) multimodal model

Consistent with Carman's (2005) model of five key ingredients for designing blended learning courses, Picciano (2009) postulates a "blending with purpose" multimodal model for the blended learning design to enhance students' learning experiences and enable them to accomplish their learning goals.

This model comprises six basic pedagogical objectives or activities, called components, with appropriate technologies to achieve them. Figure 5 depicts six components in the multimodal model: content, social/emotional, dialectic/questioning, synthesis/evaluation (assignments and assessment), collaboration/student-generated content (collaborative learning), and reflection. The number of components in the model is flexible—they can be added or removed, and teachers also have to apply suitable technologies to achieve objectives of each component.



*Figure 5: Blending with Purpose—The Multimodal Model (Picciano, 2009, p. 15)*

The first component is content. Picciano points out that it is one of the primary drivers of instruction that should be delivered and presented via multiple technologies and media to suit a wide range of students' learning styles and attain the content objective effectively.

The second component is social and emotional component. Picciano suggests that instruction is not just about learning content or a skill, but also about providing students with some social and emotional support where possible and suitable.

The third component is the dialectic and questioning component. This component allows instructors to examine what students know and clarify their understanding of the content. Dialectic and questioning can be attained through activities such as discussion board and asking and answering questions that help students think critically about a topic or issue.

The fourth component is reflection. Students are required to reflect on what they are studying and share their ideas and opinions with teachers and other students.

The fifth component is collaborative learning. Picciano suggests that collaborative learning should be promoted by doing group work and group project. In

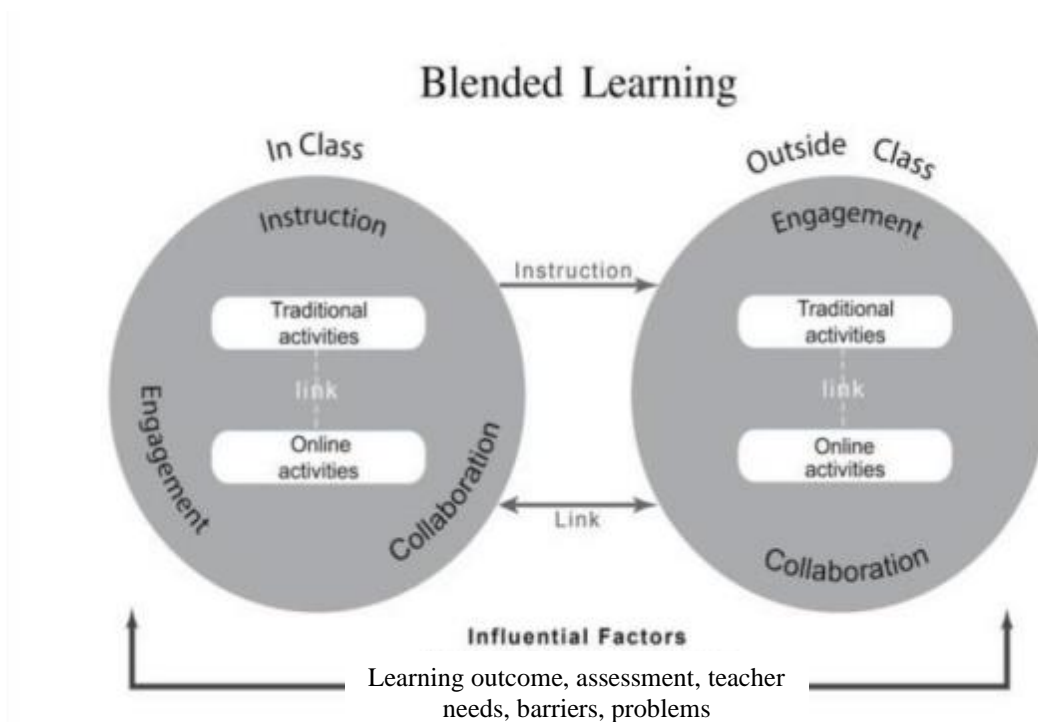
addition, computer-mediated communication such as Wikis and other computer-mediated communication tools should be utilized to facilitate collaborative learning.

The sixth component is synthesis, evaluation and assessment of learning. According to Picciano, this is the most important component of the model. Online technology comes into play in the part of evaluation and assessment activities. For example, oral presentations in the form of YouTube videos and discussions on discussion boards or blogs can be shared and viewed by students and instructors. This provides instructors with electronic records “that can be reviewed over and over again to examine how students have participated and progressed over time” (Picciano, 2009, p. 16). Therefore, the instructors will have information that they can use to self-assess their teaching, thus better understanding of what works and what does not work.

To summarize, key considerations in the models suggested by Carmen (2005) and Picciano (2009) are essential components for designing blended learning courses which include live events to increase students’ learning engagement, self-paced learning, and collaboration between students and students, and students and instructors. Students will also have a chance to reflect during the learning process and receive social and emotional support from peers and instructors. Content that corresponds with students’ learning styles and is relevant to their real-life situations, dialectic or questioning in the social community and interaction that initiates students’ critical thinking. Materials that can promote students’ learning process and outcomes, and appropriate assessment of students’ learning outcomes and evaluation can promote effectiveness of the blended courses.

#### 2.4.2.3 Lam’s (2015) blended learning model

Lam (2015) postulates a blended learning model from the study which investigated the students’ experiences with blended learning. In-dept interviews, classroom observation, online participant observation, students’ learning logs, focus group student interviews, individual teacher interviews, and an individual course leader interview were used to collect data. The findings revealed 12 themes: traditional learning activities, online learning activities, learning process, engagement, learning outcomes, assessment, collaborative learning, teacher’s role, personal barrier, course problems, need and preference. The blended learning conceptual model used in the course was constructed based on the findings as illustrated in Figure 6.



*Figure 6: The Conceptual Model of the Blended Learning Course*

In Figure 6, the 'In Class' area refers to traditional face-to-face teaching and online learning inside the classroom. In a face-to-face environment, the teacher's role is to provide instruction and encourage collaboration. The students engaged in learning by participating in both traditional and online activities.

The 'Outside Class' area refers to pre-class and post-class learning in which students participate in both traditional and online activities, including online collaboration (e.g. through social media tools). The six aspects of the model are as follows:

First, online activities integrated into face-to-face learning to enhance their learning process to make students better understand the lessons. This affirms that this model can connect learning in and beyond the classroom.

Second, students have more engagement in learning through interaction with others and doing learning activities.

Third, collaborative learning is promoted when students make use of social media to collaborate with their friends to facilitate their learning process.



Fourth, instruction can be directed by students. Instructors are still responsible for designing the curriculum, facilitating discourse, and giving direct instruction to students.

Fifth, barriers in the learning process include boredom, stress, and language difficulty can hinder students' communication and learning.

Sixth, students' needs and preferences are considered external factors that affect engagement in blended learning. Computer-mediated communication and computer technology are employed to meet students' needs to facilitate their learning activities at the time, place, and pace they prefer.

#### 2.4.3 Computer-mediated communication

Bax's (2003, 2011) concept of "normalization" refers to the use of computers and technological devices like mobile phones, iPads, etc. into learning and teaching that can occur anywhere and anytime, not just in a traditional face-to-face classroom.

Erben et al. (2009) suggest that computer-mediated communication can promote language learning because it can promote participation on the part of the students, resulting in exposure to comprehensible input, collaboration, opportunities for negotiation of meaning, and a social learning environment facilitating language learning.

There are two types of computer-mediated communication: synchronous computer-mediated communication and asynchronous computer-mediated communication (Sharma & Barrett, 2007).

##### 2.4.3.1 Synchronous computer-mediated communication

Ellis and Romano (2008, as cited in Khalil & Ebner, 2017) point out that synchronous computer-mediated communication tools promote real-time communication and collaboration in a same time-different place mode. Synchronous computer-mediated communication tools include text-based and voice/video-based tools such as Facebook Messenger (live chat mode), Skype, Line, etc.

According to Obasa et al. (2013), although synchronous computer-mediated communication tools increase students' engagement in learning, the primary disadvantage of these tools is that students are required to participate in the activity at

the same time. Different time zones and conflicting schedules can cause challenges for students. In addition, synchronous computer-mediated communication tools are costly and may require large amount of bandwidth for effectiveness. Khalil and Ebner (2017) assert that synchronous computer-mediated communication tools are difficult to moderate large-scale conversations.

#### 2.4.3.2 Asynchronous computer-mediated communication

Asynchronous computer-mediated communication tools promote communication and collaboration over a period of time through a different time-different place mode (Khalil & Ebner, 2017). Asynchronous computer-mediated communication tools include email, discussion forum, Wikis, Google Docs, blogs, Facebook, Twitter, etc.

Concerning the advantages of asynchronous computer-mediated communication tools, Obasa et al. (2013) suggest that these tools provide students with instantly accessible resources and information. They are also useful for obtaining details of group interactions. The primary disadvantage of these tools is that they require some discipline in using the tools for teaching and learning purposes. For example, emails can be employed for many activities, especially social connections, apart from distributing and receiving learning materials. This can lead to confusion for dealing with mixed information in the emails.

Tables 7 and 8 show some synchronous computer-mediated communication and asynchronous computer-mediated communication tools with their usability and limitations (Obasa et al., 2013).

*Table 7: Some Synchronous Computer-Mediated Communication Tools*

<b>Tool</b>	<b>Usability</b>	<b>Limitations</b>
Video conferencing	Real time interaction that mimics conventional classroom	Expensive, quality dependent on bandwidth
Web conferencing	Permits sharing of presentation, documents and application demonstration	Expensive, quality dependent on bandwidth, and at times effective with audio conferencing

Audio conferencing	Collaborative discussions that involve certain number of people	May be expensive if international participants are expected
Chat	Text and graphics capabilities are available for information sharing of low-complexities	Mostly text based and as such slows down communication rate
Video calling	Audio-visual: activity of speaking and listening, (un)intentional emotions; Sequential/adjacent discourse patterns; Image of counterpart: cyber face-to-face	Words or sentences that have been uttered can be modified but never erased; and call for immediate reaction
Instant messaging	Instantaneous message delivery such as important announcements	Requires some specific devices like handset. It allows 1:1 or 1: n interactions
White boarding	Demonstration and co-development of ideas	Expensive, bandwidth based, and at times effective with audio conferencing
Application sharing	Demonstration and co-development of documents	Expensive, bandwidth based, and at times effective with audio conferencing

Table 8: Some Asynchronous Computer-Mediated Communication Tools

<b>Tool</b>	<b>Usability</b>	<b>Limitations</b>
Forums	Collaboration and sharing of ideas over certain time period	May take longer to arrive at decisions or conclusions
Web logs (Blogs)	Dissemination of ideas and comments	May take longer to arrive at decisions or conclusions
Messaging (e-mail)	Distribution of course materials on one-to-one or one-to-many basis	Difficult to get instant reply to mails especially with large classes.
Streaming audio	Lecture delivery through playback	Static and does not cater for interaction.
Streaming video	Lecture delivery through playback	Static and does not cater for interaction.
Narrated slideshows	Lecture delivery through playback	Static and does not cater for interaction.

Document libraries	Tracking of learning resources	Adequate management of storage media highly needed.
Databases	Repository and management of teaching and learning resources.	Requiring proper management and good personnel
e-books	Supplements teaching and learning	Static and does not cater for interaction.
Surveys and polls	Evaluates teaching trends and performance	Requiring clear definition and proper coordination
Shared Calendars	Regulating and coordinating activities	Could be affected by time zone
Web site links (or online resources—Richards, 2015a, p. 12)	Directing students to additional resources and references	Movement of web resources may lead to non-availability of the resource being pointed at

It can be seen that these computer-mediated communication tools can be used to support teachers' and students' interests and requirements in their learning and teaching. According to Richards (2015a), the Internet is "a major source of a variety of spoken and written texts" (p. 12). Technology, the media, and the use of virtual social networks including computer-mediated communication tools provide greater opportunities for meaningful and authentic language use than what are available in the classroom, which promote out-of-class learning activities effectively which offer students collaborative learning, multimodal input (e.g. Ted Talks, digital games, etc.), authentic input, and autonomous learning (students can make choices and decisions on what kinds of speech events they will choose according to their interests). As such, learning beyond the classroom should be promoted to achieve two important dimensions to successful second language learning, which mean what goes on inside the classroom as well as what goes on outside of the classroom.

#### 2.4.3.3 Related studies on computer-mediated communication

Studies have disclosed benefits of computer-mediated communication on improvement of English oral communication ability and learner autonomy.

Wang and Chen (2012) investigated the effectiveness of computer-mediated communication tools on collaborative learning and Vygotsky's (1978) notion. The researchers focused on the degrees of collaborative language learning that are supported in cyber face-to-face interaction. A combination of real-time oral/aural,

visual, and text-based interaction happened simultaneously in an advanced synchronous learning management system called collaborative cyber community (3C). The study discussed the results of an evaluation of the five features, namely, the interactive whiteboard, the text chat, the group cyber face-to-face classrooms, the audio, and the video, in a 3C. Thirty-three students from an online Chinese and English interpreting course at the School of Languages and Linguistics, Griffith University in Australia, participated in this study. The findings indicated that collaborative learning could be effectively facilitated in a cyber-face-to-face environment. The tools allowed the teacher to guide students by showing examples, giving important information, and exemplifying students' work so that the whole class or groups of students could comment on their friends' work and scaffold their friends to complete the tasks collaboratively.

One of the remarkable concepts in language learning and teaching today is learner autonomy. The benefits of computer-mediated communication tools that can promote learner autonomy can be seen in Peterson's (2008) study. He investigated how EFL learners managed their real time interaction in a computer-mediated communication environment called *Schmooze University MOO*. MOO was an abbreviation of "Multi-User Domain, Object-Oriented" and referred to a text- or hypertext-based and web-based virtual reality system that allowed users to communicate and collaborate in real time.

In Peterson's (2008) study, 14 intermediate level learners of English who were enrolled in two universities in Tokyo took part in weekly text chat sessions over a semester. Four task types were implemented; information-gap, jigsaw, decision-making and opinion-exchange. The findings showed that the subjects actively managed their interaction, monitored their linguistic output, supported each other and exercised autonomy. In terms of autonomy, the findings reflected the exercise of a considerable degree of autonomy on these learners, as there was no requirement to obtain higher levels of user status in the MOO. However, the data showed that these subjects were clearly willing to invest the time and effort to obtain a higher level of user status, outside of regular class time. In addition, the finding in an analysis of the interaction showed that these participants had explored the MOO environment and agreed to meet in this new location prior to start of the session. This showed that the students paid attention

to their activity and study. Those mentioned findings indicated that these students were highly able to take control of and be responsible for their learning which was a very important element to become autonomous learners.

#### 2.4.4 Related studies on blended learning in EFL classrooms

Due to its accepted benefits, blended learning has been applied in EFL classrooms to improve students' English oral communication ability and learner autonomy. Chotipaktanasook (2018), for instance, carried out a study to investigate Thai EFL students' experiences with blended learning at the tertiary level. Data were collected by means of a the semi-structured interview with 12 randomly-selected out of 215 students who were first-year students of six universities. The findings revealed that blended learning supported students to have more learning opportunities to practice and improve their language skills, especially their mastery of vocabulary. In addition, blended learning developed learner autonomy in terms of language learning strategies and learning skills via the blended learning environment, especially metacognitive strategies (i.e., planning), affective strategies (i.e., building confidence), social strategies (i.e., cooperating with other students), and necessary 21<sup>st</sup> century learning skills (i.e., digital literacy skills). Remarkably, blended learning also helped students become independent learners it allowed them to work without instructor's assistance.

However, some interviewed students did not prefer studying in the blended learning environment due to their low English proficiency level, self-directed learning skills, and computer skills. They reported that they experienced some frustration, especially when encountering language and technical problems.

To achieve effective learning experiences and learning skills, Chotipaktanasook (2018) suggested that "teachers should learn more how to achieve an effective blend and be able to select appropriate technology and design appropriate tasks" (p. 77).

Another study that showed the effects of blended learning on students' improvement in oral communication ability was Ehsanifard, Ghapanchi, and Afsharrad's (2020) study. The findings yielded the students' more development in overall oral communication ability in the blended group than in the traditional group. Ehsanifard et al. (2020) pointed out that the students might avoid contributing their learning in face-to-face environment due to "the pressure of anxiety or lack of sufficient time to process and produce language in real time" (p. 257). Ehsanifard et. al. (2020) pointed out that the

students of blended group showed more learning engagement in doing assignments. In addition, the students with different characteristics could control learning at their own pace in blended environment. Hojnacki (2015, as cited in Ehsanifard et al., 2020) stated that some students contributed more in face-to-face environment whereas other students were more active in learning in blended environment, thus producing more oral output.

Campbell (2015) investigated the effects of Information and Communication Technologies (ICT) blended instruction on students' English language achievement, students' participation within English classes, and students' attitudes towards learning English. Participants were 278 students attending a rural university in North-eastern Thailand. They were arranged into blended learning and face-to-face classes. A course web site was developed for course instruction using social network tools such as Skype (categorized as synchronous computer-mediated communication tools), and Twitter and Facebook (as asynchronous computer-mediated communication tools) for the blended learning class for communications and language acquisition. Data were collected from the pre-test and post-test instruments, class room observation check lists, questionnaires, semi-structured interviews, and the researcher's field notes in order to compare ICT blended instruction and traditional face-to-face instruction.

Results of the data analysis revealed that ICT blended instruction showed a significant, positive difference in student's English learning achievement (four skills) when compared with the English learning achievement of students in traditional face-to-face classes. Furthermore, in terms of classroom participation, it was found that blended learning students' contributions, interactions, quality of ICT use, frequency of ICT use, and autonomous learning practices were greater than those of students in face-to-face, traditional classes. Finally, the findings derived from the quantitative data, attitude questionnaires, and open-ended attitude survey, together with findings derived from the qualitative data collected by means of semi-structured interviews, indicated that students' attitudes towards learning English through ICT blended instruction improved throughout the study and progressively became more positive.

Obviously, computer-mediated communication tools can encourage students to improve their speaking ability with enhancement of positive attitudes towards ICT blended learning, contributions and interactions in classroom, frequency and quality of ICT use, and learner autonomy. Pedagogically, lecturers of EFL classes should be

trained to integrate technology into their courses and must be supported by their institutions as well.

In addition, blended learning has been investigated to determine effects on learner autonomy. Saengsawang (2013) conducted a study on 161 students' learning achievement and attitudes toward learner autonomy in a fundamental English course integrating Facebook group activities at King Mongkut's University of Technology North Bangkok, Thailand. Data were elicited from three questionnaires investigating participants' demographic characteristics, attitudes towards learner autonomy and Facebook use, and semi-structured interview. The findings revealed that the participants' learning achievement did not go with the specified criterion. This might be caused by the fact that peers did not give quality feedback as the teacher did—they just gave some comments or compliments irrelevant to grammar or structures. In addition, the researcher pointed out that the participants might be distracted by Facebook functions such as games, as well as the opportunity to socialize with friends which were consistent with previous studies (Kirchner & Karpinski, 2010; Junco, 2012a; Junco, 2012b; Junco & Cotton, 2012, all cited in Saengsawang, 2013). Based on such findings, the researcher concluded that willingness to take charge of doing assignments and responsibilities needed to be promoted so as to ensure development of students' learner autonomy.

As regards attitudes towards learner autonomy, the mean scores were rated at a moderate level of all three phases of the study: pre-, mid- and post-course. However, there was a slight decrease in the mean scores of their attitudes in the mid- and post-course survey. The researcher argued for this decrease that the students might be burdened with doing assignments, following and receiving feedback every week. Consequently, they became exhausted with these workloads. In addition, the teacher's control over the students' assignments or activities causing the participants to be more teacher-dependent could also decrease the level of favorable attitudes towards learner autonomy. Thus, too heavy workloads should be avoided.

With respect to learner autonomy, Sanprasert (2010) carried out a study on the effects of the application of a course management system to enhance autonomy in learning English. The participants were 57 students studying at a Thai university. The study aimed at finding out whether the course management system integrated into face-



to-face English Foundation class could foster learner autonomy. The data elicited with questionnaires and student learning journals. The questionnaire was adapted from the questionnaire developed by Cotterall (1995) to investigate the effects on learner autonomy in six dimensions: role of teacher, role of feedback, learner independence, learner confidence in study ability, experience of language learning, and approach to studying. The participants were required to write down the processes of learning in their journals as well. The findings showed that blended learning could change learner perceptions in that they became more aware of the importance of feedback, more independent, more confident and more experienced in language learning. As for learner behavior, they became more independent and confident. Moreover, they developed their autonomous behavior such as making contributions to the course materials online, setting their own learning goals, planning for more online practice, and monitoring and evaluating their learning progress. The findings suggested that students developed their reactive autonomy, learned to work collaboratively, and organized their resources as directed by the teacher to engage in the independent study.

Another study that explored the effects of blended learning on learner autonomy was undertaken by Kintu et al. (2017). The emphasis was on student characteristics or background (self-regulation, computer competence, workload management, social and family support, attitudes toward blended learning, gender and age), design features (interactions, technology quality, face-to-face support, and learning management system tools and resources), and learning outcomes (performance, motivation, satisfaction, and knowledge construction). Data collection was administered with 238 participants, and the final examination results were used to assess their performance. The results revealed that students had a high level of attitudes toward blended learning. In addition, learner self-regulation was good enough in all the sub-scales of goal setting, environment structuring, task strategies, time management, help-seeking and self-evaluation. The findings also suggested that design features (technology quality, and online tools and resources), and learner characteristics (attitudes to blended learning and self-regulation) were significant predictors of learner satisfaction with blended learning, as well as knowledge construction, indicating that learners' capacity to carry out their work by themselves, peer support, and high levels of interaction with the quality technology led them to construct their own ideas and knowledge in blended

learning. They also significantly predicted the students' intrinsic motivation in the blended learning, thereby indicating that good technology, online tools and resources, and high interaction levels with independence in learning led to high intrinsic motivation.

## 2.5 Conceptual framework of the study

The conceptual framework of this present study which included blended learning, communication strategy instruction, and project-based language learning was developed based on an extensive review of literature and research in order to develop students' English oral communication ability and learner autonomy, as summarized as follows:

### 1. Project-based language learning

Seven essential project design elements proposed by Larmer (2015, 2019) consisting of *challenging problem or question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and public product* were synthesized to construct six project-based language learning phases as illustrated in Figure 3. These six project-based language learning phases which included initiation, inquiry, analysis, solution, assessment and reflection, and revision and publication, were combined with communication strategy instruction as previously reviewed. Students were encouraged to employ what they learned and practiced to conduct their works in each phase so as to develop English oral communication ability in six aspects of range, accuracy, fluency, interaction, coherence, and pronunciation, and their three main aspects of learner autonomy which included personal responsibilities, personal capabilities, and independent learning. In addition, learner autonomy of each component was divided into determining the goals and the objectives; defining the learning progressions; taking the initiative; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion; and evaluating the completed tasks and the project.

### 2. Blended learning

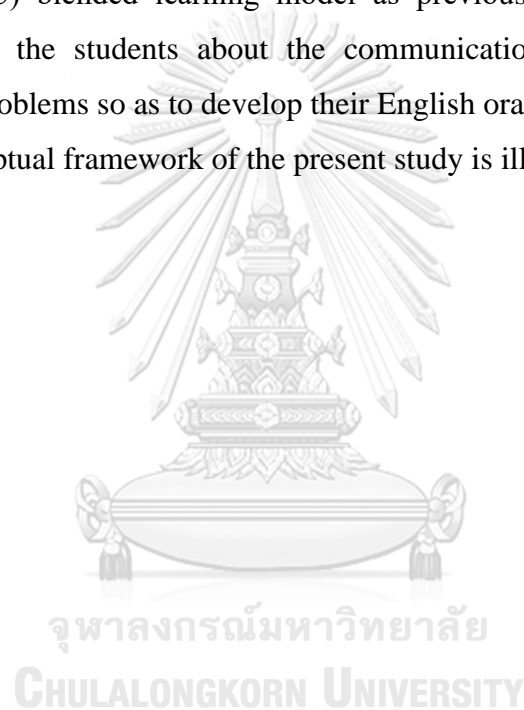
In this study, Lam's (2015) blended learning model as previously reviewed was adapted to construct the instructional framework. It was believed that blended learning could combine the strength of each type of instruction in face-to-face and online

environments and compensate for their weaknesses so as to more effectively develop students' English oral communication ability and learner autonomy while they were trying to complete face-to-face and online tasks.

### 3. Communication strategy instruction

In this study, the CALLA framework (Chamot et al., 1999) and Nakatani's (2010) framework of communication strategy instruction were integrated to construct the adapted communication strategy instruction as previously reviewed and summarized in Table 3. Then, the communication strategy instruction was integrated with Lam's (2015) blended learning model as previously mentioned in order to explicitly instruct the students about the communication strategies to overcome communication problems so as to develop their English oral communication ability.

The conceptual framework of the present study is illustrated in Figure 7.



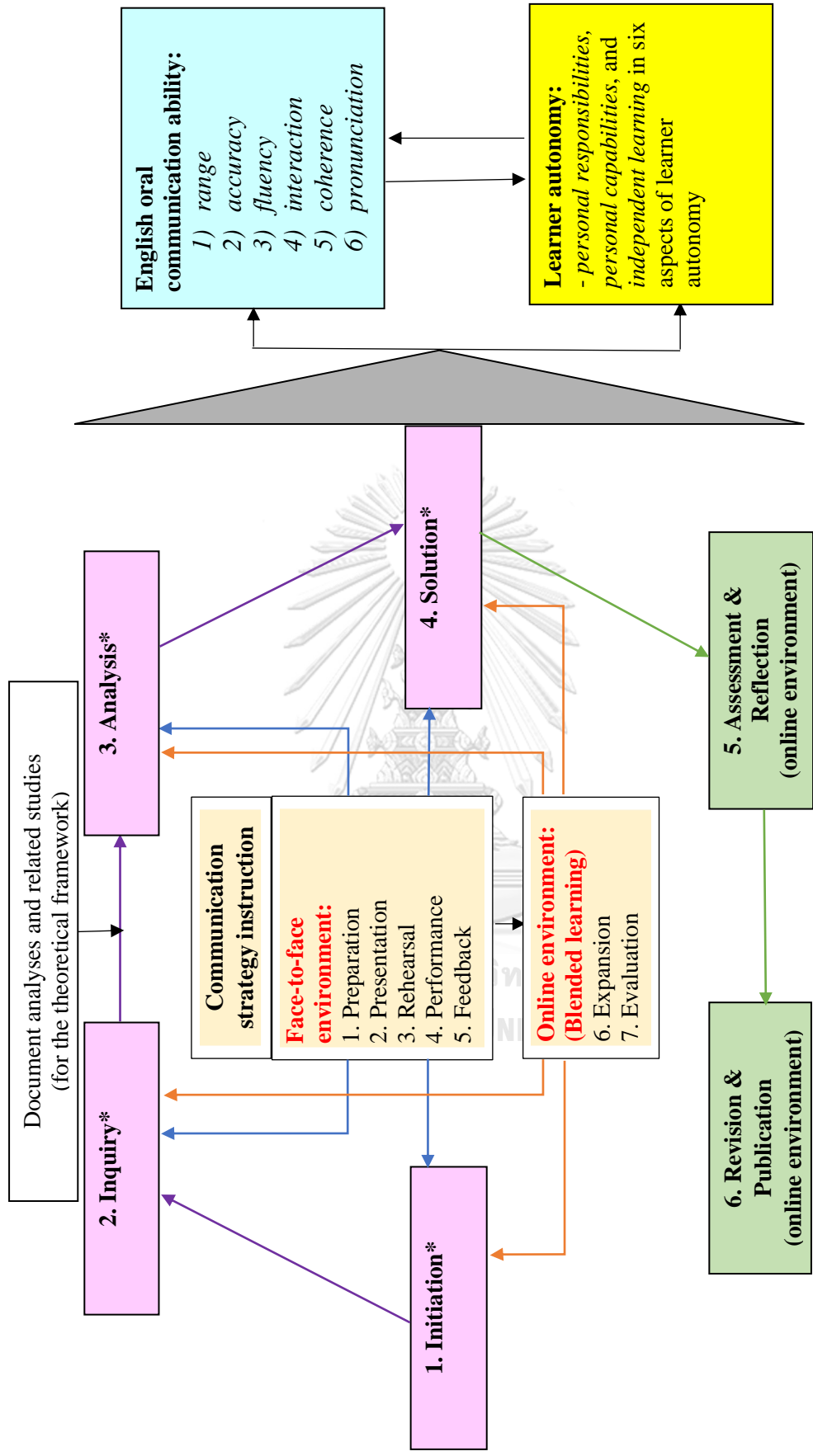


Figure 7: Project-Based Blended Learning with Communication Strategy Instruction (PBBCSI)

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter describes the research methodology used in this study. The description covers research design, population and sample, research procedures, course development, instruments for each phase of the research, data collection, and data analysis methods.

#### 3.1 Research design

This study was a research and development with a quasi-experimental design referring to “an experimental design that does not meet all the requirements necessary for controlling the influence of extraneous variables...[and] lack[s] random assignment of participants to groups” (Christensen et al., 2015, p. 290). In other words, a one-group pretest-posttest, non-randomized design was employed in this study. Data were collected and analyzed by means of quantitative and qualitative methods. Table 9 depicts the research design with O and X referring to dependent and independent variables, respectively.

In this study, the independent variable referred to the treatment of project-based blended learning with communication strategy instruction (PBBCSI). The dependent variables included students’ English oral communication ability and students’ learner autonomy.

*Table 9: One-Group Pretest-Posttest Design  
(adapted from Christensen et al., 2015)*

Pretest measure	Treatment	Posttest measure
O <sub>1</sub>	X (PBBCSI)	O <sub>2</sub>

In Table 9, O<sub>1</sub> was the English oral communication ability pretest conducted before the PBBCSI treatment of the independent variable. O<sub>2</sub> is the English oral communication ability posttest carried out after the PBBCSI treatment. The posttest scores were compared with those of O<sub>1</sub> or the pretest.

As for the other dependent abstract variable, students' learner autonomy was measured with the learner autonomy questionnaire before and after implementing the PBBCSI, and supported by the qualitative data from the face-to-face and online observation checklists, student logs (for the outside class task and project), and semi-structured interviews. The improvement of students' learner autonomy was assessed by the differences between mean scores of the pre-learner autonomy questionnaire (Pre-LAQ) and post-learner autonomy questionnaire (Post-LAQ) before and after the PBBCSI and were triangulated with the qualitative data from the instruments previously mentioned.

### **3.2 Population and sample**

#### **3.2.1 Population**

The population of this study was 154 Computer Engineering students from the field of computer engineering, Department of Electrical and Computer Engineering, Faculty of Engineering, KMUTNB.

#### **3.2.2 Participants**

The 20 participants in this study were purposively selected from computer engineering students who were enrolled in a course entitled 080103016 English Conversation. This study adopted the purposive sampling technique for the selection of the participants, since these purposively selected participants "possess the necessary information about the population" (Wasanasomsithi, 2015, p. 69). The participants enrolled in the section reserved for computer engineering students in the second to the fourth years, with the permission from the Department of Electrical and Computer Engineering, and the Department of Languages, responsible for this course. Most of the participants were third-year students. The class was offered once a week for three hours. The age range of the participants was between 18 and 22. In addition, all the participants majored in computer engineering and had education and computer background conforming to the same Computer Engineering Curriculum 2016. Hence, the participants shared similar characteristics with the population in terms of computer literacy and English learning background under Computer Engineering Curriculum 2016 (Faculty of Engineering, KMUTNB, 2016). Consequently, the participants of the study represented the population.

Concerning the English conversation course, it is an elective course designed to improve general and listening skills or English oral communication ability for everyday situations. This course is offered every semester of every academic year. Each semester, there are approximately 40-50 sections with 25-50 students in each section. The computer engineering students usually enroll in the section reserved for electrical and computer engineering students in the first semester of every academic year.

The PBBCSI was conducted in 15 consecutive weeks (1.5 hours a week) in the main course where the students were taught four communication strategies selected from the three categories adapted from Cohen's (2010) taxonomy.

### 3.2.3 Statistical tests

In general, there are two main types of statistical tests: parametric and non-parametric tests. The non-parametric tests were used for this study due to its small sample size ( $n < 30$ ) (Kuntz, 1997). According to Field (2009), non-parametric tests are distribution-free tests, and they make no assumptions or is less restrictive in making assumptions about the data distribution than their parametric counterparts. This suggests that the non-parametric tests do not assume anything about the data distribution such as they do not require to assume that the data come from the normally distributed population. Also, Vogt et al. (2014) make suggestion about the distribution-free tests (e.g. Chi-squared ( $\chi^2$ ) test, Wilcoxon signed-rank test, Friedman test, etc.) that the inferences of their findings are correct regardless of the shape of data distribution. Therefore, the distribution tests were not applied for the non-parametric tests in this study (i.e. Wilcoxon signed-rank test).

Concerning the non-parametric tests, Field (2009) explains that most of the non-parametric tests work on ranking the data; that is, the lowest score of the data is given a rank of 1, the next highest score is then given a rank of 2, and so on. As such, the analysis is processed on the ranks rather than the actual data or means as their parametric counterparts.

As for non-parametric tests, medians are the appropriate statistics when the data are in the ordinal scale (Field, 2009; Siegel, 1957). The data of this study were transformed into ranks which were also in the ordinal scale for the non-parametric tests, thus the medians were reported as the main statistics for the results of this study.

With regard to the median, it refers to the middle value of a dataset which is in an ordered distribution from the highest to lowest values or the lowest to highest ones which divide the distribution into two equal parts (Field, 2009; Vanlalhriati & Singh, 2015). One useful feature of the median is that the extreme values (e.g. the scores of those who have the highest or smallest ones in the measurements) do not affect the median unlike the arithmetic mean (Bonamente, 2017; Vanlalhriati & Singh, 2015).

To analyze the research findings, the statistical tests in this study were as follows:

1. The Wilcoxon signed-rank test (also called the Wilcoxon matched-pair signed ranks test and the Wilcoxon signed ranks test) was used to compare the differences between ranked scores in the two conditions (e.g. pretest and posttest) from the same participants (Field, 2009).

2. The effect size  $r$  or  $r$  coefficient of each pairwise comparison referring to “an objective and (usually) standardized measure of the magnitude of observed effect” (Field, 2009, p. 56) was used and calculated as follows (Rosenthal, 1991, p. 19):

$$r = \frac{Z}{\sqrt{N}}$$

in which  $Z$  = the  $z$ -score produced by SPSS,  $N$  = the number of observations in the comparison. Field (2009) points out that the correlation coefficient which implies that the negative sign of the effect size  $r$  can be ignored as stated below:

the correlation coefficient can also be negative (but not below -1), which is useful when we're measuring a relationship between two variables because the sign of  $r$  tells us about the direction of the relationship, but in *experimental research* the sign of  $r$  merely reflects the way in which the experimenter coded their groups (p. 57).

As mentioned above, in experimental research, it can be inferred that the negative sign of the effect size  $r$  can be ignored for data analysis and interpretation because the way in which the way the researcher codes the groups seems not to affect the main usefulness of the effect size  $r$  for determining the magnitude of the observed effect between the two tests (e.g. pretest and posttest) of the experiment. For example,



when running the Wilcoxon signed rank test by SPSS in this study (also as experimental research), the scores were coded into positive and negative ranks and then calculated for test statistics such as T and Z values, possibly resulting in negative values. After this, the effect size  $r$  was estimated using the formula previously described, also possibly resulting in its negative values. However, the importance of the effect size  $r$  in this situation was accounted for the magnitude of the observed effect, not the relationship between the two variables. Therefore, it is implied that the negative sign of  $r$  can be ignored due to the way the scores are coded for calculation of some test statistics, but not for the effect size  $r$  in this situation.

In addition, when calculating the effect size  $r$  as previously mentioned, the negative sign of  $Z$  can be ignored for data analysis and interpretation (Field, 2009, p. 554), suggesting that the negative sign of the effect size  $r$  can also be neglected. This is because when the negative sign of  $Z$  is ignored in the calculation, the negative value of the effect size is not constrained for data analysis and interpretation, either.

Therefore, the interpretation of positive or negative values of the effect size  $r$  was the same in the present study. The interpretation of the effect size  $r$  was adapted from both Cohen (1988) and Rosenthal (1996) as shown in Table 10 below.

*Table 10: The Effect Size  $r$  and Interpretation*

The effect size $r$	Interpretation
.10 to .30 or - .10 to - .30	small
.31 to .50 or - .31 to - .50	medium
.51 to .70 or - .51 to - .70	large
$\geq .70$	very large

Moreover, Spearman's correlation coefficient ( $r_s$ ) or Spearman's rho was used to measure the strength of relationship between two variables (e.g. researcher's and interrater's scores). In this study, the interpretation of the Spearman's correlation

coefficient ( $r_s$ ) was based on Dancey and Reidy (2007) as demonstrated in Table 11 below.

*Table 11: Spearman's Correlation Coefficient ( $r_s$ ) and Interpretation*

Spearman's correlation coefficient ( $r_s$ )	Interpretation
1 or -1	Perfect
.70 to .99 or - .70 to - .99	Strong positive Strong negative
.40 to .69 or - .40 to - .69	Medium positive Medium negative
.10 to .39 or - .10 to - .39	Weak positive Weak negative
0 to .09 or 0 to - .09	Zero

Field (2009) explains how the correlation coefficient can be interpreted:

a coefficient of +1 indicates that the two variables are perfectly positively correlated, so as one variable increases, the other increases by a proportionate amount. Conversely, a coefficient of -1 indicates a perfect negative relationship: if one variable increases, the other decreases by a proportionate amount (p. 170).

It can be seen that as one variable (e.g. the researcher's rating scores) increases or decreases, the other one (e.g. the other rater's rating scores) also increases or decreases, respectively.

### 3.3 Data Collection Instruments

Eight data collection instruments were used to elicit data from the participants to answer research questions 1, 2, and 3. They were the English oral communication ability test, English oral communication ability test rubric, tasks and the independent

project, task and project rubric, learner autonomy questionnaires, student log (for the task and the project), observation checklists, and semi-structured interviews, which can be described in detail below.

### 3.3.1 English oral communication ability test

To assess students' English oral communication ability, all of the participants were asked to complete a set of three speaking test tasks before and after implementation of the PBBCSI. The three test tasks were designed based on a review of related studies and research. The direct tests were applied to construct the English oral communication ability test in this study in the forms of the interview and role-plays to ensure a close relationship with real-life communication and elicited the use of communication strategies to overcome communication problems to achieve communication purposes in the conversation.

The three speaking test tasks were designed to elicit students' use of target communication strategies and reflect the six aspects of English oral communication ability. The three speaking test tasks were as follows (see Appendix A):

#### **Test Task 1: Description and solution**

The objective of this test task was to assess students' English oral communication ability (i.e. range, accuracy, fluency, interaction, coherence, and pronunciation) in describing computer products or technology, and giving solutions to a problem.

Each student was the owner of the computer and electronic devices show. He/She asked and answered the questions about the product (i.e. a portable SSD) and its problem (i.e. defragmenting and optimizing drives) to sell one kind of device that a customer was looking for. The students also showed and gave the instructions to solve the problem.

#### **Test Task 2: Interview**

The objective of this test task was to assess students' English oral communication ability in six aspects as previously mentioned in discussing and exchanging opinions towards computer technology and the computer engineering field.

In this task, each student was interviewed by the employer/interviewer of a company (i.e. the researcher) who was looking for the right candidate for his/her company. The oral interview consisted of three sets of questions: computer products and technology, creation of the innovation, and application of knowledge and skills (abilities) for their innovation.

### **Test Task 3: Presentation**

The objective of this test task was to assess students' English oral communication ability in six aspects as previously mentioned in delivering the project presentation on selected issues. Each student gave a five-minute project presentation to a customer about their company project in order to promote their new antivirus software. The student was provided with key information and the findings of the project. Following this, the student prepared himself/herself for the presentation. To ensure the interaction, the student asked and answered the questions to clarify the product and overcome communication problems in a conversation.

During the pretest and posttest, students' performances on each test task were rated against the English oral communication ability test rubric adapted from CEFR, Council of Europe, 2017) in six aspects of *range*, *accuracy*, *fluency*, *interaction*, *coherence*, and *pronunciation* (see Appendix B) by two raters (i.e. the researcher and another experienced instructor). There were four levels of English oral communication ability on the test rubric which ranged from level 0 to 4. Of each aspect of each test task, students' performances were rated analytically with the scores of 0, 1, 2, 3, and 4. It was noted that the use of the two strategies "asking for clarification" and "asking for confirmation" depended on situations and their language functions stimulating the students (speakers) to employ them in order to interact with their interlocutors, help them overcome communication problems, and maintain the conversations to achieve the communication purposes. As for "circumlocution" and "use of fillers and other hesitation devices," the use of these two strategies depended on personal decisions to use them in conversations, so test takers' use of these strategies could not be controlled. If controlled, the conversations in the pretest and posttest would not be natural. Hence, the test tasks might or might not be able to elicit the use of circumlocution, and use of fillers and other hesitation devices strategies.

The obtained data from the English oral communication ability pretest and posttest were used as evidence of students' English oral communication ability before and after taking the PBBCSI. The English oral communication ability pretest scores were compared with the English oral communication ability posttest scores using the Wilcoxon signed-rank test. The data were then transcribed, coded into the four target communication strategies, and analyzed in order to reflect the effects of the PBBCSI on each aspect of the English oral communication ability and support the quantitative data gathered from the English oral communication ability pretest and posttest.

To examine the interrater reliability of the three test tasks, Spearman's correlation coefficient ( $r_s$ ) or Spearman's rho was used to measure the strength of relationship between researcher's and interrater's scores of each test task and ensure that the obtained scores were reliable for further analysis. Of each test task, there were two raters (the researcher and another instructor) who each rated the performances of the six purposively-selected students. These students were the same as the six students who paired up by themselves to perform the online tasks (pair tasks).

With respect to the interrater reliability identified by the Spearman's correlation coefficient values, there was a significantly strong relationship between the researcher's and each experienced instructor's rating scores of pretest tasks 1, 2, and 3 ( $r_s = .95, .84,$  and  $.76$ , respectively,  $p < .01$  (two-tailed), meaning that as the researcher's rating scores increased, each experienced instructor's rating scores also increased in the pretest. In addition, there was also a significantly strong relationship between the researcher's and each experienced instructor's rating scores of posttest tasks 1, 2, and 3 ( $r_s = .95, .91,$  and  $.73$ , respectively,  $p < .01$  (two-tailed), meaning that as the researcher's rating scores increased, each experienced instructor's rating scores also increased in the posttest. The obtained correlation coefficient values indicated that the pretest and posttest scores were reliable for further analysis.

### 3.3.1.1 The validation of the English oral communication ability test

#### 1) Experts' validation

As for content validity, the item-objective congruence (IOC) index (Rovinelli & Hambleton, 1977) was used to assess the ratings by the three experts (see Appendix O) obtained in order to evaluate the match between test items and the table of

specifications. Mean scores from the three experts would be calculated and the items which did not receive a score between 0.50 and 1.00 would be revised according to their comments and suggestions. In this regard, the content validity of the English oral communication ability test for the pretest and posttest was .73 (see Table 54 in Appendix J), indicating that the English oral communication ability test was acceptable and applicable for the pilot study. However, the English oral communication ability test was revised according to experts' comments and suggestions that the explicit statements of the PBBCSI objectives and assessor's and student's roles of the situations of the test task design should be given. The preparation time should be increased. Table 12 illustrates the example of the revised parts of the English oral communication ability test.



Table 12: Example of the Revised Parts of the English Oral Communication Ability Test: For the Pilot Study

Original Parts	Revised Parts
<p><b>Test Task 1</b> Describing computer products or technologies, and giving solutions for a problem</p>	<p><b>Test Task 1</b> Describing computer products or technologies, and giving solutions for a problem</p>
<p><b>Test Task Design:</b></p>	<p><b>Test Task Design:</b></p>
<p><b>Objective:</b> To assess students' English oral communication ability in describing computer products or technologies, and giving solutions for a problem.</p>	<p><b>Objective:</b> To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in describing computer products or technologies, and giving solutions for a problem.</p>
<p><b>Known criteria:</b> Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance.</p>	<p><b>Known criteria:</b> Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance. [Your performance will be audio-recorded.]</p>
<p><b>Purpose context:</b> A shop of computer and electronic devices</p>	<p><b>Purpose context:</b> A shop of computer and electronic devices</p>
<p><b>Preparation time:</b> 4 minutes</p>	<p><b>Preparation time:</b> 7 minutes</p>
<p><b>Performance time:</b> 4-5 minutes</p>	<p><b>Performance time:</b> 5 minutes</p>
<p><b>Assessment</b> The English oral communication ability (EOCA) test rubric</p>	<p><b>Assessment</b> The English oral communication ability (EOCA) test rubric</p>

## 2) The pilot study of the English oral communication ability test

The pilot study was tried out in the summer of the second semester, academic year 2018. The participants in the pilot study were electrical engineering students who were enrolled in 080103034 English Conversation, semester 1, academic year 2019. Both of the electrical engineering students (the pilot participants) and the computer engineering students (the main participants) studied in the Department of Electrical and Computer Engineering, Faculty of Engineering, KMUTNB. They already took the same fundamental English courses, English 1 and English 2. Therefore, they were likely to have the similar characteristics in terms of computer literacy and English learning background under Computer Engineering Curriculum 2016 (King Mongkut's University of Technology North Bangkok, 2016).

During the pilot test, there were no problems and the pilot students understood the questions, so they did not give any comments or suggestions about the test. The questions of the tests were clear and could be used to elicit the students' use of communication strategies in different situations. However, one of the experts (or the raters) suggested that the job functions related to the study unit and more details of student's and assessor's roles should be given. After the English oral communication ability test was revised according to experts' comments, it was used in the main study. Table 13 demonstrates the example of the revised parts of the English oral communication ability test.



Table 13: Example of the Revised Parts of the English Oral Communication Ability Test: For the Main Study

Original Parts	Revised Parts
<p><b>Test Task 1</b> Describing computer products or technologies, and giving solutions for a problem</p>	<p><b>Objective:</b> To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in describing computer products or technology, and giving solutions for a problem.</p>
<p><b>Test Task Design:</b></p> <p><b>Objective:</b> To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in describing computer products or technologies, and giving solutions for a problem. Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance. [Your performance will be audio-recorded.]</p> <p><b>Purpose context:</b> A shop of computer and electronic devices</p> <p><b>Test taker's role:</b> The owner of the computer and electronic devices shop</p> <p><b>Assessor's role:</b> The customer</p> <p><b>Preparation time:</b> 7 minutes</p> <p><b>Performance time:</b> 5 minutes</p> <p><b>Assessment</b> The English oral communication ability (EOCA) test rubric</p>	<p><b>Job functions related to the study unit</b></p> <p>- Describing computer products and peripherals (Unit 2 Computer Products and Peripherals) - Giving instructions, suggestions, warning, and analyzing results to give solutions for computer products and peripherals (Unit 3 Computer and Networking Problems)</p> <p><b>Known criteria:</b> Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance. [Your performance will be video-recorded.] At a shop of computer and electronic devices in Bangkok, Thailand</p> <p><b>Purpose context:</b> The owner of the computer and electronic devices shop in Bangkok, Thailand -You (the student) ask and answer some questions about the product and its problem to sell one kind of device that a Singaporean customer is looking for. -READ the situation with its details in the sheets of "Test Task 1 (For the student/test taker)."</p> <p><b>Assessor's role:</b> The Singaporean customer -The assessor acts as the Singaporean customer who is looking for one kind of device for his/her notebook, but he/she does not know how to call it. He/She asks some questions about the product and its problem in the "Statements and questions (For Interviewer I)."</p> <p><b>Preparation time:</b> 7 minutes</p> <p><b>Performance time:</b> 5 minutes</p> <p><b>Assessment</b> The English oral communication ability (EOCA) test rubric</p>

### 3.3.2 Learner autonomy questionnaires

As for the measurement of learner autonomy levels before and after the intervention with the PBBCSI, the pre-learner autonomy questionnaire (Pre-LAQ) before taking the PBBCSI and post-learner autonomy questionnaire (Post-LAQ) after taking the PBBCSI were used respectively. The questionnaires were the Likert scale type, with a five-point rating scale ranging from 1 to 5 (see Appendix E) which rated the students' learner autonomy according to each statement in the questionnaires. Scale 1 meant "very slightly agree," scale 2 "slightly agree," scale 3 "moderately agree," scale 4 "very agree," and scale 5 "extremely agree" with the statements.

The questionnaires were developed based on the literature review regarding the components of learner autonomy. The statements of the questionnaires adapted from Arabai (2017), Channuan (2012), and Swatevacharkul (2006) were written in English, and then translated into Thai to overcome language barriers. The Pre-LAQ and Post-LAQ were the same in Part 1. The Pre-LAQ consisted of Part 1 only, while the Post-LAQ comprised of Part 1 and 2 as follows:

Part 1: The measurement of learner autonomy levels: personal responsibilities, personal capabilities, and independent learning

Part 2: Opinions towards the PBBCSI model

Part 1: The measurement of learner autonomy levels

To elicit the data regarding the three main components of learner autonomy in this study (i.e. personal responsibilities, personal capabilities, and independent learning), three sections of 56 main items (before experts' validation) were constructed to measure students' levels of learner autonomy before and after taking the PBBCSI. Based on the complete version of the questionnaires, items 53-61 were reverse coded items and were interpreted in the opposite direction when compared with the remaining items of the questionnaire. It was necessary to recode the reverse coded items in order to facilitate consistent interpretation of the data (Salkind, 2007). Those three sections were as follows:

#### 1.1 Personal responsibilities

Students rated the willingness to take responsibilities in the PBBCSI according to the statements on six aspects of learner autonomy which included determining the

goals and the objectives, defining the learning progressions, taking the initiative, making decisions on methods or techniques, communication strategies, and resources, monitoring task and project completion procedures, and evaluating the completed tasks and project.

### 1.2 Personal capabilities

Students rated the confidence in capabilities to take responsibilities in the PBBCSI according to the statements on six aspects of learner autonomy as previously mentioned.

### 1.3 Independent learning

Students rated the independence from the instructor and/or peers according to the statements on six aspects of learner autonomy before and after taking the PBBCSI.

## Part 2: Opinions towards the PBBCSI model

There were 18 main statement items (before experts' validation) in this part that required the students to rate their opinions towards the PBBCSI.

### 3.3.2.1 The validation of the Pre-LAQ and Post-LAQ

#### 1) Experts' validation

To ensure the content validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 was revised in accordance with the experts' comments and suggestions. Since the Pre-LAQ and Post-LAQ were the same in Part 1, while the Post-LAQ comprised Parts 1 and 2 as previously mentioned, the Post-LAQ was distributed to the three experts to perform validation on two main parts: the measurement of learner autonomy levels and opinions towards the PBBCSI. As such, the content validity of the Post-LAQ also represented that of the Pre-LAQ. In this regard, the content validity of the questionnaires was .72 (see Table 55 in Appendix J), indicating that the Pre-LAQ and Post-LAQ were applicable for the pilot study. However, the Pre-LAQ and Post-LAQ were revised according to experts' comments and suggestions as most of the items fell in the characteristic of double-barreled statements which could cause a lot of confusion to the students. Therefore, those items with double-barreled statements and

other too long statements were revised to become shorter and to ensure that there could be only one claim for each statement as demonstrated in Table 14.



Table 14: Examples of Revised Version of the Pre-LAQ and Post-LAQ: Items

Original Items	Revised Items
<p><b>C. Taking the initiative</b></p> <p>8. After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, guidelines, choices, or ideas, I am willing to self-initiate* to take common actions that are necessary for completing the works according to the work prompts (e.g. forming the group or pair, making short notes, etc.) and new actions that I newly create after the instructor and peers guide or initiate to do so (e.g. encouraging my peers to work, making new choices, ideas, or ways, being a leader or a volunteer in a group or pair work, asking the questions to stimulate other students or the instructor to clarify or correct some mistakes, problems, and unclear points, etc.) for completing the during class activities.</p>	<p><b>C. Taking the initiative</b></p> <p>8. After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, etc., I am willing to self-initiate to take common actions according to the work prompts for completing the during class activities.</p> <p>9. After the instructor or peers start taking actions for learning and teaching, I am willing to self-initiate to take new actions that I newly create (e.g. encouraging my peers to work and making new choices, ideas, or ways, etc.) for completing the during class activities.</p>
<p>63. The six phases of the PBBCSI model ("1) initiation, 2) inquiry, 3) analysis, 4) solution, 5) assessment and reflection, and 6) revision and publication" help develop my English oral communication ability.</p>	<p>75. The following phases of the PBBCSI model help develop my English oral communication ability for completing the independent project.</p> <p>75.1 Initiation</p> <p>75.2 Inquiry</p> <p>75.3 Analysis</p> <p>75.4 Solution</p> <p>75.5 Assessment and reflection</p> <p>75.6 Revision and publication</p>

Noted that the English and Thai versions of the questionnaires were validated by the three experts if the meaning of each statement on both versions were consistent to each other and comprehensible.

## 2) The pilot study of the Pre-LAQ and Post-LAQ

The pilot study of the Pre-LAQ and Post-LAQ was carried out with the six electrical engineering students in the summer class of the academic year 2018. Although they were not the participants of the main study, they could be representatives of the population as previously discussed.

As for the pilot study, the Pre-LAQ was distributed to those six students on the first day of the PBBCSI implementation and the post-learner autonomy questionnaire (Post-LAQ) on the second day of the pilot study. As for the main study, the Pre-LAQ was distributed to the students in the first week of the PBBCSI implementation and the Post-LAQ in the final week. Cronbach's alpha internal consistency was used to calculate reliability of the questionnaires. George and Mallery (2003) described the guidelines for the Cronbach's alpha coefficient range in Table 15.

*Table 15: Guidelines for the Cronbach's Alpha Coefficient Range*

Cronbach's Alpha coefficient ( $\alpha$ )	Internal consistency
More than or equal to .9	Excellent
.80 to .89	Good
.70 to .79	Acceptable
.60 to .69	Questionable
.50 to .59	Poor
Less than .5	Unacceptable

After the pilot study, the obtained data from the Pre-LAQ and Post-LAQ were analyzed using SPSS to examine the Cronbach's alpha coefficient. In this regard, the Cronbach's alpha coefficient values of the Pre-LAQ and Post-LAQ were .93 and .95, respectively, indicating excellent reliability.

However, some items (2, 22, 30, 50, 62, 68) were deleted from the original version due to the revision and reduction of the teaching and learning steps from eight

to seven steps. Some items (8, 9, 10, 11, 12, 15, 16, 36, 37, 38, 39, 40, 43, 44, 59, 65, 66, 69, 70, 71, 72, 73, 74, 79, 81, 86, 87, and 88) were revised to be clearer by changing the terms to be consistent with the PBBCSI model: “during class” to become “face-to-face,” and “after class” to become “online,” to name just a few. After the revision, the Pre-LAQ and Post-LAQ were applicable for the main study (see Appendix E).

The Wilcoxon signed-rank test was used to examine score differences in the Pre-LAQ and Post-LAQ before and after implementing the PBBCSI model. The effect size  $r$  of those two scores was estimated.

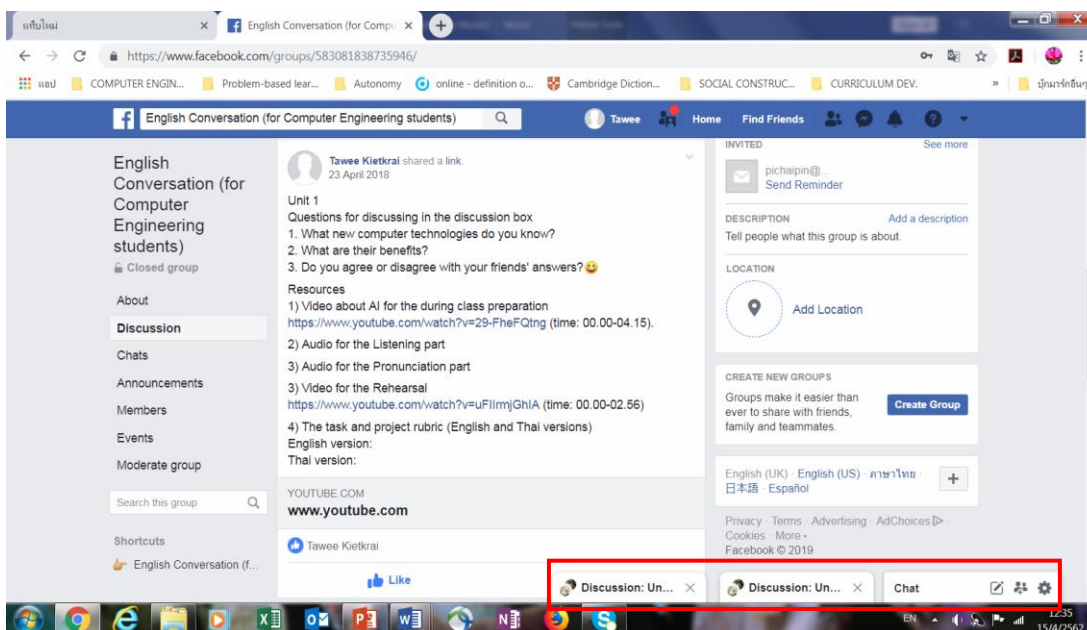
### 3.3.3 Tasks and the project

The tasks and the independent project were used to stimulate participants' online interaction with their peers to elicit the use of communication strategies, as well as develop English oral communication ability and learner autonomy while completing the tasks and their project on social platforms. Therefore, the tasks and the project were not analyzed, but the findings of the data collection instruments related to the tasks and the project were collected and analyzed. Students' tasks and projects were rated against the task and project rubric. There were two platforms in this study as follows:

1) Facebook: The participants visited Facebook to participate in the group of English conversation (for computer engineering students) which mainly consisted of unit posts with learning resources, online tasks, and projects on each pinned unit post.

2) Self-selected platform: As choices and decision making are central to the development of learner autonomy (Benson, 2016), particularly in selecting methods, techniques, and resources, the students were given the liberty to make their own decision to select the social platforms they preferred to do the tasks and the projects such as Facebook Messenger, Skype, Line, etc. These platforms were well-known in Thailand, so the students were familiar with them and did not have problems using them.

Students used the Ocam program or other programs to record their conversations for their tasks and the project. Then they posted their recorded tasks and projects in Facebook group in each pinned unit post (see Figure 8).



*Figure 8: Unit Posts with Learning Resources in Facebook Group*

There were three tasks and the independent project in order to help participants improve their English oral communication ability and learner autonomy. The students carried out the three online tasks and eventually the project.

### 3.3.3.1 The validation of the tasks and the project

#### 1) Experts' validation of the tasks and the project

The sample instructional materials including the sample unit 1 and its task (see Appendix K), the lesson plan (see Appendix L), the PBBCSI syllabus (see Appendix M), and the independent project (see Appendix N) were validated by a panel of three experts in English language instruction (see Appendix O). As for the content validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 were revised in accordance with experts' comments and suggestions. The content validity was equal to .92 (see Table 56 in Appendix J), indicating that the tasks and the project were acceptable and applicable for the pilot study. However, one expert was concerned with the authenticity and content relevance to the computer engineering field. In fact, the contents were designed according to the job functions that were obtained from the document analyses on Computer Engineering Curriculum 2016, a needs analysis study of computer engineering students at KMUTNB, and a needs analysis study of computer



engineers as previously reviewed and described. Therefore, the authenticity and content relevance met the computer engineering students' needs of the main study.

## 2) The pilot study of the tasks and the project

Unit 1 with its activities and pair task 1, and the instructions of the project (due to the time constraint before the beginning of the semester) were tried out with the six electrical engineering students in the summer class of the academic year 2018. Pilot students did not give comments or suggestions because they reflected that the materials in the PBBCSI were already good and the instructions were clear. However, the first part of 'Before class presentation' was deleted due to the time constraint.

There were three outside class tasks and one independent project that the individual students had to complete in the PBBCSI as follows:

### A. *Pair task 1*

Find your pair. Find one problem in your computer engineering field, community, or country and decide what computer technology can help solve that problem. Set up the driving question to find the answers to the problem. Perform discussions on the driving question and computer technology that can solve the problem.

### B. *Pair task 2*

The problem which originates the driving question in Pair Task 1 (Unit 1) might have other possible causes that should be taken into consideration and there may be computer products and technology that can help you deal with those possible causes of the problem. Therefore, to find more information for the driving question, consider asking deeper questions "What are possible causes of the problem that should be considered?" and "What computer products and technology can help deal with those possible causes of the problem?" (You can ask deeper questions for the specific answer from answering the driving question previously). Then, to answer the two deeper questions, perform the interview between you (as a sale representative) and your partner (as a customer). Work in the same pair of pair task 1 as guided below.

Notes: You can change your driving question in this task and can change your pair, but your friends (both in the old and new pairs) should be willing to do that as well.

### *C. Semi-pair task 3*

Student A is a sales representative and Student B is a customer who is interested in being an investment partner of Student A's company. Analyze the data of Pair Task 2 (questionnaire and interview). Then, the sales representative do a presentation on the survey results (all of the question items), conclusion, and solution for the customer.

In addition, the customer is not sure about the information that the sales representative has presented, so he/she asks for confirmation about the information (on DIFFERENT ASPECTS). The customer sometimes cannot recall some WORDS, so he/she describes those words and the sales representative guesses the exact/target words.

### *D. Independent project*

The independent project consists of three main parts: project preparation, project presentation, and after presentation as described in more details in Appendix L.

To improve tasks and the independent project by students themselves, their tasks and the project posted on Facebook were commented on by their peers according to the aspects of the task and project rubric (see Appendix C) in which they could select English or Thai versions by themselves. Then, the instructor gave comments and suggestions on their tasks and the project based on the task and project rubric.

As previously mentioned, students were encouraged to conduct the outside class tasks to develop their English oral communication ability. They were able to select the ways to carry out their own independent project phase by phase.

With respect to fostering learner autonomy, students were encouraged to perform the outside class tasks and the project to develop their learner autonomy.

In this way, students performed the outside class tasks and the independent project, filled out the information on the student logs when doing the tasks and the project, and gave comments on their peers' tasks and project on Facebook after completing the tasks and the project. As such, insightful qualitative data about learner autonomy could be found in the student logs, observation checklists, and the semi-structured interviews.

#### *3.3.4 Student logs (for the tasks and the project)*

The students filled in the information on the student log when they performed the outside class tasks and the independent project. This student log was used to train the students to develop their learner autonomy in their responsibilities, capabilities, and

independent learning in six aspects of learner autonomy as previously mentioned in order to complete the independent project. The data from the student logs of the two pairs of focused students who were willing to participate in the study were analyzed and coded into categories of what they wrote in the student logs. The obtained data would be triangulated with the data obtained from the whole class. The student logs were used as the evidence of whether the participants had responsibilities, capabilities, and independent learning in six aspects of learner autonomy as previously mentioned. In brief, the data were used to determine if the students could become autonomous or independent learners.

#### 3.3.4.1 The validation of student logs

##### 1) Experts' validation of student logs

The student log was validated by a panel of three experts. As for the content validity, mean scores from the three experts' validation with the IOC index were calculated, and the items which did not receive a score between 0.50 and 1.00 were revised in line with the experts' comments and suggestions. The content validity was 1.00 (see Table 57 in Appendix J), indicating that the student log was acceptable and applicable for the pilot study. However, all of the three experts suggested that the student log needed to be tried out to see if it could get the target evidence of learner autonomy.

##### 2) The pilot study of the student logs

The student log was tried out with the electrical engineering students in the special class in the summer semester of the academic year 2018. The pilot students did not give comments or suggestions on the student log because they did not have problems when filling out the information onto the student log. However, due to the deletion of 'Before class presentation,' the student log (for the during-class activity) was also deleted.

#### 3.3.5 Observation checklists

Since the learning process inside and online was important evidence for students' development of learner autonomy as previously mentioned, there were two kinds of observation checklists (see Appendix F) used in this study:

#### 1) Face-to-face observation checklist

Two pairs of focused students were video-recorded while learning in face-to-face environment.

#### 2) Online observation checklist

On Facebook, the students and the two pairs of focused students gave comments on their peers' tasks and projects, and the data were discussed in the consultation box. The obtained data from both types of observation checklists were collected, transcribed, coded, and analyzed according to the six aspects of learner autonomy previously described.

### 3.3.5.1 The validation of observation checklists

#### 1) Experts' validation of observation checklists

Both of the face-to-face and online observation checklists were validated by a panel of three experts (see Appendix O). As for the content validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 were revised based on the experts' comments and suggestions. In this regard, the content validity was .87 (see Table 58 in Appendix J), indicating that the observation checklists were acceptable and applicable for the pilot study.

#### 2) The pilot study of observation checklists

The observation checklists were tried out with the six electrical engineering students in the summer of the academic year 2018. The researcher found that it was difficult to analyze the students' occurrences of learner autonomy in different three main components (i.e. personal responsibilities, personal capabilities, and independent learning) in six aspects of learner autonomy as previously described. Therefore, the observation checklists were revised by dividing one column of the components of learner autonomy into three columns so that the occurrences of each component could be examined more easily as shown in Appendix F. In addition, due to the revision of the PBBCSI that included deletion of the first part of 'before class presentation' in all of the four units and the section of 'before class observation checklist' on the face-to-face observation checklist, the wording of 'during class observation checklist' and 'after class observation checklist' were changed into 'face-to-face observation checklist' and 'online observation checklist,' respectively.

### 3.3.6 Semi-structured interviews

Semi-structured interviews (see Appendix G) were carried out with twelve purposively-selected students to gain more in-depth information on six aspects of learner autonomy. The interview questions were, therefore, based on two parts of the Pre-LAQ and Post-LAQ as previously described.

The interview questions were translated from English into Thai to overcome language barriers. The interviews were administrated at the end of the course on the basis of the convenience of the students, raters, and the researcher. The data were then be transcribed, coded, and analyzed.

#### 3.3.6.1 The validation of semi-structured interviews

##### 1) Experts' validation of semi-structured interviews

With regard to content and construct validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 were rewritten in accordance with the experts' comments and suggestions. In this regard, the content validity of the semi-structured interviews was 1.00 (see Table 59 in Appendix J), indicating that the semi-structured interviews were acceptable and applicable for the pilot study.

It is noteworthy that the English and Thai versions of the interview questions were validated by those three experts to ensure that the meaning of each question on both versions were consistent with each other and comprehensible.

##### 2) The pilot study of semi-structured interviews

The pilot study of semi-structured interviews was conducted with the six electrical engineering students in the summer class of the academic year 2018. The interviews were carried out in Thai with them.

As for the revision of the semi-structured interviews, the pilot students were asked if they understood the interview questions clearly. Their comments and suggestions were used to revise the interview questions. Although they did not have problems with the questions and explained that those questions were already clear, three questions about their independent learning were added (see Appendix G), two weeks after the interviews of the main study completed.

### 3.3.7 English oral communication ability test rubric

The English oral communication ability test rubric was used to assess the students' English oral communication ability when doing the English oral communication ability test. The test rubric consisted of six aspects of spoken language: *range, accuracy, fluency, interaction, coherence, and pronunciation* adapted from the qualitative features of spoken language (expanded with phonology) of the Common European Framework of Reference for Languages (CEFR) (Council of Europe, 2017, pp. 155-156) in terms of range, accuracy, fluency, interaction, coherence, and phonology.

According to Hiranburana et al. (2017), the Ministry of Education announced the Common European Framework of Reference for Languages (CEFR) as the standards to be practiced at all levels of education in Thailand, stating “Teachers and students have found that their English proficiency levels are too low to achieve the required standard” (p. 91). This suggests that CEFR levels should be adapted to be more achievable, comprehensible, and practical in Thailand. In addition, Hiranburana et al. (2017, p. 93) pinpoint that CEFR should be adopted or adapted to be “appropriate to the needs, characteristics, and local context of particular learners or groups of learners to make the framework more comprehensible and more practical” as Council of Europe (2001, p. 30, as cited in Hiranburana et al., 2017) has stated as follows:

You may well wish to keep some, reject others and add some of your own...the taxonomic scheme presented... of the framework is not seen as a closed system, but one which is open to further development in the light of experience (p. 93).

In this study, there were five levels of the English oral communication ability test rubric ranging from level 4 to level 0. To construct the English oral communication ability test rubric, some expressions and structures of CEFR descriptors which were very complex and difficult to achieve, and which were not related to the contents and learning outcomes of the PBBCSI, were deleted, while others were simplified and adapted to the required levels to be more achievable, comprehensible, and practical to the Thai context, computer engineering students' pre-intermediate and intermediate proficiency levels, and the PBBCSI. Therefore, most of the descriptors of C1 and C2

levels which contained many difficult expressions and complicated structures were adapted and adjusted to become level 4, and B2 level adapted and adjusted to become level 3. Since some descriptors of A1 and A2 levels were similar and overlapped, they were adapted and adjusted to become level 1. In addition, level 0 was constructed to represent students' inabilities that made them unable to give responses or their responses were not related to the stimulus (see Appendix B). Of each aspect, participants' performances were *assessed analytically* according to five levels of the adapted test rubric ranging from level 0 to level 4 (see Appendix B).

### 3.3.7.1 The validation of the English oral communication ability test rubric

#### 1) Experts' validation of the English oral communication ability test rubric

With regard to content validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not achieve a score between 0.50 and 1.00 were revised according to the experts' comments and suggestions. In this regard, the content validity was .67 (see Table 60 in Appendix J), indicating that the English oral communication ability test rubric was acceptable and applicable for the pilot study. However, the experts commented that there were some ambiguous words modifying nouns such as “varied cohesive devices” and suggested that phrases should be added to differentiate the different quantity of those nouns. Likewise, the quantifiers should have been used carefully to really differentiate levels of English oral communication ability as illustrated in Table 16.

Table 16: Examples of the Revised Parts of the English Oral Communication Ability Test Rubric

Original Parts						
Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	
<b>Coherence</b> <input type="checkbox"/> Pretest <input type="checkbox"/> Expected Posttest	- The responses are fully related to the topic in the conversation and have complete information for the tasks and the questions of the EOCA test. - Can produce utterances with an appropriate number of cohesive devices to organize thoughts and ideas logically.	- The responses are almost fully related to the topic in the conversation and have almost complete information for the tasks and the questions of the EOCA test. - Can produce utterances with an appropriate number of cohesive devices to organize thoughts and ideas logically.	- The responses are relatively related to the topic in the conversation, but lack some information for the tasks and the questions of the EOCA test. - Can produce utterances with some appropriate cohesive devices to organize thoughts and ideas logically.	- The responses are hardly related to the topic in the conversation and lack a lot of the information for the tasks and the questions of the EOCA test. - Can produce utterances with a limited number of appropriate cohesive devices to organize thoughts and ideas logically.	- No responses or responses are not related to the stimulus.	
Revised Parts						
Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Notes
<b>Coherence</b> <input type="checkbox"/> Pretest <input type="checkbox"/> Expected Posttest	- The responses are <b>fully related</b> to the topic in the conversation and have <b>complete information</b> for the tasks and the questions of the EOCA test. - Can produce utterances with an appropriate number (not too many) of varied cohesive devices to organize thoughts and ideas logically.	- The responses are <b>almost fully related</b> to the topic in the conversation and have <b>almost complete information</b> for the tasks and the questions of the EOCA test. - Can produce utterances with a sufficient number of varied cohesive devices to organize thoughts and ideas logically.	- The responses are <b>relatively related</b> to the topic in the conversation, but <b>lack some information</b> for the tasks and the questions of the EOCA test. - Can produce utterances with a certain number of varied cohesive devices to organize thoughts and ideas logically.	- The responses are <b>hardly related</b> to the topic in the conversation and <b>lack a lot of the information</b> for the tasks and the questions of the EOCA test. - Can produce utterances with a limited number of varied cohesive devices to organize thoughts and ideas logically.	- No responses or responses are not related to the stimulus.	

## 2) The pilot study of the English oral communication ability test rubric

The pilot study of the English oral communication ability test rubric was conducted with the three raters during the English oral communication ability test in the summer class of the academic year 2018. Their comments and suggestions were used to revise the English oral communication ability test rubric. However, they did not give comments on the revised version of the test rubric. Therefore, this complete version of the English oral communication ability test rubric (see Appendix B) was considered applicable for the main study. With respect to the descriptions of the aspects in the test rubric, there were six aspects of spoken language: *range*, *accuracy*, *fluency*, *interaction*, *coherence*, and *pronunciation* adapted from the qualitative features of spoken language in the CEFR (Council of Europe, 2017, pp. 155-156). Their descriptions were as follows:

1. *Range* referred to the extent to which the students could use a large amount of varied vocabulary to convey meaning and ideas appropriately for topics and situations.



As for language use analysis, the four target categories of range (i.e. nouns, verbs, adverbs, and adjectives) were examined to compare their differences in the English oral communication ability pretest and posttest.

2. *Accuracy* referred to the extent to which the students could employ grammatical structures and usage. As for language use analysis, accuracy of the grammatical structures (minor and major mistakes) employed by the students were analyzed in the English oral communication ability pretest and posttest.

3. *Fluency* referred to the extent to which the students could produce utterances with smooth and effortless flow of language. Short pauses or hesitations might occur. Concerning language use analysis, the use of fillers and hesitation devices were analyzed to compare their differences in the pretest and posttest. In addition, the pauses and the length of utterances were analyzed without consideration on their frequencies.

4. *Interaction* referred to the extent to which the students could use a large number of varied expressions to interact in a conversation with appropriate (natural) turn-taking in order to initiate the topics and/or ideas, and take the turns in the conversation. In this study, the expressions referred to words, phrases, and sentences related to the four communication strategies taught in units 1 to 4 used to interact in the conversations which included **asking for clarification strategy** (e.g. *What does that word mean?, Why do you think that?*); **circumlocution strategy** (e.g. *What should I call ... (something: e.g. a device/ equipment, etc.) that .....?, I don't know how to say/ call it. It is something that .....;* **asking for confirmation strategy** (e.g. *Is it pronounced "....."?, You mean .....? (with rising intonation);* and **use of fillers and other hesitation devices** (e.g. *Uhm/Hm/Er/Ah..., Well..., Now let me see., Let me think., Let's see....*).

The expressions related to the communication strategies and the conversation topic that the speakers (students) studied in units 1 to 4 and employed them in their conversations in the online tasks, independent projects, and the English oral communication ability pretest and posttest such as “What do you think about .....?, I think .....”, “May I ask you a few questions?”, “Do you know how to .....?, etc. were investigated, analyzed, and coded into the four taught communication strategies to compare their differences in the pretest and posttest.

5. *Coherence* referred to the extent to which the students could produce utterances using a range of cohesive devices to connect separate ideas into a coherent whole of logical responding utterances appropriately. The responses are also related to the topic in the conversation. According to Widdowson (2007), the cohesive devices are used to:

serve to link parts of a text together. It is important to note, however, that they (i.e. these cohesive devices) do so (i.e. link parts of texts together) so that new content is understood in relation to the content that has been established in the reader's mind by what has been said before (p. 46).

Therefore, *cohesive devices* in this study referred to various types of linking words used to add, show the relationship between cause and effect of, give examples to clarify, indicate the order of, and contrast the information or the new ideas of the utterances. In addition, the categories of the cohesive devices focused in this study included 1) addition: “*and*” and “*also,*” used for adding some information to the preceding utterances, 2) result: “*so,*” and “*because,*” used for showing the relationship between cause and effect of the information in the utterances, 3) exemplification: “*for example,*” “*such as,*” and “*like,*” used to give examples to clarify the preceding utterances, 4) sequencing: “*first,*” “*second,*” “*next,*” “*then,*” and “*finally,*” used for indicating a series of related things or events, or the order in which they happened in the utterances, and 5) contrast: “*but*”) used to connect ideas that were contrasted in the utterances.

As for language use analysis, varied cohesive devices were examined and analyzed to compare their differences in the English oral communication ability pretest and posttest, and the qualitative findings were also used to support the quantitative findings.

6. *Pronunciation* referred to the extent to which the students could employ correct pronunciation of word (sounds), word and sentence stress, and intonation to produce utterances with high comprehensibility. With respect to the pronunciation errors that affected the English oral communication ability in pronunciation, they were categorized into two main types of errors: minor pronunciation errors that referred to

the errors that did not obscure or hardly obscured the meaning of utterances and major pronunciation errors that referred to the errors that obscured the meaning of utterances.

With respect to language use analysis, pronunciation of word (sounds), word and sentence stress, and intonation patterns employed by the students were analyzed and compared in the English oral communication ability pretest and posttest.

Concerning the limitation of the study in terms of pronunciation, the interviewers in the pretest and posttest of the recent study were Thai university instructors who had experiences in English teaching for many years, so they were familiar with Thai students' pronunciation. Hence, the results of the students' pronunciation of utterances in the pretest and posttest in the study were limited to the context where the speakers and interlocutors were Thai speakers of English.

#### 3.3.8 The task and project rubric

The task and project rubric was used to rate the tasks and the project. The rubric was adapted from Buck Institute for Education (2017) whose essential project design elements are relevant to Larmer's (2015, 2019) project-based language learning adapted for the framework of this study previously mentioned. The rubric was also designed in accordance with the elements and phases of project-based language learning, and the syllabus content of the PBBCSI in the main course 'English conversation.' The task and project rubric consisted of both English and Thai versions so that the students could select the language they preferred. However, students' selection of different versions was not investigated in this study. The rubric comprised two following sections:

##### A. Task and project quality

As for the task and project quality, the rubric assessed the tasks and the project in aspects of content, organization, authenticity, use of methods or techniques and resources, and reflection.

##### B. English oral communication ability

Similar to the English oral communication ability test rubric, this section of the task and project rubric assessed and reflected the tasks and the project in the six aspects of English oral communication ability: range, accuracy, fluency, interaction, coherence, and pronunciation.

Students' performances when conducting the online tasks and the projects were rated according to the task and project rubric on four levels which ranged from levels 0 to 4. The researcher marked the scores with 0, 1, 2, 3, and 4 on each aspect of task and project quality and English oral communication ability. On Facebook group, the students gave comments on their peers' tasks in sections A and B.

### 3.3.8.1 The validation of the task and project rubric

#### 1) Experts' validation of the task and project rubric

Regarding content validity, mean scores from the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 were revised according to the experts' comments and suggestions. The English and Thai versions of the task and project rubric (see Appendix C) were validated by those three experts to determine if the meaning of each descriptor on both versions were consistent with each other and was comprehensible. Experts' comments and suggestions were used to revise the task and project rubric. Concerning the content validity of the task and project rubric, it was .71 (see Table 60 in Appendix J), indicating that the task and project rubric was acceptable and applicable for the pilot study. Since the task and project rubric was similar to the English oral communication ability test rubric, it also had similar problems to the test rubric, and as such the ways to revise it were also similar to the ways to revise the test rubric as previously described.

#### 2) The pilot study of the task and project rubric

The pilot study of the task and project rubric was conducted with the six electrical engineering students in the summer class of the academic year 2018. For the revision of the descriptors, the pilot students were asked to specify if they understood the descriptors of both versions clearly. Pilot students' comments and suggestions were expected to be used to revise the questions of the semi-structured interviews. However, they did not give comments or suggestions because they could understand and employ the rubric themselves with ease. But if they did not understand some parts of the English version, they could compare them to the Thai version.

### 3.4 Research procedures

The research procedures consisted of two main phases: the preparation of the PBBCSI and the implementation and evaluation of the PBBCSI as shown in Table 17.

Table 17: Research Procedures

<b>Phase 1: Preparation of the PBBCSI</b>
<ol style="list-style-type: none"> <li>1. Performing document analysis to identify job functions and the main components of the theoretical framework</li> <li>2. Designing the PBBCSI</li> <li>3. Validating the PBBCSI</li> <li>4. Performing the pilot study of the PBBCSI</li> <li>5. Revising the PBBCSI</li> </ol>
<b>Phase 2: Implementation of the PBBCSI</b>
<b>Data collection</b>
<ol style="list-style-type: none"> <li>1. Administrating the English oral communication ability pretest and distributing the Pre-LAQ before taking the PBBCSI</li> <li>2. Conducting the main study and collecting data from the observations and student logs</li> <li>3. Administrating the English oral communication ability posttest and distributing the Post-LAQ after taking the PBBCSI</li> <li>4. Conducting the semi-structured interviews</li> </ol>
<b>Data analysis</b>
<ol style="list-style-type: none"> <li>5. Analyzing data corresponding to Research Questions 1, 2, and 3</li> </ol>

### 3.4.1 Phase 1: Preparation of the PBBCSI

The first phase of the research procedures was the preparation of the PBBCSI. It consisted of five steps: 1) performing document analysis to identify job functions and the main components of the theoretical framework, 2) designing the PBBCSI, 3) performing the pilot study of the PBBCSI, 4) validating PBBCSI, and 5) revising the PBBCSI.

#### 3.4.1.1 Performing document analysis to identify job functions and the main components of the theoretical framework

To identify computer engineering job functions and the main components of the theoretical framework, documents such as Computer Engineering Curriculum 2016 (King Mongkut's University of Technology North Bangkok, 2016), and related studies were examined and analyzed.

#### 3.4.1.1.1 Identification of computer engineering job functions

According to Jordan (1997, as cited in Brown, 2016), documentation or document analysis is one way to perform a needs analysis. In this study, document analysis was applied to identify the job functions which were mainly related to computer engineering job functions and could also be guidelines to identify the expected outcomes of the units of study in the PBBCSI model. The job functions were derived from three main document analyses: Computer Engineering Curriculum 2016 (King Mongkut's University of Technology North Bangkok, 2016), Pinphet's (2017a) unpublished study on the analysis of needs and problems with English oral communication ability of computer engineering students at King Mongkut's University of Technology North Bangkok on their English oral communication ability, and Rajprasit and Hemchua's (2015) study which was about the analysis of needs and problems of Thai computer engineering professional in the international workplace on their English language proficiency. The obtained job functions after the triangulation of the data from the three documents were then selected and adapted to create the job functions and the unit themes in accordance with the four phases of the PBBCSI (i.e. initiation, inquiry, analysis, and solution phases) and the learning outcomes of the main course "English conversation."

The steps to identify the job functions based on document analyses were as follows:

**Step 1:** Analyzing goals/objectives of computer engineering program and learning outcomes of five domains in Computer Engineering Curriculum (2016).

**Step 2:** Grouping goals/objectives of computer engineering program and learning outcomes of five domains.

**Step 3:** Identifying the job functions from the analysis on Computer Engineering Curriculum (2016) which provided the five main job functions as follows:

- 1) Describing computer organization, products, operations of computer systems, and tools;
- 2) Giving instructions, warnings, suggestions and solutions for using, installing, maintaining computer products and solving related problems;
- 3) Analyzing, discussing, and exchanging opinions towards Computer Engineering issues and problems;

- 4) Conversing socially for the meeting/conference; and
- 5) Delivering presentations on engineering issues and projects.

**Step 4:** Triangulating the gained job functions with the data about the job functions derived from Pinphet's (2017a) and Rajprasit and Hemchua's (2015) studies in order to consolidate and obtain more reliable information about different functions that students should be able to perform in communicative situations of the PBBCSI.

The job functions from this data triangulation were the same as those before the data triangulation with the two studies previously mentioned, reliable, and good for developing the syllabus content.

**Step 5:** Selecting and adapting the job functions for the PBBCSI of the present study

The *four out of five* job functions from the triangulation were then selected and adapted to construct the job functions and the unit themes to be relevant to the four phases of the PBBCSI (i.e. initiation, inquiry, analysis, and solution phases) and the learning outcomes of the main course "English Conversation" to ensure that what the students learned in the PBBCSI were related to the objectives of the main course. The selected and adapted four job functions were as follows:

#### **Four job functions of the present study**

- 1) Discussing and exchanging opinions towards computer technologies;
- 2) Describing computer products and peripherals;
- 3) Giving instructions, warnings, suggestions, and analysis results to give solutions regarding computer products and peripherals; and
- 4) Delivering the independent project on selected issues.

#### **Four themes:**

- 1) Computer Technologies for Better Lives
- 2) Computer Products and Peripherals
- 3) Computer and Networking Problems
- 4) Project Presentation

#### 3.4.1.1.2 The main components of the PBBCSI framework

As reviewed, related studies and theories of the three main components of the PBBCSI had been analyzed to develop the PBBCSI framework which included blended learning, communication strategy instruction, and project-based language learning which are briefly summarized as follows:

##### **1. Blended learning**

In this study, Lam's (2015) blended learning model as previously reviewed was adapted to construct the instructional framework, since this model encouraged students to integrate learning activities in face-to-face and online environments in order to optimize their learning process effectively. In addition, since the proportion of face-to-face time and online time was not fixed in Lam's blended learning model, it could provide instructors with flexibility to manage learning activities in face-to-face and online environments without the constraints on the proportion of face-to-face and online time use.

With its prominent characteristics and flexibility which could integrate learning activities in face-to-face and online environments could be combined and go beyond the limit of the traditional proportion of face-to-face and online time use as previously reviewed, Lam's (2015) blended learning model was adapted for the instructional framework of the present study and combined with the communication strategy instruction and project-based language learning for the PBBCSI framework.

##### **2. Communication strategy instruction**

In this study, the CALLA framework (Chamot et al., 1999) and Nakatani's (2010) framework of communication strategy instruction were integrated to construct the adapted communication strategy instruction as previously reviewed and summarized in Table 3. Then, the adapted communication strategy instruction was integrated with Lam's (2015) blended learning model which included face-to-face and online environments without the constraints in the proportion of face-to-face and online time use in the PBBCSI model in order to instruct the four communication strategies and the ways to conduct the independent project in a face-to-face environment. In the online environment, the students applied what they had learned and practiced in the face-to-face environment to do online tasks and eventually their independent projects.



The seven learning and teaching steps would be implemented as the essential learning and teaching steps to explicitly instruct the students about the communication strategies to overcome communication problems, especially those relevant to the essential components of English oral communication ability which comprised *range, accuracy, fluency, interaction, coherence, and pronunciation*.

The seven learning and teaching steps were implemented in each of the first four phases of the PBBCSI which included initiation, inquiry, analysis, and solution (see Figure 7) and were proceeded in face-to-face and online environments as briefly described below:

**Face-to-face environment:**

1) Preparation

The instructor activated students' background knowledge to prepare them for the following topics of the study unit.

2) Presentation

The instructor presented new topics on listening comprehension and pronunciation by having the students do the exercises of those topics themselves to develop their learner autonomy, and explained the language expressions related to the taught communication strategies.

3) Rehearsal

The students applied what they had learned in the previous topics in the rehearsal of the communication activity.

4) Performance

The students practiced the communication activity again in order to master the target communication strategies and other aspects of English oral communication ability.

5) Feedback

The instructor gave feedback and comments to students' performances against the task and project rubric similar to the test rubric in the part of English oral communication ability so that the students could employ the comments and suggestions as guidelines to improve their activities in the following units. In addition, the way that

the instructor gave feedback and comments could be the guidelines for students to comment their peers' online tasks and projects.

**Online environment:**

6) Expansion

The students extended the use of the taught communication strategies and the ways to do the projects through the online task completion.

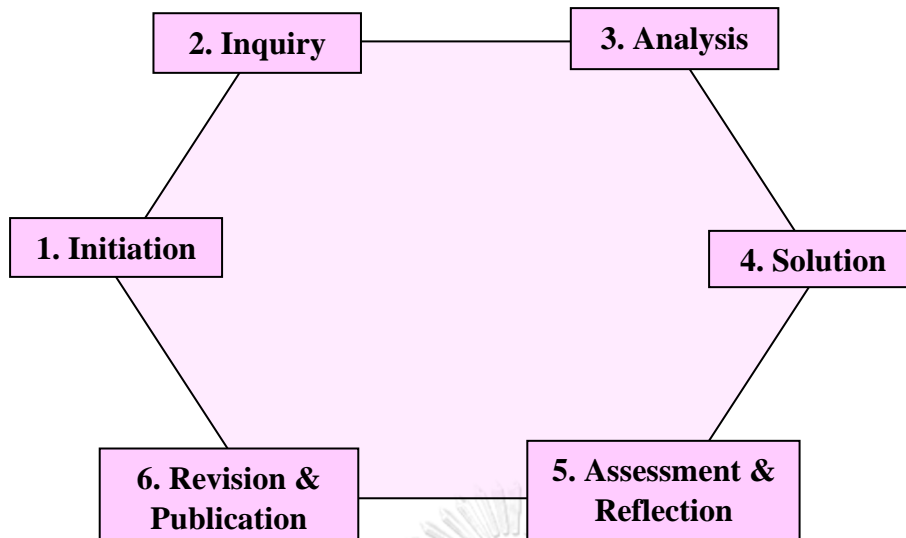
7) Evaluation

The students gave feedback and comments on their peers' online tasks posted on the Facebook group. Then, they also rated their online tasks against the task and project rubric and gave reflection on their tasks in the student log to improve their performance in the following phases.

These seven learning and teaching steps were implemented in the phases of the project-based language learning, which were then synthesized for the PBBCSI framework consisting of six phases: initiation, inquiry, analysis, solution, assessment and reflection, and revision and publication.

**3. Project-based language learning**

Seven essential project design elements proposed by Larmer (2015, 2019) consisting of *challenging problem or question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and public product* were synthesized to construct *six* project-based language learning phases as illustrated in Figure 9. These six project-based language learning phases were then combined with the blended learning communication strategy instruction which was implemented in face-to-face and online environments as the instructional framework of the present study called the PBBCSI.



*Figure 9: Project-based Language Learning Phases  
(adapted from Larmer, 2015, 2019)*

#### 3.4.1.2 Designing PBBCSI framework

The three main components of blended learning, communication strategy instruction, and project-based language learning were integrated and synthesized to construct the PBBCSI framework of the present study (see Figure 7). It consisted of six phases and seven learning and teaching steps of the communication strategy instruction in face-to-face and online environments to guide the students on how to complete the independent project in each of the six PBBCSI phases as summarized below.

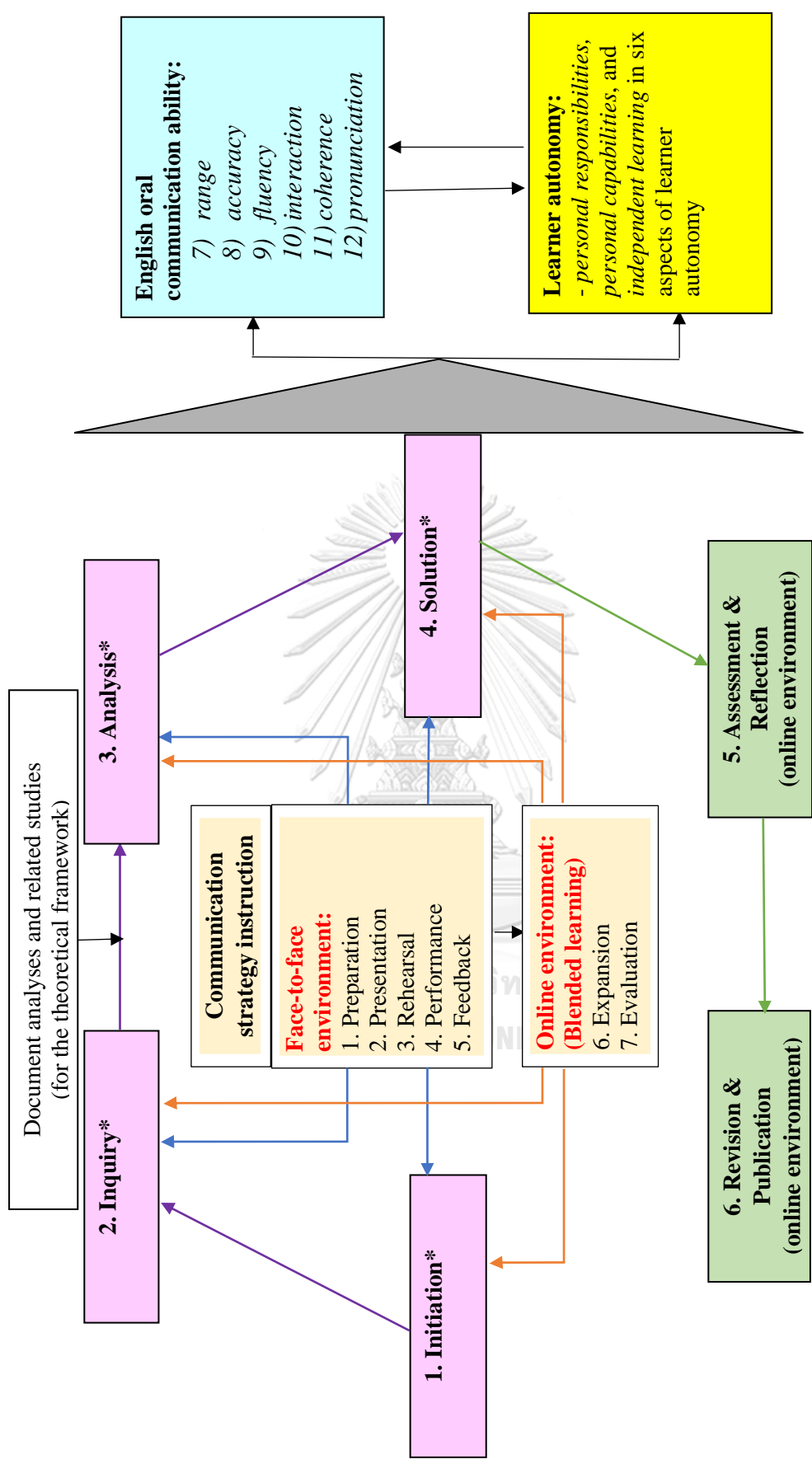


Figure 7: Project-Based Blended Learning with Communication Strategy Instruction (PBBCSI)

### ***Face-to-face environment and online environments***

#### 1) Initiation phase:

- The students self-selected a topic and made up the driving question that emerged from the key problem for their independent project.

#### 2) Inquiry phase:

- The students formulated more insightful questions to research into self-selected resources (e.g. websites, interviews, etc.), and collected information (e.g. interview, survey, questionnaire, etc.).

#### 3) Analysis phase:

- The students analyzed the results.

#### 4) Solution phase:

- The students gave solutions to the problems to answer the driving question.

### ***Online environment***

#### 5) Assessment and reflection phase:

- The students continued doing their project, presented the project, assessed the project, and provided comments and feedback for their project reflection.

#### 6) Revision and publication phase:

- The students revised their independent project according to peers' comments and feedback, as well as their own reflection, before sharing it on their Facebook page.

Each of the first four PBBCSI phases: initiation, inquiry, analysis, and solution was administered in face-to-face and online environments through the seven learning and teaching steps of the communication strategy instruction which included preparation, presentation, rehearsal, performance, feedback, expansion, and evaluation that were explicitly explained to the participants to ensure their understanding of which communication strategies they needed to tackle communication problems or maintain the conversations to achieve the communication purposes. The ways to perform the independent project in each of the first four PBBCSI phases were also discussed. In the face-to-face environment, the students applied the background knowledge they were prepared in *step 1 'Preparation'* to study and carry out the activities regarding the communication strategies in *step 2 'Presentation'* presented by the instructor including

new topics on vocabulary and pronunciation necessary for the communication activities in *step 3 'Rehearsal'* which required the students to apply what they had learned in the previous steps to perform the communication activity and practice more in *step 4 'Performance.'* Then, in *step 5 'Feedback,'* the students received the instructor's feedback and comments on their activities as the model when they did the presentation in front of the class to ensure that they were able to give feedback and comments on their peers' online tasks in *step 7 'Evaluation.'* After that, in the online environment, the students applied what they learned and practiced in the previous steps in the face-to-face environment to carry out their online tasks in *step 6 'Expansion'* which required them to select appropriate technology to perform the three online tasks such as communication social platform (e.g. Skype, Facebook Messenger, Discord, etc.), screen saving programs (e.g. Ocam, Bandicam, etc.), and Internet resources. Subsequently in *step 7 'Evaluation,'* the students gave feedback and comments on their peers' online tasks posted in Facebook Group as previously learned in *step 5 'Feedback.'* They also rated their online tasks against the task and project rubric and reflected on their tasks in the student log for subsequent improvement.

Concerning the online tasks and the project, the participants needed to conduct *three* online tasks in the online environment phase by phase in order to practice the use of communication strategies and the ways to carry out *one* independent project. They posted their videos of online tasks and gave comments and feedback on their peers' online tasks in Facebook Group according to the English oral communication ability task and project rubric which included two sections of the criteria: task and project quality, and English oral communication ability. The descriptors and levels of six aspects of English oral communication ability were similar to those of the English oral communication ability test rubric of the pretest and posttest. In addition, participants' online tasks were also assessed by the instructor according to the same task and project rubric. Therefore, each participant's English oral communication ability could be improved by means of doing those three online tasks and one independent project.

#### 3.4.1.2.1 Conducting the main study and collecting data

The main study was conducted and the data were collected as follows:

Week 1: The students took the English oral communication ability pretest administered according to students' and three raters' agreed availability and

convenience of date and time. Also, the students responded to the pre-learner autonomy questionnaire (Pre-LAQ) before taking the PBBCSI.

Week 2: The students were introduced to the Facebook page consisting of the materials and links used for studying and carrying out the outside class tasks and the independent project of the PBBCSI. In addition, they were introduced to some social platforms such as Skype and Facebook messenger, and the screen saving program “Ocam” that could be used to carry out the tasks and the independent project. They were also informed that they could use other social platforms and screen saving programs to complete their tasks and projects as appropriate

During week 3 to week 14, the six phases of the PBBCSI model were implemented according to the PBBCSI syllabus (see Appendix K).

Week 15: The students filled out the post-learner autonomy questionnaire (Post-LAQ) and took the English oral communication ability posttest. In addition, they were also interviewed with the semi-structured interview protocol according to their convenience and availability.

#### 3.4.1.2.2 Instructor’s roles

In this PBBCSI, the instructor acted as a *facilitator* and a *motivator* encouraging students to do communicative activities. He also acted as an organizer and administrator of resources for students’ activities; a monitor of the students’ working on the activities; a commentator to give feedback on students’ activities, works, tasks, and the project; and a *counselor* when the students faced problems and needed suggestions or assistance.

In addition, the students’ roles in the PBBCSI changed from those in a traditional classroom. The instructors encouraged the students to initiate their own learning in order to transfer some responsibilities to them.

#### 3.4.1.2.3 Students’ roles

The students were engaged in doing communicative activities with their peers. They took the responsibilities for their own learning and learned how to work independently for task and project completion.

#### 3.4.1.3 Validating the PBBCSI model

The PBBCSI manual was validated by three experts (see Appendix O) in aspects of rationale, theoretical framework, and components of the PBBCSI lesson plan

(learning outcomes, instructional activities, and assessment and evaluation) as previously described in the validation of the tasks and the project. As for the content validity, mean scores of the three experts' validation with the IOC index were calculated and the items which did not receive a score between 0.50 and 1.00 were revised the instructional materials in accordance with experts' comments and suggestions. In this regard, the content validity was .92 (see Table 56 in Appendix J), indicating that the components of the PBBCSI were acceptable and applicable for the pilot study. The three experts' comments and suggestions were used to revise the manual, lesson plan, and other components of the PBBCSI as well.

#### 3.4.1.4 Performing the pilot study of the PBBCSI

The pilot study of the sample unit 1 was conducted in the second semester of the academic year 2018 with the six electrical engineering students in the English Conversation course. The pilot study aimed to validate the contents of four units of the study as well as the data collection instruments.

#### 3.4.1.5 Revising the PBBCSI

Pilot students' suggestions and the researcher's observations were used to revise the PBBCSI as previously described.

### 3.4.2 Phase 2: Implementation of the PBBCSI

#### 3.4.2.1 Data collection

The main study of the PBBCSI was undertaken for 15 weeks in the first semester of the academic year 2019. Data collection consisted of three phases: before, during, and after the implementation

##### 1) Before the implementation

##### *The English oral communication ability pretest*

The students took the English oral communication ability pretest. Their performances of each test task were video-recorded. Also, they filled out the pre-learner autonomy questionnaire (Pre-LAQ) before taking the PBBCSI.

##### 2) During the implementation

Weeks 3: The students did the activities, outside class tasks, and the independent project as shown in the syllabus of the PBBCSI (See Appendix G).

##### 3) After the implementation



Week 15: The students performed the English oral communication ability (EOCA) posttest and their performances were video-recorded. They were also asked to respond to the post-learner autonomy questionnaire (Post-LAQ).

As for the semi-structured interviews, the interviews were scheduled according to the researcher's and the students' availability and convenience, after week 15. The interviews were carried out in Thai with 12 students who were purposively selected to give more in-depth information in accordance with the Pre-LAQ and Post-LAQ (the same questionnaires). The interviews were video- and audio-recorded. The data were translated, transcribed, and coded by researcher.

### 3.4.3 Data analysis

The quantitative and qualitative data were analyzed to answer Research Questions 1, 2, and 3 as follows:

#### **Research Question 1:**

*What are the effects of PBBCSI on English oral communication ability of undergraduate engineering students?*

Answers to Research Question 1 were gathered from the English oral communication ability pretest and posttest which were used to examine the improvement of students' English oral communication ability.

The English oral communication ability pretest and posttest were rated by the researcher and another experienced instructor using the English oral communication ability test rubric. The interrater reliability identified by the Spearman's correlation coefficient values was checked. The results revealed that there was a significantly strong relationship between the researcher's and each experienced instructor's rating scores of pretest tasks 1, 2, and 3 ( $r_s = .95, .84, \text{ and } .76$ , respectively,  $p < .01$  (two-tailed). In addition, there was also a significantly strong relationship between the researcher's and each experienced instructor's rating scores of posttest tasks 1, 2, and 3 ( $r_s = .95, .91, \text{ and } .73$ , respectively,  $p < .01$  (two-tailed). The correlation coefficient values of the pretest and posttest demonstrated that as the researcher's rating scores increased, each experienced instructor's rating scores also increased both in the pretest and posttest. Accordingly, the obtained correlation coefficient values indicated that the pretest and posttest scores were reliable for further analysis.

The Wilcoxon signed-rank test was used to calculate the differences in pretest and posttest scores of the students' English oral communication ability. The effect size  $r$  scale of the two test scores was estimated to see the magnitude of the observed effect between the pretest and posttest scores.

To triangulate the findings of the pretest and posttest, qualitative data were collected from the recorded videos of the six purposively-selected students out of the 20 students while taking the pretest and posttest. All of the 18 videos of those six students were analyzed and the obtained data were classified into different themes according to each aspect of English oral communication ability using the qualitative software "NVivo." Based on the levels of English oral communication ability, the students pretest scores ranged from 1.00 to 1.50 which was classified at the low level, 1.51-2.50 the moderate level, 2.51-3.50 the high level, and 3.51-4.00 the very high level. As such, the two videos of each test task in the pretest were chosen from the two purposively-selected students whose levels of English oral communication ability were of the low or moderate level and the high level to ensure that those purposively-selected students were of mixed English oral communication ability and represented for the ability of the whole class. In addition, the two videos of each test task in the posttest from the same students in the pretest were analyzed in order to compare the qualitative findings of the pretest and posttest. All of these qualitative findings were then used to support the quantitative findings of the pretest and posttest as concluded in Table 18.

*Table 18: Students' Videos Selection from Each Test Task in the Pretest and Posttest*

Test Task	Video of student in the pretest	Average student's pretest scores <sup>a</sup>	Student's level of English oral communication ability in the pretest	Video of student in the posttest	Average student's posttest scores	Student's level of English oral communication ability in the posttest
Test Task 1	#student 1	2.83	high	#student 1	3.50	high
	#student 2	2.33	moderate	#student 2	2.83	high
Test Task 2	#student 3	2.50	moderate <sup>b</sup>	#student 3	2.83	high
	#student 6	1.50	low	#student 6	2.17	moderate

Test Task 3	#student 4	2.67	high	#student 4	3.17	high
	#student 5	2.00	moderate	#student 5	2.33	moderate

<sup>a</sup> Average students' scores were classified or interpreted into levels of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high

<sup>b</sup> There was none of the six purposively-selected students whose level of English oral communication ability was higher than 2.50 in test task 2 of the pretest.

To support the quantitative findings, the obtained data were then transcribed and undergone the *language use analysis* on six aspects of English oral communication ability as follows:

### 1. Range

The obtained data were analyzed and coded into the four main contents words which typically carried the meaning of a spoken utterance, consisting of nouns, verbs, adjectives, and adverbs to compare the evidence of the use of those four content words in the pretest and posttest.

In addition, the errors of word choice affecting the English oral communication ability in range were also examined. The errors were categorized into two main errors: 1) minor errors of word choice that referred to the errors of word choice that did not obscure or hardly obscured the meaning of utterances and 2) major errors of word choice that referred to the errors of word choice that obscured or sometimes obscured (depending on the contexts) the meaning of utterances. The findings were used to support the quantitative data previously reported.

### 2. Accuracy

The obtained data were analyzed and coded into types of errors according to the surface structure taxonomy of Dulay et al. (1982) consisting of four main types of errors: omission, addition, misformation, and misordering, and also based on linguistic description of errors or specific types of errors in spoken English of Phetongkam (2017) comprising verb form, word form, plural form, article, preposition, pronoun, subject-verb agreement, tense, question, negation, and severe errors (major errors).

Moreover, the utterances that were accounted for spoken language such as "Better?", "What problem?", or "In my company?" were not considered as errors in this study according to Brown (2003) who suggests that the grammar of spoken

language does not require complete sentences and “the persistent use of complete sentences will sound strange” (p. 4), but the grammar of spoken language needs the spoken English that sounds natural and appropriate in the context of conversations.

Concerning the errors, they were classified into two types of errors: minor and major errors. The minor errors referred to the errors that made the utterances comprehensible and did not change or almost did not change the meaning of utterances such as subject-verb agreement, omission of the articles “a, an, the” and could be analyzed and classified into four main types of errors and ten specific types of errors previously mentioned. On the other hand, major errors referred to the errors that made the utterances incomprehensible and changed the meaning of utterances such as incorrect numbers of persons and things, misordering the words causing incomprehension (e.g. “He high specifications the CPU needs of”) and could not be analyzed or classified into four main types of errors and ten specific types of errors due to their un-English forms and uncertainty of which type of errors was required for analysis, such as “er... you in life everyone your for everyone... .” The findings were used to support the quantitative data previously reported.

### 3. Fluency

According to CEFR, Council of Europe (2017), the “ability to construct utterances, despite hesitations and pauses (lower levels), ability to maintain a lengthy production or conversation, and ease and spontaneity of expression” (p. 142) are related to fluency, implying that the use of fillers and hesitation devices, the pauses, and the length of utterances are main factors affecting the English oral communication ability in fluency.

Therefore, in this study, the language use analysis was performed on the transcribed data to investigate and compare the evidence on the use of fillers and hesitation devices, as well as short and long pauses between the pretest and posttest. According to Oviatt (1994), short utterances include one to 12 words while long utterances contain more than 13 words. The findings were used to support the quantitative data previously reported.

### 4. Interaction

The obtained data were analyzed and coded into target communication strategies, namely, asking for clarification, asking for confirmation, and circumlocution

in the pretest and posttest. The other target communication strategy “fillers and hesitation devices” was already analyzed in “fluency.” The findings were used to support the quantitative data previously reported.

#### 5. Coherence

The content analysis was performed with the transcribed data to investigate and compare the evidence of the use of cohesive devices employed to connect separate ideas into a coherent whole of logical responding utterances appropriately in the pretest and posttest. The cohesive devices focused on in this study included 1) addition: “and” and “also,” 2) result: “so,” and “because,” 3) exemplification: “for example,” “such as,” and “like,” 4) sequencing: “first,” “second,” “next,” “then,” and “finally,” and 5) contrast: “but.” The findings were used to support the quantitative data previously reported.

#### 6. Pronunciation

The obtained data of the listening texts were analyzed and coded into types of errors in pronunciation on sounds, stress (word and sentence), and intonation found in the pretest and posttest. The findings were used to support the quantitative data previously reported.

With regard to pronunciation errors, they were classified into two types of errors: minor and major errors. The minor errors referred to the errors that did not affect comprehensibility of the utterances and did not change or almost did not change the meaning of the utterances in the context such as the word “problem” /'prɒbləm/ incorrectly pronounced as /'prɒbəm/ when the speakers reduced the cluster /-bl-/ to /-b-/ of the word or /prɒ'bləm/ when the speakers incorrectly shifted the stress on the syllable of the word and replaced /ə/ with /æ/ in the final syllable, and the yes-no question “Does it mean *unsuitable*?” with rising intonation (↑) incorrectly produced with falling intonation (↓). In contrast, the major errors referred to the errors that made the utterances incomprehensible and changed the meaning of utterances in the context such as the word “appropriate” /ə'prəʊpriət/ incorrectly pronounced as /ə'brəʊət/ when the speakers incorrectly replaced the cluster /-pr-/ with /-b-/ and deleted the cluster /-pr-/ in the third syllable and the interlocutor could not understand the messages or not even guess their meaning in the context.

### **Research Question 2:**

*What are the effects of PBBCSI on learner autonomy of undergraduate engineering students?*

Answers to Research Question 2.1 were obtained from the pre- and post-learner autonomy questionnaires (Pre-LAQ and Post-LAQ) in part 1 (the measurement of learner autonomy levels), observation checklists, student logs, and semi-structured interviews.

Consisting of sub three parts of part 1, the five-Likert scale Pre-LAQ and Post-LAQ provided the data regarding levels of learner autonomy in terms of personal responsibilities, personal capabilities, and independent learning in six aspects of learner autonomy as follows:

#### **Personal responsibilities**

This part investigated the learner autonomy levels of personal responsibilities according to the statements on six aspects of learner autonomy which included determining the goals and the objectives, defining the learning progressions, taking the initiative, making decisions on methods or techniques, communication strategies, and resources, monitoring task and project completion procedures, and evaluating the completed tasks and project.

#### **Personal capabilities**

This part examined the learner autonomy levels of personal capabilities according to the statements on six aspects of learner autonomy previously mentioned.

#### **Independent learning**

This part investigated the learner autonomy levels of independent learning from the instructor according to the statements on six aspects of learner autonomy previously stated.

The Wilcoxon signed-rank test was used to examine the score changes in the Pre-LAQ and Post-LAQ before and after the implementation of the PBBCSI. The effect size  $r$  of those two scores was calculated.

To gain more in-depth information on learner autonomy, the semi-structured interviews were administered with the twelve purposively-selected students. These twelve students included the six students whose videos of the pretest and posttest were also collected and analyzed to answer Research Question 1, the four focused students whose data were collected and analyzed for the student logs and observation checklists previously mentioned, and the other two students. All of these twelve students were willing to participate in the study and give the information on the interview questions. The obtained data were then transcribed, coded, and analyzed by the researcher.

**Research Question 3: What are students' opinions toward the PBBCSI?**

To answer Research Question 3, the results of the scores of part 2 of the post-learner autonomy questionnaire (Post-LAQ) scores after the implementation of the PBBCSI (opinions towards the PBBCSI model) were analyzed.

To triangulate the findings of the Post-LAQ, qualitative data were collected using semi-structured interviews of the twelve students who were purposively-selected for the interviews and analyzed as previously described. The data collection instruments and data analysis are summarized in Table 19 below.

*Table 19: Data Collection Instruments and Data Analysis*

<b>Research Questions</b>	<b>Instruments</b>	<b>Data analyses</b>
1. What are the effects of PBBCSI on English oral communication ability of undergraduate engineering students?	1. The English oral communication ability pretest and posttest	-Descriptive statistics -Wilcoxon signed-rank test -Language use analysis
2. What are the effects of PBBCSI on learner autonomy of undergraduate engineering students?	1. The pre-learner autonomy questionnaire (Pre-LAQ) and the post-learner autonomy questionnaire (Post-LAQ) in Part 1	-Descriptive statistics -Wilcoxon signed-rank test
	2. Semi-structured interviews	-Content analysis
	3) Observation checklists	-Descriptive statistics -Content analysis

	4) Student logs	-Content analysis
3. What are students' opinions toward the PBBCSI?	1. The post-learner autonomy questionnaire (Post-LAQ) in Part 2	-Descriptive statistics -Wilcoxon signed-rank test
	2. semi-structured interviews	-Content analysis





## CHAPTER IV

### RESULTS

This chapter reports the findings of the data collected from the English oral communication ability test, learner autonomy questionnaires, semi-structured interviews, student logs, and observation checklists. Data were analyzed and presented in relation to the three main research questions:

1. What are the effects of project-based blended learning with communication strategy instruction (PBBCSI) on English oral communication ability of undergraduate engineering students?
2. What are the effects of PBBCSI on learner autonomy of undergraduate engineering students?
3. What are students' opinions toward the PBBCSI?

#### 4.1 Results of Research Question 1

**Research Question 1:** *What are the effects of PBBCSI on English oral communication ability of undergraduate engineering students?*

**Hypothesis 1:** *After implementation of the PBBCSI model, there would be changes in the posttest mean score of English oral communication ability of undergraduate engineering students.*

This research question aimed to investigate the effects of the PBBCSI on English oral communication ability of undergraduate engineering students by assessing the pretest and posttest scores of the English oral communication ability test which consisted of three test tasks: Test Task 1 (Sales Task), Test Task 2 (Interview Task), and Test Task 3 (Presentation Task). These three test tasks were rated against the English oral communication ability test rubric adapted from CEFR (Council of Europe, 2017) on six aspects of English oral communication ability of range, accuracy, fluency, interaction, coherence, and pronunciation.

Due to the small sample size ( $n < 30$ ), the non-parametric tests were used for data analysis (Kuntz, 1997) on the results of this study. Therefore, the Wilcoxon signed

rank test was used to determine the difference between the pretest and posttest ranked scores. To interpret the students' levels of English oral communication ability, the total scores of all six aspects were calculated for the average scores and then run with the Wilcoxon signed rank test. Generally, the results of the non-parametric tests were reported by median scores (Field, 2009; Siegel, 1957). However, in some cases of the study results, the pretest and posttest median scores were equal, resulting in zero median differences and causing confusion on analyzing the results. Therefore, medians and means were also reported together to simply show if the posttest median scores increased. Nevertheless, the meaning or the interpretation of students' levels of English oral communication ability was based on the median scores.

To answer Research Question 1, the quantitative and qualitative results were analyzed and reported.

#### 4.1.1 Quantitative Results of Research Question 1

The obtained data from the pretest and posttest of the 3 test tasks were analyzed and displayed in Table 20.

*Table 20: Pretest and Posttest Scores of Overall Aspects of English Oral Communication Ability and Overall Test Tasks*

	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff <sup>b</sup>	Median Diff <sup>c</sup>	Z <sup>d</sup>	p	Effect Size r
Pretest	1.95	1.94	Moderate	.70	.62	-3.92	.00*	-.62
Posttest	2.56	2.56	High					

\*p < .05, n = 20

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high; <sup>b</sup> Mean Difference; <sup>c</sup> Median Difference; <sup>d</sup> Z refers to the test statistic value calculated by SPSS and its negative sign (-) of Z can be ignored for data analysis and interpretation (Field, 2009, p. 554), suggesting that the negative sign of the effect size r can be also neglected (p. 57).

The results in Table 20, indicated the students' significant improvement ( $Z = -3.92, p < .05$ ) in their English oral communication ability pretest and posttest scores of overall six aspects of English oral communication ability and three test tasks after the fifteen-week intervention with the improvement in their level of English oral communication ability from a moderate ( $Mdn_{pretest} = 1.94$ ) to a high level ( $Mdn_{posttest} = 2.56$ ).

The significant improvement was shown in an increase of the posttest median scores of .62 points. The effect size  $r$  of pretest and posttest median scores was -.62 or a large effect size (Cohen, 1988; Rosenthal, 1996). This indicated the significantly great improvement of undergraduate engineering students' English oral communication ability after their exposure to the PBBCSI. Therefore, Research Hypothesis 1 of Research Question 1, i.e. *After implementation of the PBBCSI, there would be changes in the posttest mean score of English oral communication ability of undergraduate engineering students* was accepted.

To determine if the PBBCSI significantly improved the pretest and posttest scores of each aspect of English oral communication ability of overall test tasks, another Wilcoxon signed rank test was conducted. The findings of each aspect of English oral communication ability were shown in Table 21.

*Table 21: Pretest and Posttest Scores of Each Aspect of English Oral Communication Ability of Overall Test Tasks*

English oral communication ability Aspect	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
Range <sub>pre</sub>	2.28	2.33	Moderate	.79	.67	-3.87	.00*	-.61
Range <sub>post</sub>	3.07	3.00	High					
Accuracy <sub>pre</sub>	1.82	1.83	Moderate	.53	.50	-3.56	.00*	-.56
Accuracy <sub>post</sub>	2.35	2.33	Moderate					
Fluency <sub>pre</sub>	1.83	1.67	Moderate	.75	.66	-3.62	.00*	-.57

Fluency <sub>post</sub>	2.58	2.33	Moderate					
Interact <sub>pre</sub>	1.98	2.00	Moderate	.70	.67	-3.36	.00*	-.53
Interact <sub>post</sub>	2.68	2.67	High					
Coherence <sub>pre</sub>	1.88	2.00	Moderate	.67	.67	-3.87	.00*	-.61
Coherence <sub>post</sub>	2.55	2.67	High					
Pronun <sub>pre</sub>	1.90	2.00	Moderate	.20	0	-2.51	.01*	-.40
Pronun <sub>post</sub>	2.10	2.00	Moderate					

\* $p < .05$ ,  $n = 20$

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high

The findings in Table 21 exhibited students' pretest and posttest scores of each aspect of English oral communication ability of overall test tasks. The findings indicated the students' significant improvement in all six aspects of English oral communication ability of range, accuracy, fluency, interaction, coherence, and pronunciation ( $Z = -3.87, -3.56, -3.62, -3.36, -3.87, \text{ and } -2.51$ , respectively,  $p < .05$ ) after the PBBCSI intervention with changes in students' levels of English oral communication ability from a moderate to a high level in 3 aspects; namely, range ( $Mdn_{pretest} = 2.33, Mdn_{posttest} = 3.00, r = -.61$ ), interaction ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 2.67, r = -.53$ ), and coherence ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 2.67, r = -.61$ ), indicating the large effect sizes of all the three aspects.

Despite the significant improvement, there were no changes in students' levels of English oral communication ability, staying at the moderate level in three aspects; namely, accuracy ( $Mdn_{pretest} = 1.83, Mdn_{posttest} = 2.33, r = -.56$ ), fluency ( $Mdn_{pretest} = 1.67, Mdn_{posttest} = 2.33, r = -.57$ ), both indicating the large effect sizes, and pronunciation ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 2.00, r = -.40$ ), indicating the moderate effect size.

Moreover, the effect sizes of the pretest and posttest median scores demonstrated the students' highest improvement in range and coherence, fluency,

accuracy, and interaction, respectively ( $r = -.61, -.61, -.57, -.56,$  and  $-.53,$  respectively), indicating the large effect sizes. However, their effect size on pronunciation showed the least improvement ( $r = -.40$ ), indicating the moderate effect size.

It could be concluded that after taking the PBBCSI, the students yielded significant improvement in all aspects of English oral communication ability, the three aspects of which demonstrated high development with changes in their levels of English oral communication ability in range, interaction, and coherence from the medium to the high level, and with no changes in their levels of English oral communication ability by staying at the moderate level in accuracy fluency, and pronunciation. It was also evident that the students had the highest development in range and coherence with changes in their levels of English oral communication ability from the medium to the high level, and the least in pronunciation with no change in the level of English oral communication ability by staying at the moderate level.

To determine if the PBBCSI significantly improved the pretest and posttest scores of each test task from overall aspects of English oral communication ability, another Wilcoxon signed rank test was carried out. The findings were displayed in Table 22.

*Table 22: Pretest and Posttest Scores of Each Test Task of Overall Aspects of English Oral Communication Ability*

Test Tasks	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
Test Task 1 pre	2.05	2.00	Moderate	.61	.83	-3.71	.00*	-.59
Test Task 1 post	2.66	2.83	High					
Test Task 2 pre	1.93	2.00	Moderate	.51	.42	-3.41	.00*	-.54
Test Task 2 post	2.44	2.42	Moderate					
Test Task 3 pre	1.87	1.83	Moderate	.70	.67	-3.93	.00*	-.62
Test Task 3 post	2.57	2.50	Moderate					

\* $p < .05, n = 20$

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high

The findings in Table 22 indicated the students' significant improvement on their pretest and posttest scores of Test Tasks 1, 2, and 3 ( $Z = -.71, -3.41, \text{ and } -3.93$ , respectively,  $p < .05$ ) of overall six aspects of English oral communication ability after the 15-week intervention with the change in their levels of English oral communication ability from the medium to the high level in Test Task 1 ( $Mdn_{\text{pretest}} = 2.00, Mdn_{\text{posttest}} = 2.83, r = -.59$ ), indicating the large effect size. Despite the significant improvement, there were no changes in their levels of English oral communication ability, staying at the moderate level in Test Task 3 ( $Mdn_{\text{pretest}} = 1.83, Mdn_{\text{posttest}} = 2.50, r = -.62$ ) and Test Task 2 ( $Mdn_{\text{pretest}} = 2.00, Mdn_{\text{posttest}} = 2.42, r = -.54$ ), both indicating the large effect sizes.

Moreover, the effect sizes of the pretest and posttest median scores demonstrated significantly high improvement of all the three test tasks by the students in which the highest improvement was found in Test Task 3 ( $r = -.62$ ) and Test Task 1 ( $r = -.59$ ), respectively, and the least improvement in Test Task 2 ( $r = -.54$ ), indicating the large effect sizes of all test tasks.

Overall, it could be stated that after taking the PBBCSI, the students had significant development of all test tasks of overall aspects of English oral communication ability in which Test Task 3 was found the highest improvement with no change in the level of English oral communication ability by staying at the moderate level, followed by Test Task 1 with the change in the level of English oral communication ability from the medium to the high level. Of all the test tasks with significant development, Test Task 2 was found the least improvement with no change in the level of English oral communication ability by staying at the moderate level.

To determine if the PBBCSI significantly improved the pretest and posttest scores of each aspect of English oral communication ability of each test task (Test Tasks 1, 2, and 3), Wilcoxon signed rank tests were carried out with each test task. The results were reported in Tables 23, 24, and 25, respectively.

*Table 23: Pretest and Posttest Scores of Each Aspect of English Oral Communication Ability of Test Task 1*

English oral communication ability Aspect	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
Range <sub>pre</sub>	2.55	2.50	Moderate	.50	.50	-2.89	.00*	-.46
Range <sub>post</sub>	3.05	3.00	High					
Accuracy <sub>pre</sub>	1.80	2.00	Moderate	.60	.50	-3.21	.00*	-.51
Accuracy <sub>post</sub>	2.40	2.50	Moderate					
Fluency <sub>pre</sub>	1.70	1.50	Low	.90	1.50	-3.26	.00*	-.52
Fluency <sub>post</sub>	2.60	3.00	High					
Interact <sub>pre</sub>	2.60	2.50	Moderate	.55	.50	-2.39	.02*	-.38
Interact <sub>post</sub>	3.15	3.00	High					
Coherence <sub>pre</sub>	1.85	2.00	Moderate	.70	1.00	-2.84	.01*	-.45
Coherence <sub>post</sub>	2.55	3.00	High					
Pronun <sub>pre</sub>	1.80	2.00	Moderate	.40	0	-2.53	.01*	-.40
Pronun <sub>post</sub>	2.20	2.00	Moderate					

\* $p < .05$ ,  $n = 20$

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high

The findings in Table 23 revealed students' pretest and posttest scores of each aspect of English oral communication ability of Test Task 1. The findings indicated the students' significant improvement in all six aspects of English oral communication ability or range, accuracy, fluency, interaction, coherence, and pronunciation ( $Z = -2.89, -3.21, -3.26, -2.39, -2.84, \text{ and } -2.53$ , respectively,  $p < .05$ ) after the PBBCSI intervention with changes in their levels of English oral communication ability, remarkably from the low to the high level ( $Mdn_{pretest} = 1.50, Mdn_{posttest} = 3.00, r = -.52$ ), indicating the large effect size, and from the moderate to the high level in 3 aspects; namely, range ( $Mdn_{pretest} = 2.50, Mdn_{posttest} = 3.00, r = -.56$ ), interaction

(Mdn<sub>pretest</sub> = 2.50, Mdn<sub>posttest</sub> = 3.00,  $r = -.38$ ), and coherence (Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 3.00,  $r = -.45$ ), indicating the moderate effect sizes of all the three aspects.

In spite of the significant improvement, there were no changes in students' levels of English oral communication ability, staying at the moderate level in two aspects; namely, accuracy (Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 2.50,  $r = -.51$ ), indicating the large effect size and pronunciation (Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 2.00,  $r = -.40$ ), indicating the moderate effect size.

Moreover, the effect sizes of the pretest and posttest median scores demonstrated the students' highest improvement in fluency, accuracy, range, coherence, and pronunciation, respectively ( $r = -.52, -.51, -.46, -.45, \text{ and } -.40$ , respectively), indicating the large effect sizes on fluency and accuracy, and the moderate effect sizes on range, coherence, and pronunciation. However, their effect size on interaction showed the least improvement ( $r = -.38$ ), indicating the moderate effect size.

It could be summarized that after taking the PBBCSI, the students had significant improvement in all aspects of English oral communication ability in Test Task 1 with increases in their levels of English oral communication ability from the moderate to the high level in range, interaction, and coherence, and remarkably from the low to the high level in fluency. They also showed significant improvement in accuracy and pronunciation with no increases in their levels of English oral communication ability by staying at the moderate level. It was also evident that the students yielded the highest development in fluency and the least in interaction.

To determine if the PBBCSI significantly improved the pretest and posttest scores of each aspect of English oral communication ability of Test Task 2, the Wilcoxon signed rank test was carried out. The results were reported in Table 24.



*Table 24: Pretest and Posttest Scores of Each Aspect of English Oral Communication Ability of Test Task 2*

English oral communication ability Aspect	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
Range <sub>pre</sub>	2.15	2.00	Moderate	.80	1.00	-3.77	.00*	-.60
Range <sub>post</sub>	2.95	3.00	High					
Accuracy <sub>pre</sub>	1.85	2.00	Moderate	.55	0	-3.05	.00*	-.48
Accuracy <sub>post</sub>	2.40	2.00	Moderate					
Fluency <sub>pre</sub>	1.95	2.00	Moderate	.65	0	-3.15	.00*	-.50
Fluency <sub>post</sub>	2.60	2.00	Moderate					
Interact <sub>pre</sub>	1.85	2.00	Moderate	.30	0	-1.26	.21	NA <sup>b</sup>
Interact <sub>post</sub>	2.15	2.00	Moderate					
Coherence <sub>pre</sub>	1.95	2.00	Moderate	.55	.50	-2.65	.01*	-.42
Coherence <sub>post</sub>	2.50	2.50	Moderate					
Pronun <sub>pre</sub>	1.85	2.00	Moderate	.20	0	-2.00	.05*	-.32
Pronun <sub>post</sub>	2.05	2.00	Moderate					

\* $p < .05$ ,  $n = 20$

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high; <sup>b</sup> NA refers to the effect size of the non-significant results that was not reported.

The findings in Table 24 revealed students' pretest and posttest scores of each aspect of English oral communication ability of Test Task 2. The findings indicated the students' significant improvement in five aspects of English oral communication ability in range, accuracy, fluency, coherence, and pronunciation ( $Z = -3.77, -3.05, -3.15, -2.65, \text{ and } -2.00$ , respectively,  $p < .05$ ) after the PBBCSI intervention with the change in their level of English oral communication ability from the moderate to the high level in range ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 3.00, r = -.60$ ), indicating the large effect size, and with no changes in levels of English oral communication ability, staying at the moderate level in four aspects; namely, accuracy ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 2.00, r = -.48$ ), fluency ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 2.00, r = -.50$ ), coherence

(Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 2.50,  $r = -.42$ ), and pronunciation (Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 2.00,  $r = -.32$ ), indicating the moderate effect sizes of all the four aspects.

However, the students did not show significant improvement in interaction ( $Z = -1.26$ ,  $p = .11$ ) at .05 significance level with no change in their level of English oral communication ability, staying at the moderate level (Mdn<sub>pretest</sub> = 2.00, Mdn<sub>posttest</sub> = 2.00).

Moreover, the effect sizes of the pretest and posttest median scores demonstrated the students' highest improvement in range, fluency, accuracy, and coherence, respectively ( $r = -.60$ ,  $-.50$ ,  $-.48$ , and  $-.42$ , respectively), indicating the large effect size for range and the moderate effect sizes on fluency, accuracy, and coherence. However, their effect size on pronunciation showed the least improvement ( $r = -.32$ ), indicating the moderate effect size.

It could be concluded that after taking the PBBCSI, the students yielded significant improvement in five aspects of English oral communication ability in range, fluency, accuracy, coherence, and pronunciation in Test Task 2 with the increase in their levels of English oral communication ability from the moderate to the high level in range and with no increases in their levels of English oral communication ability in accuracy, fluency, coherence, and pronunciation by staying at the moderate level. It was also evident that the students showed the highest improvement in range and the least in pronunciation. However, they did not yield significant improvement in interaction.

To determine if the PBBCSI significantly improved the pretest and posttest scores of each aspect of English oral communication ability of Test Task 3, the Wilcoxon signed rank test was conducted. The results were reported in Table 25.

*Table 25: Pretest and Posttest Scores of Each Aspect of English Oral Communication Ability of Test Task 3*

English oral communication ability Aspect	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
Range <sub>pre</sub>	2.15	2.00	Moderate	1.05	1.00	-3.67	.00*	-.58
Range <sub>post</sub>	3.20	3.00	High					
Accuracy <sub>pre</sub>	1.80	2.00	Moderate	.45	0	-3.00	.00*	-.47
Accuracy <sub>post</sub>	2.25	2.00	Moderate					
Fluency <sub>pre</sub>	1.85	2.00	Moderate	.70	.50	-2.89	.00*	-.46
Fluency <sub>post</sub>	2.55	2.50	Moderate					
Interact <sub>pre</sub>	1.50	1.00	Low	1.25	2.00	-3.37	.00*	-.53
Interact <sub>post</sub>	2.75	3.00	High					
Coherence <sub>pre</sub>	1.85	2.00	Moderate	.75	1.00	-3.27	.00*	-.52
Coherence <sub>post</sub>	2.60	3.00	High					
Pronun <sub>pre</sub>	2.05	2.00	Moderate	0	0	0	1.00	NA <sup>b</sup>
Pronun <sub>post</sub>	2.05	2.00	Moderate					

\* $p < .05$ ,  $n = 20$

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of English oral communication ability: 0.00-0.99 = very low, 1.00-1.50 = low, 1.51-2.50 = moderate, 2.51-3.50 = high, and 3.51-4.00 = very high; <sup>b</sup> NA refers to the effect size of the non-significant results that was not reported.

The findings in Table 25 demonstrated students' pretest and posttest scores of each aspect of English oral communication ability of Test Task 3. The findings indicated the students' significant improvement in five aspects of English oral communication ability in range, accuracy, fluency, interaction, and coherence ( $Z = -3.67, -3.00, -2.89, -3.37, \text{ and } -3.27$ , respectively,  $p < .05$ ) after the PBBCSI intervention with changes in their levels of English oral communication ability, remarkably from the low to the high level in interaction ( $Mdn_{pretest} = 1.00, Mdn_{posttest} = 3.00, r = -.53$ ), indicating the large effect size, and from the moderate to the high level in 2 aspects; namely, range ( $Mdn_{pretest} = 2.00, Mdn_{posttest} = 3.00, r = -.58$ ) and coherence ( $Mdn_{pretest}$

= 2.00,  $Mdn_{\text{posttest}} = 3.00$ ,  $r = -.52$ ), both indicating the large effect sizes; and with no changes in levels of English oral communication ability, staying at the moderate level in two aspects; namely, accuracy ( $Mdn_{\text{pretest}} = 2.00$ ,  $Mdn_{\text{posttest}} = 2.00$ ,  $r = -.47$ ) and fluency ( $Mdn_{\text{pretest}} = 2.00$ ,  $Mdn_{\text{posttest}} = 2.00$ ,  $r = -.46$ ), both indicating the moderate effect sizes.

However, the students did not yield significant improvement in pronunciation ( $Z = 0$ ,  $p = .50$ ) at .05 significance level.

Moreover, the effect sizes of the pretest and posttest median scores revealed the students' highest improvement in range, interaction, coherence, and accuracy, respectively ( $r = -.58$ ,  $-.53$ ,  $-.52$ , and  $-.47$ , respectively), indicating the large effect sizes on range, interaction, coherence, and the moderate effect size on accuracy. However, their effect size on fluency showed the least improvement ( $r = -.46$ ), indicating the moderate effect size.

It could be concluded that after taking the PBBCSI, the students yielded significant improvement in five aspects of English oral communication ability in range, accuracy, fluency, interaction, and coherence in Test Task 3 with increases in their levels of English oral communication ability, remarkably from the low to the high level in interaction, and from the moderate to the high level in range and coherence; and with no changes in levels of English oral communication ability in accuracy and fluency by staying at the moderate. It was also evident that the students showed the highest improvement in range and the least in fluency. However, they did not yield significant improvement in pronunciation.

#### **4.1.1 Summary of the Quantitative Results of Research Question 1**

Overall, the data from the English oral communication ability test (i.e. pretest and posttest) showed that there was the highly significant improvement in undergraduate engineering students' English oral communication ability of overall six aspects of English oral communication ability and three test tasks after the 15-week intervention with the increase in their level of English oral communication ability from the moderate to the high level.

Of each aspect of English oral communication ability of overall test tasks, the students also showed significant development with changes in their levels of English

oral communication ability in three aspects of range, interaction, and coherence with large effect sizes, and without changes in their levels of English oral communication ability, staying at a moderate level in three aspects of accuracy, fluency, and pronunciation with moderate effect sizes. They yielded the highest improvement in range with the increase in the level of English oral communication ability from the medium to the high level, and the least improvement in pronunciation with no increase in the level of English oral communication ability.

With respect to each test task of overall aspects of English oral communication ability, the students showed significant improvement of all test tasks. They demonstrated the highest improvement in Test Task 3 with no increase in the level of English oral communication ability by staying at the moderate level, followed by Test Task 1 with the increase in the level of English oral communication ability from the medium to the high level. However, they yielded the least improvement with no increase in the level of English oral communication ability by staying at the moderate level.

Of each aspect of English oral communication ability of Test Task 1, the students showed significant improvement in all aspects of English oral communication ability with the highest improvement in fluency and the least in interaction.

As for Test Task 2, the students yielded significant improvement in five aspects of English oral communication ability in range, fluency, accuracy, coherence, and pronunciation with the highest improvement in range and the least in pronunciation. However, they did not show significant improvement in interaction.

Regarding Test Task 3, the students showed significant improvement in five aspects of English oral communication ability in range, accuracy, fluency, interaction, and coherence with the highest improvement in range and the least in fluency. Nevertheless, they did not demonstrate significant improvement in pronunciation.

To give details and support the findings of the English oral communication ability pretest and posttest, the qualitative data were collected and analyzed by means of language use analysis on eighteen videos of the six purposively-selected students during taking the English oral communication ability pretest and posttest of three test tasks: Test Task 1 (Sales Task), Test Task 2 (Interview Task), and Test Task 3 (Presentation Task). These three test tasks were rated against the English oral

communication ability test rubric adapted from CEFR (Council of Europe, 2017) on six aspects of English oral communication ability of range, accuracy, fluency, interaction, coherence, and pronunciation.

The qualitative data were gathered and analyzed in order to examine the effects of the PBBCSI model on each aspect of English oral communication ability as follows.

### **The PBBCSI effects on English oral communication ability in range**

This aspect of the recent study refers to the extent to which the students can use a large amount of varied vocabulary to convey meaning and ideas appropriately for topics and situations.

Based on the quantitative findings previously discussed in the quantitative part, there was significant development in students' English oral communication ability pretest and posttest scores of overall test tasks (see Table 22) and each test task (see Tables 23-25) of range with the improvement in their level of English oral communication ability from the moderate to the high level.

To support the findings previously described, it was necessary to perform the language use analysis on the qualitative data in terms of the word items and the errors of word choice found in the pretest and posttest. To do so, the qualitative data of each test task were analyzed and coded according to the four categories of the content words: nouns, verbs, adjectives, and adverbs for their word items that were used to deliver the main utterances or messages in conversation.

Overall, the students used all of the four categories of content words, namely, nouns, verbs, adjectives, and adverbs in overall test tasks of the pretest and posttest. The students usually used varied word items of each content word that were mainly related to computer technology and computer engineering in response to different topics or functions of each test task (see Table 26). For example, test task 1 was about describing computer products or technology, and giving solutions for a problem; test task 2 was about discussing and exchanging opinions towards computer technology and computer engineering field; and test task 3 was about delivering the project presentation on selected issues.

In addition, the new word items of all of the four categories of content words were also found in each test task of the posttest, suggesting students' development on

English oral communication ability in range that they produced new word items in conversation in the posttest after taking the PBBCSI.

The examples of the frequent word items of each content word and each test task, and new word items are reported in Table 26. Moreover, the examples of frequent word items of each content word and each test task, and new word items in sentences are shown in Table 26.



Table 26: Examples of Frequent and New Word Items of Each Content Word and Each Test Task

Content Words	Test Tasks	Pretest	Posttest	New Word Items Increased in the Posttest
<b>1. Nouns</b>	Test Task 1	SSD, HDD, speed, defragment, capacity, computer, storage, terabyte(s), data, device	SSD, defragment, data, HDD, storage, capacity, device, speed, computer, terabyte(s)	sequence, component, improvement, mobility, optimization
	Test Task 2	life, Computer Engineering, programming, technology, money, software, car, coding, Internet	life, AI, technology, pet, smartphone, subject, time, example, innovation	chatbot, developer, loneliness, microcontroller, arithmetic
	Test Task 3	antivirus, software, computer, children, website, company, problem, content, program, information, project	program, problem, antivirus, software, children, website(s), customer(s), transaction(s), company, compensation	result(s), objective, solution, analysis, questionnaire
<b>2. Verbs</b>	Test Task 1	click, read, use, write, go, help, search, recommend, start, show	click, read, use, help, write, start, search, recommend, want, store	optimize, prefer, manage, carry, cause
	Test Task 2	think, use, make, want, create, like, call, control, apply, design, help, invent	help, think, make, use, create(s), like, want, connect, develop, invent	focus, mean, remind, detect, reduce
	Test Task 3	protect, buy, mean, think, call, scan, know, present, use, give	protect, use, want, buy, help, get, mean, give, need, block, see, think	develop, filter, harm, attack, respond
<b>3. Adjectives</b>	Test Task 1	faster, expensive, fast, lighter, slow, old, better, good, right, cheaper, new	faster, slow, good, expensive, lighter, better, easy, external (external storage device), fast, small	compatible, physical, large, wrong, correct
	Test Task 2	smart (= intelligent), better, easy, good, old, digital, best, convenient, daily, far, faster, favorite, important, juridical, light, right, ubiquitous, wireless	smart (= intelligent), light, embedded, comfortable, good, better, easier, best, easy, sure, tired	automatic, discrete, interesting, main, major
	Test Task 3	new, inappropriate, online, safe, small, free, good, appropriate, special, cheap, dangerous, low, real, serial, sexual	good, safe, appropriate, bad, online, cheap, inappropriate, new, free	last, lower, suitable, bloody, unreliable

n = 6



Table 26: Examples of Frequent and New Word Items of Each Content Word and Each Test Task (continued)

Content Words	Test Tasks	Pretest	Posttest	New Word Items Increased in the Posttest
4. Adverbs	Test Task 1	now, first, maybe, just, next, nowadays, really, today	maybe, first, anywhere, faster, anyway, also, now, nowadays, quickly, really	anywhere, also
	Test Task 2	now, easily, everyday, first, just, never, nowadays, recently, simply, sometimes	nowadays, maybe, just, now, today, easier, alone, also, everywhere	anymore, anywhere, besides, quickly, really
	Test Task 3	today, maybe, now, anymore, first, forward, later, really	today, first, next, overall, also, just, now, later, maybe	actually, sometimes, exactly, finally

n = 6



Table 27: Examples of Frequent and New Word Items in Sentences of Each Content Word and Each Test Task<sup>a</sup>

Content Words	Pretest	Posttest	New Word Items Increased in the Posttest
<b>Noun</b>			
<b>“SSD”</b> “Yes, <b>SSD</b> can store your data in your notebook.” (Student 2, pretest task 1)	<b>“SSD”</b> “When your <b>SSD</b> [is] slow... you can...(the student is working with the computer)... search “defragment” ... (Student 2, posttest task 1)	<b>“SSD”</b> “When your <b>SSD</b> [is] slow... you can...(the student is working with the computer)... search “defragment” ... (Student 2, posttest task 1)	<b>“sequence”</b> It’s function[s] to er... <b>sequence</b> ... <b>sequence</b> the data in your SSD... (Student 1, posttest task 1)
<b>“life”</b> “... it make[s] everyone[’s] to ..... <b>life</b> is better ...er it makes <b>life</b> for easy [easier].” (Student 6, pretest task 2)	<b>“life”</b> “Because the computer technology help[s] people ..... er help[s] people use ... help[s] people er ..... increase their <b>life</b> [quality].” (Student 6, pretest task 2)	<b>“life”</b> “Because the computer technology help[s] people ..... er help[s] people use ... help[s] people er ..... increase their <b>life</b> [quality].” (Student 6, pretest task 2)	<b>“chatbot”</b> “I develop [a] chatbot.” (Student 3, posttest task 2)
<b>“antivirus”</b> “Today, I will present [you] the new <b>antivirus</b> program.” (Student 5, pretest task 3)	<b>“program”</b> “Ah ... this program, this antivirus <b>program</b> can protect your children from the online transactions.” (Student 5, posttest task 3)	<b>“program”</b> “Ah ... this program, this antivirus <b>program</b> can protect your children from the online transactions.” (Student 5, posttest task 3)	<b>“result(s)”</b> “Next, er ..... <b>Results</b> and Analysis, ... er ... in question 1, the people ... the all ...(self-correction) <del>the</del> most people ... indicated the [program]..... er ... keep children from the information...” (Student 4, posttest task 3)
<b>“click”</b> “...and... <b>click</b> ...(the student is working with a computer) when I <b>click</b> , it will show...this.” (Student 1, pretest task 1)	<b>“click”</b> “...when you <b>click</b> on your device...name and you... <b>click</b> on “defragment.” (Student 1, posttest task 1)	<b>“click”</b> “...when you <b>click</b> on your device...name and you... <b>click</b> on “defragment.” (Student 1, posttest task 1)	<b>“optimize”</b> First, you have to start at [the] “start” button and search [the student is typing in the start box] “defragment,” and <b>optimize</b> [the] device.(Student 2, posttest task 1)

	<p><b>“think”</b> “... uhm I <b>think</b> I like ... ah ... computer network.” (Student 3, pretest task 2)</p>	<p><b>“help”</b> “Ah ... for example, it can <b>help</b> <del>they</del> [them] schedule their <del>life</del> [lives]...” (Student 3, posttest task 2)</p>	<p><b>“focus”</b> “Smartwatch ... er ... it can help ... can help people ..... <b>focus</b> ... <b>focus</b> in [on] their help [benefits]...” (Student 6, posttest task 2)</p>
	<p><b>“protect”</b> “... and this antivirus [software] has a ... system <del>about</del> [to] <b>protect</b> your children...” (Student 5, pretest task 3)</p>	<p><b>“protect”</b> “... the customer ... customer er... [people] <del>with</del> <del>use</del> ... <del>with-use</del> [using the] antivirus [program] <del>for</del> [to] er... <b>protect</b> [against] the hac... the hacker.” (Student 5, posttest task 3)</p>	<p><b>“develop”</b> “Er... They use more people and use more information to <b>develop</b> er... this software.” (Student 4, posttest task 3)</p>
Adjectives	<p><b>“faster”</b> “...it <del>calls</del> [is called] SSD...er...it <del>the</del> [is] <b>faster</b> and lighter than HDD.” (Student 1, pretest task 1)</p>	<p><b>“faster”</b> “Yeah...it [is] very <b>faster</b>...and...it <del>have</del> [has] a capacity [of] 1.5 terabytes.” (Student 1, posttest task 1)</p>	<p><b>“compatible”</b> “It [is] <b>compatible</b> with <del>the</del> Windows 8...” (Student 2, posttest task 1)</p>
	<p><b>“smart”</b> “...I can create an application from Ipad <del>#</del> [on] a <b>smart</b> button from my subject , Programming.” (Student 6, pretest task 2)</p>	<p><b>“smart”</b> “...if I had [the] budget and knowledge, I ... I want[ed] to ... er construct er ...[a] <b>smart</b> ... <b>smart</b> car.” (Student 6, posttest task 2)</p>	<p><b>“automatic”</b> “Ah... I [will] create er... <b>automatic</b> light[s].” (Student 3, posttest task 2)</p>
	<p><b>“new”</b> “This software has...<b>new</b> [specs] <del>from</del> [about]..... protect[ion] and... detection...<del>from</del> [with] virus.” (Student 4, pretest task 3)</p>	<p><b>“good”</b> “Er...if if our customer[s] have <b>good</b> malware anti virus software, er...they will have a good PCs or notebooks.” (Student 4, posttest task 3)</p>	<p><b>“last”</b> “...so ... the <b>last</b> feature of this [software] is er... it’s ..... it can er... <del>that</del> [be trialed] for 1 month ...” (Student 5, posttest task 3)</p>

<p><b>Adverbs</b></p>	<p><b>“now”</b> “Oh, but it’s... much cheaper <b>now</b>.” (Student 2, pretest task 1)</p>	<p><b>“maybe”</b> “Uhm... <b>maybe</b> you [are] looking for SSD.” (Student 2, posttest task 1)</p>	<p><b>“anywhere”</b> “... [for] SSD, you can... take [it] <b>anywhere</b>.” (Student 1, posttest task 1)</p>
<p><b>“now”</b> “Uhm... <b>now</b> I like Software Development.” (Student 6, pretest task 2)</p>	<p><b>“nowadays”</b> “Er... <b>nowadays</b> some people drink a lot of water...” (Student 6, posttest task 2)</p>	<p><b>“anymore”</b> “...you don’t have to...do your homework...you <del>don’t</del> [aren’t] tired <b>anymore</b>.” (Student 3, posttest task 2)</p>	<p><b>“anymore”</b> “...you don’t have to...do your homework...you <del>don’t</del> [aren’t] tired <b>anymore</b>.” (Student 3, posttest task 2)</p>
<p><b>“today”</b> “<b>Today</b> ... I ... I will introduce my new antivirus [software] <del>from</del> [of] my company to you.” (Student 5, pretest task 3)</p>	<p><b>“today”</b> “So, <b>today</b> I will present you to the er... the new antivirus [software] <del>from</del> [of] my company.” (Student 5, posttest task 3)</p>	<p><b>“actually”</b> So next er... the Avira is er...(self-correction) can er... scan er... or ..... filter ... can filter <del>it</del> er... [the] information <del>it</del> [on] the Internet ..... <b>actually</b> er... the er... harm[ful] er... or the secure [things] <del>for</del> [or] anything <del>if</del> you want.” (Student 4, posttest task 3)</p>	<p><b>“actually”</b> So next er... the Avira is er...(self-correction) can er... scan er... or ..... filter ... can filter <del>it</del> er... [the] information <del>it</del> [on] the Internet ..... <b>actually</b> er... the er... harm[ful] er... or the secure [things] <del>for</del> [or] anything <del>if</del> you want.” (Student 4, posttest task 3)</p>

According to Tables 26 and 27, they showed that the students mainly used nouns, verbs, and adjectives in relation to different topics or functions of each test task to carry their main utterances or messages in conversation and commonly used adverbs for modifying the actions such as “just” and “easily”, indicating the time such as “today” and “now”, and showing the sequence such as “first” and “next” in the utterances or messages to achieve their communication purposes in each test task of the pretest and posttest.

Furthermore, with reference to Tables 26 and 27, the new word items of all of the four types of content words (i.e. nouns, verbs, adjectives, and adverbs) were also found in all test tasks of the posttest. In addition, the students seemed to produce longer utterances in the posttest when they interacted in conversation, suggesting students’ development on English oral communication ability in range that they produced new word items with longer utterances in conversation in the posttest after taking the PBBCSI.

With respect to the errors of word choice that also affected the English oral communication ability in range, they were categorized into two main errors: *minor errors of word choice* that referred to the errors of word choice that did not obscure or hardly obscured the meaning of utterances and *major errors of word choice* that referred to the errors of word choice that obscured or sometimes obscured (depending on the contexts) the meaning of utterances.

The findings from the language use analysis revealed that the students seemed to produce the utterances with less minor errors of word choice and no major errors of word choice in the posttest rather than in the pretest, showing students’ improvement on English oral communication ability in range after taking the PBBCSI. The examples of the findings are reported in Table 28.

Table 28: Examples of Minor and Major Errors of Word Choice in the Pretest and Posttest

Pretest	Explanation
<b>Minor errors of word choice</b>	
“I’m sorry I forgot that how to er ... <u>improve</u> ( <i>solve</i> ) <sup>a</sup> this problem.” (Student 2, test task 1)	The student misselected the wrong word “improve” instead of the correct word “ <i>solve</i> .”
“Er student must not take a book ... <u>weight</u> ( <i>heavy</i> ) book.” (Student 6, test task 2)	The student misselected the wrong word “weight” instead of the correct word “ <i>heavy</i> .”
“Oh, I think that’s <u>like</u> ( <i>almost</i> ) a half ... half of [the] <sup>b</sup> budget.” (Student 4, test task 3)	The student misselected the wrong word “like” instead of the correct word “ <i>almost</i> .”
<b>Major errors of word choice</b>	
S6: “Er it is a <u>quality</u> ( <i>quantity</i> ) of water in everyday life [calculated] from [your] weight er ... you have Ipad I can create [an] application from Ipad in [a] smart button from my subject Programming.” Interviewer 2: Why do you want to create that thing or that innovation? S6: “Because because er everyone..... drink[s] water [a] little bit [ <del>from</del> ] everyday.” (Student 6, test task 2)	The student misselected the wrong word “quality” instead of the correct word “quantity” causing much misunderstanding. In the context of the conversation, the student tried to explain that she wanted to create the application on Ipad that was able to calculate the appropriate amount of water for user’s consumption a day, not the standard of water. Therefore, the correct word in this context was “quantity” not “quality.”
<b>Posttest</b>	
<b>Explanation</b>	
<b>Minor errors of word choice</b>	
“You can use this by ... <u>add</u> [ing] ( <i>connecting</i> ) this <del>on</del> [to] the USB port...” (Student 2, test task 1)	The student misselected the wrong word “add” instead of “connect” and also misused the wrong form of a base form of verb “add” instead of the correct form of present participle form of verb “ <i>connecting</i> .”
“I ... I <u>favorite</u> ( <i>like</i> ) er... computer network[ing].” (Student 6, test task 2)	The student misselected the wrong word “favorite” and also misused the wrong form of an adjective as a verb instead of the correct word “ <i>like</i> .”
“Yeah, as I say <u>above</u> ( <i>earlier</i> ).” (Student 5, test task 3)	The student misselected the wrong word “above” instead of the correct word “ <i>earlier</i> .”
<b>Major errors of word choice</b>	
-	

n = 6, <sup>a</sup> ( ) the parentheses refer to the correct word choice for the underlined incorrect word choice, <sup>b</sup> [ ] the square brackets refer to the components added or replaced with the incorrect ones to make the utterances grammatically correct, (...) refers to short pauses, and (.....) refers to long pauses.

According to Table 28, the students misselected the wrong words of word choice whose meanings were a bit close to the meanings of the correct words. However, those wrong words did not go together or collocate with other words in the context both in the pretest and posttest. Although the students misselected the wrong words of word choice, the interlocutors or listeners could guess the meaning of the utterance from the context.

In conclusion, the findings from the language analysis revealed that the students used all of the four categories of content words (i.e. nouns, verbs, adjectives, and adverbs) mainly related to computer technology and computer engineering in order to give responses to different topics or functions of all test tasks both in the pretest and posttest. In addition, the students produced longer utterances with new word items and less minor errors without major errors of word choice in the posttest, indicating students' development on English oral communication ability in range after taking the PBBCSI.

These qualitative findings confirmed the quantitative findings that the students had significant improvement in range of overall test tasks and each test task with changes in levels of English oral communication ability from the moderate level to the high level after taking the PBBCSI.

#### **The PBBCSI effects on English oral communication ability in accuracy**

This aspect of the recent study refers to the extent to which the students can employ grammatical structures and usage to construct the utterances for their communication.

Based on the quantitative findings previously discussed in the quantitative part, there was highly significant development in students' English oral communication ability pretest and posttest scores of overall test tasks (see Table 22) of accuracy. Despite having high development, there was no change in their level of English oral communication ability in the pretest and posttest, staying at the moderate level.

Therefore, it was essential to perform an error analysis on grammatical errors in the pretest and posttest to support the quantitative findings previously reported. To do so, the types of errors were analyzed and coded according to the linguistic descriptions of errors or ten specific types of errors in spoken English of Phetongkam (2017)

comprising verb form, word form, plural form, article, preposition, pronoun, subject-verb agreement, tense, question, and negation.

As for the errors, they were classified into two types of errors: minor and major errors. The *minor errors* referred to the errors that made the utterances still comprehensible and did not change or almost did not change the meaning of utterances such as subject-verb agreement, omission of the articles “a, an, the” and could be analyzed and classified into ten specific types of errors previously mentioned, whereas the *major errors* referred to the errors that made the utterances incomprehensible and changed the meaning of utterances such as incorrect numbers of persons and things, misordering the words causing incomprehension (e.g. “He high specifications the CPU needs of”) and could not be analyzed and classified into ten specific types of errors previously described due to their un-English forms and uncertainty of which type of errors was required for analysis, for example, “er...in everyone your in life for everyone...” (Student 6, pretest task 2).

The qualitative data of accuracy from the six purposively-selected students were analyzed and coded. Both in the pretest and posttest, the findings revealed that the students produced the utterances with the ten specific types of errors (i.e. verb form, word form, plural form, article, preposition, pronoun, subject-verb agreement, tense, question, and negation) as demonstrated in Table 29.



Table 29: Examples of Errors Based on Linguistic Descriptions: Specific Types of Errors<sup>a</sup>

Pretest	Explanation
<p>1. word form            Incorrect form: ...it's a storage *[ ]<sup>b</sup> that (is)<sup>c</sup> better than HDD ...            Correct form: ...it's a storage [device] that (is) better than HDD ...            (Student 2, pretest task 1)</p>	<p>Word form omission            The student omitted the word form of the noun "device" after the word "storage" to construct the correct form of the compound noun "storage device."</p>
<p>2. Article            Incorrect form: ...can make me er construct *[ ] Internet of Thing(s) ...            Correct form: ...can make me er construct [the] Internet of Thing(s) ...            (Student 3, pretest task 2)</p>	<p>Article omission            The student omitted the article "the" in front of the noun phrase "Internet of Thing[s]."</p>
<p>3. Preposition            Incorrect form: Because because er everyone..... drink(s) drink(s) water a little bit *<b>from</b> every day.            Correct form: Because because er everyone..... drink(s) drink(s) water a little bit <b>from</b> every day.            (Student 3, pretest task 2)</p>	<p>Preposition addition            The student inserted the unnecessary preposition "from" before the adverb phrase of frequency "every day."</p>
<p>4. Verb form            Incorrect form: ...some feature(s) *[ ] maybe worse...            Correct form: ...some feature(s) [are] maybe worse...            (Student 4, pretest task 3)</p>	<p>Verb form omission            The student omitted the verb to be "are" that is a verbal and compulsory component of the statement preceding the adjective phrase "maybe worse."</p>
<p>5. Plural form            Incorrect form: This antivirus (software) er... has er (a) free trial for new *<b>customer</b>[ ] or new *<b>client</b>[ ].            Correct form: This antivirus (software) er... has er (a) free trial for new <b>customer</b>[s] or new <b>client</b>[s].            (Student 5, pretest task 3)</p>	<p>Plural form omission            The student omitted the plural morpheme "s" after the countable nouns "customer" and "client," to construct the correct form of plural countable nouns "customers" and "clients," respectively.</p>

<p>6. Pronoun Incorrect form: ...for example *[ ] is <del>a</del> (an) Ipad for (the) student(s) can use it for (a) lecture. Correct form: ...for example [it] is <del>a</del> (an) Ipad for (the) student(s) can use it for (a) lecture. (Student 6, pretest task 2)</p>	<p>Pronoun omission The pronoun “it” functioning as the subject was ungrammatically omitted.</p>
<p>7. Subject-verb agreement Incorrect form: This project *have (the) budget of two millions... Correct form: This project <del>have</del> has (the) budget of two millions... (Student 4, pretest task 3)</p>	<p>Subject-verb agreement misformation The student used the incorrect form of the main verb “have” in the sentence that is not in agreement with the singular subject “This project” that the correct form of the main verb “has” is required.</p>
<p>8. Tense Incorrect form: Ah in my (last) project before, we *have a group of 3 persons. Correct form: Ah in my (last) project before, we <del>have</del> [had] a group of 3 persons. (Student 3, pretest task 2)</p>	<p>Tense misformation The student used the incorrect form of the main verb “have” in the present tense in place of the correct form of the main verb “had” that is required to indicate the past tense in the context.</p>
<p>9. Question Incorrect form: What *[ ] you looking for? Correct form: What [are] you looking for? (Student 1, pretest task 1)</p>	<p>Question omission To construct the correct form of wh-question, the auxiliary verb “are” is grammatically put between the wh-word “What” and the subject “you.” However, the student ungrammatically produced the wh-question without putting the auxiliary verb “are” to do so. (Thing et al., 2010, p.56)</p>
<p>10. Negation Incorrect form: Hackers can access your computer if you *isn’t care enough. Correct form: Hackers can access your computer if you <del>isn’t</del> [don’t] care enough. (Student 4, pretest task 3)</p>	<p>Negation misformation To grammatically construct the negative form of the main verb “care,” the auxiliary negative form of the main verb in the present tense “don’t” is needed to agree with the subject “You.” However, the student ungrammatically used the incorrect form of the auxiliary negative form of the main verb “isn’t” that does not agree with the subject, either.</p>

n = 6, \* refers to the ungrammatical components of the utterances, <sup>a</sup> The examples of errors were selected according to students’ frequent types of errors resulting in specific types of errors shown above, <sup>b</sup> [ ] the bold square brackets refer to the target components added or replaced with the incorrect ones to make the utterances grammatically correct, <sup>c</sup> ( ) the parentheses refer to the common components added or replaced with the incorrect ones to make the utterances grammatically correct, (...) refers to short pauses, and (.....) refers to long pauses.

Table 29: Examples of Errors Based on Linguistic Descriptions: Specific Types of Errors <sup>a</sup> (continued)

Posttest	Explanation
1. word form Incorrect form: Er hard disk is ... internal storage *[ ]... Correct form: Er (this) hard disk is ...(an) <sup>c</sup> internal storage [ <b>device</b> ] <sup>b</sup> ... (Student 2, posttest task 1)	Word form omission The student omitted the word form of the noun “device” after the word “storage” to construct the correct form of the compound noun “storage device.”
2. Article Incorrect form: Er hard disk is ... *[ ] internal storage ... Correct form: Er (this) hard disk is ... [ <b>an</b> ] internal storage (device)... (Student 2, posttest task 1)	Article omission The student omitted the article “an” in front of the noun phrase “internal storage [device].”
3. Preposition Incorrect form: ...it can filter <b>*for</b> this <b>*for</b> information or data... Correct form: ...it can filter <b>for</b> this <b>for</b> information or data... (Student 5, posttest task 3)	Preposition addition The student inserted the nonessential words of the preposition “for” before and in between the noun phrase “this information or data” where it does not require.
4. Verb form Incorrect form: ... smartphone ... can help their *[ ] message... Correct form: ... (this) smartphone ... can help <del>the#</del> (them) [ <b>send</b> ] message... (Student 6, posttest task 2)	Verb form omission The student omitted the main verb “send” in the statement. However, the meaning of the statement was comprehensible for the interlocutor by using the context in conversation to help her interpret the statement with the missing main verb.
5. Plural form Incorrect form: ...if you storage er a lot of data ... example <b>*picture</b> [ ], videos, or anything... Correct form: ...if you <del>storage</del> (store) er a lot of data ... (for) example <b>picture[s]</b> , videos, or anything... (Student 2, posttest task 1)	Plural form omission The student omitted the plural morpheme “s” after the countable noun “picture” to construct the correct form of the plural countable noun “pictures.”
6. Pronoun Incorrect form: Er I’m sorry I cannot find this, but you can defragment... to the drive that slow and optimize <b>*them</b> .	Pronoun misformation The student ungrammatically used the wrong form of the object pronoun “them” to refer to the singular countable noun “drive” previously stated.

<p>Correct form: Er I'm sorry I cannot find this, but you can defragment... <del>te</del> the drive that (is) slow and optimize <b>them [it]</b>. (Student 2, posttest task 1)</p>	
<p>7. Subject-verb agreement Incorrect form: ...it <b>*support</b>[ ] on Windows 7, Windows 8 and Windows 10. Correct form: ...it support[s] <del>o#</del> Windows 7, Windows 8 and Windows 10. (Student 2, posttest task 1)</p>	<p>Subject-verb agreement misformation The student used the incorrect form of the main verb "support" in the sentence that is not in agreement with the singular subject pronoun "it." Grammatically, the correct form of the main verb with the present tense singular morpheme "s" to become "supports" is required in order to agree with the singular subject pronoun.</p>
<p>8. Tense Incorrect form: Yeah, as I <b>*say</b> above ... Correct form: Yeah, as I <b>said</b> <del>above</del> (earlier)... (Student 5, posttest task 3)</p>	<p>Tense misformation The student used the incorrect form of the main verb "say" in the present tense in place of the correct form of the main verb "said" that is required to indicate the past tense in the context.</p>
<p>9. Question Incorrect form: ...what it *[ ] look like? Correct form: ...what <b>[does]</b> it look like? (Student 1, posttest task 1)</p>	<p>Question omission To grammatically construct the correct form of wh-question, the auxiliary verb "does" is put between the wh-word "what" and the subject "it." However, the student ungrammatically produced the wh-question without putting the auxiliary verb "does" to do so.</p>
<p>10. Negation Incorrect form: Uhm...er this now my antivirus is er... <b>*have not</b> this feature... Correct form: Uhm...er <del>this</del> now my antivirus <b>is</b> er... <b>have-not [doesn't have]</b> this feature... (Student 5, posttest task 3)</p>	<p>Negation misformation To grammatically construct the negative form of the main verb "have," the auxiliary negative form of the main verb in the present tense "doesn't" is needed to agree with the subject-functioning uncountable noun "antivirus [software]." However, the student used the incorrect form of the auxiliary negative form of the main verb "have not."</p>

n = 6, \* refers to the ungrammatical components of the utterances, <sup>a</sup> The examples of errors were selected according to students' frequent types of errors resulting in specific types of errors shown above, <sup>b</sup> [ ] the bold square brackets refer to the target components added or replaced with the incorrect ones to make the utterances grammatically correct, <sup>c</sup> ( ) the parentheses refer to the common components added or replaced with the incorrect ones to make the utterances grammatically correct, (...) refers to short pauses, and (.....) refers to long pauses.

According to Table 29, the findings showed that the students faced the problems with grammatical features on all of the specific types of errors. These errors were considered the minor errors that were still comprehensible and did not change or almost did not change the meaning of utterances. In addition, students' errors occurred when the specific forms of the sentences or utterances were used ungrammatically. Both in the pretest and posttest, the students produced the utterances with all of the specific types of errors on word form, article, preposition, verb form, plural form, pronoun, subject-verb agreement, tense, question, and negation by means of omission, misformation, addition, and misordering on those forms.

Concerning the major errors that made the utterances incomprehensible and changed the meaning of utterances, the findings from the language use analysis indicated the students had very few problems with this type of errors, suggesting that they had more problems with minor errors than major ones. They produced one major error in the pretest "...because computer er ... in everyone your in life for everyone ..." (Student 6, pretest task 2) that caused uncertainty of which type of errors was required for analysis, and the other one in the posttest "My invent ... er ... have how much how money?" (Student 6, posttest task 2) that the interviewer did not understand the student's question and might be confused if the student did not understand the question, so the interviewer asked the question again.

To summarize, the students had more problems with the minor errors than the major ones both in the pretest and posttest. As for the minor errors, the student faced the grammatical problems with all of the ten specific types of errors based on the linguistic descriptions both in the pretest and posttest, namely, word form, verb form, article, preposition, pronoun, subject-verb agreement, plural form, question, tense, and negation.

Therefore, the qualitative findings indicated that the students had grammatical errors when producing utterances both in the pretest and posttest previously reported that could affect their English oral communication ability in accuracy despite of having significant development on this aspect. However, there was no improvement in their level of English oral communication ability, remaining at the moderate level, possibly due to many errors that the students faced caused their difficulties to achieve the higher level.

### **The PBBCSI effects on English oral communication ability in fluency**

This aspect of the recent study refers to the extent to which the students can produce utterances with smooth and effortless flow of language, and short pauses or hesitations might occur.

Based on the quantitative findings in Table 22, there was highly significant development on students' pretest and posttest scores of fluency. However, there was no improvement in students' level of English oral communication ability, staying at the moderate level.

With reference to CEFR, Council of Europe (2017, p.142), "ability to construct utterances, despite hesitations and pauses (lower levels), ability to maintain a lengthy production or conversation, and ease and spontaneity of expression" are related to fluency, implying that the use of fillers and hesitation devices, the pauses, and the length of utterances are main factors affecting the English oral communication ability in fluency.

Therefore, the language use analysis was performed with the transcribed data to investigate the evidence on the use of fillers and hesitation devices, the length of the utterances, and short and long pauses in the pretest and posttest.

The findings showed that the students used "er", "ah", "uhm", and "well" as the fillers and hesitation devices both in the pretest and posttest, and the new one "actually" only in the posttest in order to fill pauses and gain thinking time for continuing further utterances in conversation. The examples of the use of fillers and hesitation devices, and short and long pauses in the pretest and posttest are shown in Table 30.

Table 30: Examples of the Use of Fillers and Hesitation Devices, and Short and Long Pauses in the Pretest and Posttest

Fillers and hesitation devices	Pretest
“er”	“... <b>er</b> .....it’s er faster and lighter than HHD.” (Student 1, pretest task 1)
“ah”	“Student ... not ..... <b>ah</b> ..... student must not take a book ... weight book” (Student 3, pretest task 2)
“uhm”	“ <b>Uhm</b> .....[the] content about er .....criminal[s].” (Student 5, pretest task 3)
“well”	“ <b>Well</b> ... Yeah we have ...” (Student 4, pretest task 3)
<b>Posttest</b>	
“er”	“Ok... <b>er</b> looking for something for your notebook?” (Student 1, posttest task 1)
“ah”	“ <b>Ah</b> ... [for] example, it can help <del>they</del> [them] schedule their <del>life</del> [lives].” (Student 3, posttest task 2)
“uhm”	“ <b>Uhm</b> ..... in this case er... if the customer use[s] it ...” (Student 5, posttest 3)
“well”	“ <b>Well</b> ... smartphone, it can help people talk and video call ... when it er ... they far from home.” (Student 4, posttest task 3)
“actually”	“ <b>Actually</b> er... the er... harm er... or the secure for anything if you want ... so ... the last feature of this is er... it’s ..... It can er... trial for 1 month ...” (Student 5, test task 3)

<sup>a</sup> [ ] the bold square brackets refer to the words added or replaced with the incorrect words to make the utterances grammatically correct.

Table 30 shows that the students used the non-lexical words “er”, “ah”, “uhm” and the lexical word “well” as the fillers and hesitation devices to fill short and long pauses, and gain more thinking time to further their utterances in conversation both in the pretest and posttest. In addition, they used the new lexical word “actually” but only once in the posttest. It seemed that the students used more non-lexical words “er”,

“ah”, and “uhm” than the lexical words “well” and “actually” in the pretest and posttest. This might be due to that these non-lexical words containing one syllable were easy to use and familiar to the students, so they naturally used them in the pretest and posttest more than the lexical words.

In addition, according to the findings of Table 30, the students seemed to produce more fillers and hesitation devices in the posttest than in the pretest in longer utterances to respond to the questions in the posttest.

Moreover, the findings indicated that the student produced longer utterances with more fillers and hesitation devices, but less short and long pauses in the posttest than in the pretest to gain thinking time for continuing further utterances in conversation.

Interestingly, it also found that the students used the fillers and hesitation devices to fill pauses in order to self-correct or restructure the problem utterances both in the pretest “**Student ... not** ..... ah ..... student must not take a book ... weight book” (Student 3, pretest task 2) and posttest “Well... smartphone, it can help people talk and video call ... when **it** er ... they far from home” (Student 4, posttest task 3).

It could be seen that the students noticed their own errors “**Student ... not**” and “**it**”, so they used “ah” and “er” to fill long and short pauses in the pretest and posttest to gain more thinking time and correct the errors to become “weight” (however, it should be corrected to become “heavy”) and “they,” respectively.

The aforementioned findings suggested that the students used fillers and hesitation devices to fill pauses and gain more thinking time to continue further information, and also used them to gain more thinking time to self-correct the problem utterances both in the pretest and posttest. Furthermore, they used more fillers and hesitation devices in the posttest because of the longer utterances. Also, they used less short and long pauses in order to obtain thinking time to further longer utterances in conversation, resulting in more smooth and effortless flow of language in conversation in the posttest rather than the pretest. These findings suggested that the students had better English oral communication ability in fluency in the posttest than the pretest.

To conclude, the students showed their significant improvement on English oral communication ability in fluency since they produced longer utterances or information



with more fillers and hesitation devices (such as “er,” “ah,” “uhm,” “well,” and the new one “actually”) in the posttest with less short and long pauses to gain more thinking time for continuing further utterances, thereby contributing to more smooth and effortless flow of longer utterances in communication in the posttest than the pretest. The findings were consistent with the quantitative results that the students had significant improvement in fluency. However, their improvement in fluency as previously discussed was not much enough to achieve the higher level of English oral communication ability which still stayed at the moderate level.

### **The PBBCSI effects on English oral communication ability in interaction**

“Interaction” of the recent study refers to the extent to which the students can use a large number of varied expressions to interact in a conversation with appropriate turn-taking in order to initiate the topics and/or ideas, and take the turns in the conversation. The expressions of this study refer to words, phrases, and sentences related to the four communication strategies taught in the PBBCSI, namely, asking for clarification, asking for confirmation, circumlocution, and the use of fillers and hesitation devices, mainly aimed at dealing with communication problems for interacting with interlocutors in conversation in the pretest and posttest.

According to the quantitative results in Table 22, there was highly significant development on students’ pretest and posttest scores of interaction with the change in their level of English oral communication ability in interaction from the medium to the high level.

The language use analysis was carried out with the transcribed data of the six purposively-selected students to investigate the evidence on the effects of those communication strategies on the English oral communication ability in interaction.

Both in the pretest and posttest, the findings found that the students used only three communication strategies, namely, asking for clarification, asking for confirmation, and the use of fillers and hesitation devices according to their functions that would be discussed in the following sections for dealing with the communication problems in the aspects of English oral communication ability (i.e. range, accuracy, fluency, coherence, and pronunciation, excluding interaction because it was the aspect being discussed, but the students did not use circumlocution to do so, possibly due to

the fact that the students were studying for computer engineering, they were accordingly familiar with technical terms in their field and related ones, thus they used the technical terms fluently with no needs to use the circumlocution strategy for describing the terms in conversation.

Noted that since the results of the use of fillers and hesitation devices were reported and discussed previously, only their necessary information was reported and discussed in the aspect of interaction.

### **Asking for clarification strategy**

With respect to asking for clarification strategy, the students (the interlocutors) mostly used them to ask the speakers (the interviewers) to explain the *target problem utterances* (the single underline used for marking the target problem utterances) previously requested or asked by either the speakers or the students, and the *problem utterances related to the aspects of English oral communication ability* (the double underlines used for marking the problem utterances related to the aspects of English oral communication ability) in the pretest and posttest as in the examples below:

### **In the pretest**

Example 1: the problem utterances related to the aspect of range

Interviewer 2: Okay Besides the innovation that you talk about Ipad, besides Ipad, what innovation would you invent if you had budget and knowledge?

Student 6: **What is [the meaning of] “budget”?**

Interviewer 2: Money.

Student 6: Um ... could you tell me for answer again?

Interviewer 2: Question, right?

Student 6: Oh I'm sorry.

(Student 6, pretest task 2)

Example 2: the problem utterances related to the aspect of range

Interviewer 3: Can this product protect kids from inappropriate content?

Student 5: Appropriate.

Interviewer 3: Inappropriate.

Student 5: **Um what [does] it mean?**

Interviewer 3: Er... it means “not good, not suitable for the kids.”

So can this product protect kids from inappropriate content?

Student 5: ..... Er... Yes, it ~~will~~ can be, ~~it will~~ can be protect [kids] in the future.

(Student 5, pretest task 3)

As shown in Examples 1 and 2, Students 6 and 5, respectively used the asking for clarification strategy in the pretest by asking the interviewers different questions “What is [the meaning of] budget?” (Example 1, pretest task 2) and “Um what [does] it mean?” (Example 2, pretest task 3) to clarify more information when they faced the problem utterances about the meanings of the problem words “budget” (Example 1) and “inappropriate” (Example 2), suggesting that they made choices of clarifying questions themselves, mainly related to the word meanings considered the English oral communication ability in range, and selected the appropriate choice of clarifying questions to deal with their different problem utterances in conversation in order to achieve their purposes in communication of different situations.

### **In the posttest**

In the posttest, the students (the interlocutors) used the asking for clarification strategy like the pretest by asking the speakers (the interviewers) different questions as demonstrated in Examples 3 and 4 below.

#### **Example 3: the target problem utterances**

Student 1: Er... Hello my name is Chaninat Boonsiri...I’m from computer engineering [department]...er what do you want ~~from me~~?

Interviewer 1: Yes, I’m looking for something for my notebook ok.

Student 1: Ok...er looking for something for your notebook?

*(asking for confirmation with rising intonation—spoken form of language)*

Interviewer 1: Yes.

Student 1: **Er...what about...what [does] it look like?**

*(asking for clarification)*

Interviewer 1: Yeah, I'm looking for a device that can store a lot of data from my notebook.

(Student 1, posttest task 1)

Example 4: the problem utterances related to the aspect of range and the target problem utterances

Interviewer 2: I see. That's good. And for the last question, er besides the innovation you give examples, er what innovation would you invent if you had budget and knowledge?

Student 6: **What is [the] mean[ing of] er "invent"?**

*(asking for clarification)*

Interviewer 2: "Invent", right?

Student 6: Yes.

Interviewer 2: For the word "invent" it means "create or do". Create or do.

Student 6: You mean ... my invent[ion]?

*(asking for confirmation with rising intonation—spoken form of language)*

Interviewer 2: Yes.

Student 6: **My invent[ion] ... er ... ~~have how much money~~ [is the budget]?**

*(asking for clarification)*

Interviewer 2: Oh, I ... I mean so what, what innovation or what things would you create if you had budget and knowledge to do?

Student 6: Oh, I ... think I ... want to ... if I had budget and knowledge I ... I want to ... er construct er ... smart ... smart car.

(Student 6, posttest task 2)

As shown in Examples 3 and 4, Students 1 and 6, respectively employed the asking for clarification strategy in the posttest by asking the interviewers different wh-questions "Er...what about...what [does] it look like?" (Example 3, posttest task 1),

“What is [the] mean[ing of] er “invent”?”, and “My invent[ion] ... er ... ~~have~~ how much ~~how money~~ [is the budget]?” (Example 4, posttest task 2) to clarify more information when they faced the target problem utterances about “something for my notebook” (Example 3), “my invention” (Example 4), and the problem utterances about the meanings of the problem word “invent” (Example 4), suggesting that they made more different choices (or forms) of clarifying questions themselves when they encountered *the target problem utterances* and *the problem utterances related to the word meanings considered the English oral communication ability in range* in the posttest than in the pretest, and selected the appropriate choice (or form) of clarifying questions to deal with their different problem utterances in conversation in order to achieve their purposes in communication of different situations. In contrast with the posttest, the students employed limited choices of the clarifying questions in the pretest, mainly when they faced the problem utterances related to the word meanings considered the English oral communication ability in range.

As the students made more different choices of clarifying questions to deal with their different problem utterances in the posttest, the students (the interlocutors) had opportunities to take more turns to interact with the speakers (the interviewers) in the posttest than in the pretest, suggesting students’ development on English oral communication ability in interaction after taking the PBBCSI.

#### **Asking for confirmation strategy**

As for asking for confirmation strategy, the students (the interlocutors) employed this strategy to ask the speakers (the interviewers) to check if they (the interviewers) understood what the students said (e.g. Right?, OK?) or ask the speakers by repeating what the speakers said to confirm what they heard or understood was correct (e.g. You mean..., Do you mean ...?) about the target problem utterances previously produced and the problem utterances related to the aspects of English oral communication ability in the pretest and posttest as in the examples below:

### In the pretest

#### Example 5: the target problem utterances

Interviewer 1: But I don't like SSD. I like the old one....HHHHH...something... I can't remember. But I think it's better. The old one is better.

Student 2: Better? Er... **Did you mean ~~that~~ HDD?**

Interviewer 1: Um Right. What do you think? Why do most people prefer to use this SSD rather than HDD?

Student 2: Because the SSD is faster and lighter and it's er ... it's better because it's faster.

(Student 2, pretest task 1)

#### Example 6: the target problem utterances related to the aspect of range

Interviewer 3: Um, and for the customer for the customer, can they get any compensation when their transactions have problems?

Student 5: **Compensation?**  
(asking for confirmation with rising intonation)

Interviewer 3: Yes.

Student 5: What [does] it mean?  
(asking for clarification)

Interviewer 3: It means the money you pay for the customers when they have problems.

(Student 5, pretest task 3)

As demonstrated in Examples 5 and 6, students 2 and 5, respectively used the asking for confirmation strategy in the pretest by asking the interviewers the yes-no question “Er... Did you mean ~~that~~ HDD?” (Example 5, pretest task 1) and the spoken form of language with rising intonation “Compensation?” (Example 6, pretest task 3) to confirm what they understood and heard about the target problem utterances “The old one is better” and the problem utterances related to the aspect of range “Compensation?,” respectively, was correct, suggesting that they made choices of confirming questions themselves, mainly making sure what the interlocutor understood or heard was correct or so-called confirmation check and selected the appropriate

choice of confirming questions to deal with their problem utterances in conversation to accomplish their purposes in communication of different situations.

### **In the posttest**

In the posttest, the students (the interlocutors) used the asking for confirmation strategy by asking the speakers (the interviewers) the yes-no questions and spoken forms of language with rising intonation as previously demonstrated in Examples 4 and 7.

#### Example 4: the problem utterances related to the aspect of range

Interviewer 2: I see. That's good. And for the last question, er besides the innovation you give examples, er what innovation would you invent if you had budget and knowledge?

Student 6: What is [the] mean[ing of] er "invent"?  
(asking for clarification)

Interviewer 2: "Invent", right?

Student 6: Yes.

Interviewer 2: For the word "invent" it means "create or do". Create or do.

Student 6: **You mean ... my invent[ion]?**  
(asking for confirmation with rising intonation—spoken form of language)

Interviewer 2: Yes.

(Student 6, posttest task 2)

#### Example 7: the target problem utterances

Interviewer 1: And once I use it and it becomes slow, right! Do you have any recommendations for this serious flaw?

Student 1: Um...Yeah you can...you can fix it by...[this way] you can go to "start".

Interviewer 1: Yes.

Student 1: And then you type er "defragment" ... disk defragment your hard drive...ok and click...[the student is clicking on the screen]. And then

you if you connect er device ~~on~~ to computer, you will see the name of your device then you...ah ah I...[the student is clicking on the screen] when you click on your device... name and you click on “defragment disk.”

Interviewer 1: Ah, I see.

Student 1: Yes...it will ~~generate~~ [work] and it will fix it by itself so it can fix that when you have a ~~problem slow~~ [slow problem] or ~~something~~ others, it will [be] faster.

Interviewer 1: Ok.

Student 1: **Can you remember?**  
(*asking for confirmation*)

Interviewer 1: Yeah, er thank you very much for your information.

(Student 1, posttest task 1)

As shown in Examples 4 and 7, like the pretest, Students 6 and 1, respectively used the asking for confirmation strategy in the posttest by asking the interviewers the spoken form of language with rising intonation “You mean ... my invent[ion]?” (Example 4, posttest task 2) and the yes-no question “Can you remember?” (Example 7, posttest task 1) to make confirmation in 2 ways: 1) to confirm what Student 6 herself understood and heard about the problem utterances related to the aspect of range “For the word “invent” it means “create or do”. Create or do” was correct and 2) to check if the speaker (the interviewer) understood what Student 1 (the interlocutor) recommended to tackle the target problem utterances “Do you have any recommendations for this serious flaw?”, suggesting that they made more choices (or forms) of confirming questions themselves (i.e. 1) confirming what the interlocutor understood or heard was correct or so-called confirmation check and 2) checking if the speaker (or interlocutor when taking turns) understood what the interlocutor (or speaker when taking turns) said or so-called comprehension check) and selected the appropriate choice of confirming questions to deal with their problem utterances in conversation to accomplish their purposes in communication of different situations. In contrast with the posttest, the students employed limited choices of confirming questions in the



pretest, mainly for making the confirmation check if what the interlocutor understood or heard was correct as previously discussed.

Since the students made more choices of confirming questions to deal with their different problem utterances in the posttest as previously discussed, the students (the interlocutors) had opportunities to take more turns to interact with the speakers (the interviewers) in the posttest than in the pretest which were the reasons for students' development on English oral communication ability in interaction after taking the PBBCSI.

### **The use of fillers and hesitation devices**

Regarding the use of fillers and hesitation devices, the students often used the non-lexical words “er”, “ah”, “uhm” and the lexical words “well” and “actually” to gain more thinking time to further their utterances in conversation as previously discussed in the aspect of fluency. As for the aspect of interaction, the students used these strategies with other communication strategies to gain more thinking time and then selected other appropriate strategies to deal with the problem utterances in order to achieve their communication purposes in different situations in the pretest and posttest as previously demonstrated in Examples 5 and 3. Furthermore, the fillers and hesitation devices seemed to be more used with other communication strategies in the posttest (Example 3) than in the pretest (Example 5) as shown below.

#### **In the pretest**

##### Example 5: the target problem utterances

Interviewer 1: But I don't like SSD. I like the old one....HHHHH...something...

I can't remember. But I think it's better. The old one is better.

Student 2: Better? Er ... Did you mean ~~that~~ HDD?

(ASCon)(F)(S)(ASCon)\*

Interviewer 1: Um Right. What do you think? Why do most people prefer to use this SSD rather than HDD?

Student 2: Because the SSD is faster and lighter and it's er ... it's better because it's faster.

(Student 2, pretest task 1)

\*F = fillers and hesitation devices, S = short pause, ASCon = asking for confirmation  
ASClar = asking for clarification

### In the posttest

#### Example 3: the target problem utterances

Student 1: Er... Hello my name is Chaninat Boonsiri...I'm from computer engineering [department]...er what do you want ~~from me~~?

Interviewer 1: Yes, I'm looking for something for my notebook ok.

Student 1: Ok...er looking for something for your notebook?

(S)(F)(ASCon)\*

Interviewer 1: Yes.

Student 1: Er...what about...what [does] it look like?

(F)(S)(ASClar)\*

Interviewer 1: Yeah, I'm looking for a device that can store a lot of data from my notebook.

(Student 1, posttest task 1)

\*F = fillers and hesitation devices, S = short pause, ASCon = asking for confirmation  
ASClar = asking for clarification

As demonstrated in Example 5 (pretest task 1), Student 2 used the non-lexical word “er” as the fillers and hesitation devices strategy with the short pause to gain more thinking time for further utterances in the expressions of asking for confirmation strategy “Better? Er ... Did you mean ~~that~~ HDD?” that consisted of the spoken form of language with rising intonation “Better?” and the yes-no question “Did you mean ~~that~~ HDD?” to make sure what the student understood was correct.

Regarding Example 3 (posttest task 1), Student 1 used the non-lexical word “er” as the fillers and hesitation devices strategy with the preceding short pause to gain more thinking time for further utterances before the expression of asking for confirmation strategy “...er looking for something for your notebook?” that was the spoken form of language with rising intonation to ensure what the student heard was correct. Moreover, the student also used the non-lexical word “er” with the short pause to gain more thinking time for further utterances in the expression of asking for clarification strategy

to clarify more information when they faced the target problem utterances about “notebook.”

As for initiating the new topics or ideas, the students rarely used the expressions related to the taught communication strategies to do so. However, to initiate the new topics or ideas, few students used the confirming questions such as “Do you have any question about this project?” in the pretest (Student 4, pretest task 3) and “Do you have any question?” in the posttest (Student 5, posttest task 3) to initiate the topics that the customers might want to ask for more information related to the presentation that they had just performed. This finding implied that the students preferred to use the expressions related to the taught communication strategies for dealing with their communication problems rather than initiating the new topics or ideas.

In addition, the findings of the use of fillers and hesitation devices previously discussed suggested that they seemed to be more used with the asking for clarification and asking for confirmation strategies in the posttest than in the pretest, indicating that the students employed more use of the fillers and hesitation devices in order to give more thinking time for further their utterances in conversation with the asking for clarification and asking for confirmation strategies in order to deal with the problem utterances, interact, and take turns with other people in conversation to achieve their communication purposes in different situations in the posttest than in the pretest.

To summarize, in the aspect of interaction, the findings revealed that in order to achieve different communication purposes of different situations, the students employed only three communication strategies both in the pretest and the posttest, namely, asking for clarification, asking for confirmation, and the use of fillers and hesitation devices, excluding the circumlocution strategy that might be due to the fact that that the students were studying for computer engineering, they were accordingly familiar with technical terms in their field and related ones, thus they used the technical terms fluently with no needs to use the circumlocution strategy for describing the terms in conversation.

As for asking for clarification strategy, the students made more different choices of clarifying questions when they encountered the target problem utterances (e.g. “Er...what about...what [does] it look like?” in Example 3, posttest task 1) and the problem utterances related to the word meanings considered the English oral

communication ability in range (e.g. “What is [the] mean[ing of] er “invent”?” in Example 4, posttest task 2) in the posttest than in the pretest.

With respect to asking for confirmation strategy, the students also made more different choices of confirming questions by means of making 1) confirmation check to confirm what the interlocutor understood or heard was correct (e.g. “You mean ... my invent[ion]?” in Example 4, posttest task 2) and 2) comprehension check to make sure if the speaker understood what the interlocutor said (e.g. the yes-no question “Can you remember? in Example 7, posttest task 1) to tackle their problem utterances in conversation to achieve their communication purposes of different situations.

Concerning the use of fillers and hesitation devices, the students often employed the non-lexical words “er,” “ah,” “uhm” and the lexical words “well” and “actually” to gain more thinking time for continuing further utterances in conversation. Also, they were more used with the asking for clarification and asking for confirmation strategies in the posttest to deal with the problem utterances, interact, and take turns with other people in conversation to achieve their communication purposes in different situations.

As the evidence showing that the students employed more varied communication strategies in the posttest than in the pretest in order to tackle the problems, interact, and take turns with other people in conversation to achieve their communication purposes in different situations, thus supporting the quantitative results that there was significant development on students’ pretest and posttest scores of interaction with the improvement in their level of English oral communication ability in interaction from the medium to the high level after taking the PBBCSI model.

### **The PBBCSI effects on English oral communication ability in coherence**

“Coherence” in this recent study refers to the extent to which the students can produce utterances using a range of cohesive devices to connect separate ideas into a coherent whole of logical responding utterances in conversation appropriately.

Since students’ responses in the pretest and posttest might be complete or incomplete but still showed their ability in using coherence, assessing their English oral communication ability in coherence did not include the ability to give responses with complete or incomplete information in the English oral communication ability test.

Instead, it focused on assessing their English oral communication ability in coherence by means of the use of cohesive devices as mentioned above.

Referring to the quantitative results in Table 22, there was highly significant development on students' pretest and posttest scores of coherence with the high improvement in their level of English oral communication ability from the moderate to the high level after tasking the PBBCSI model.

The findings revealed that the students used different words “and,” “so,” “because,” and “but” as cohesive devices both in the pretest and posttest, and the new ones “such as,” “first,” “next,” “then,” “also,” “like,” and “for example” in the posttest in order to connect the separate ideas or utterances into a coherent whole of logical responding utterances appropriately according to the functions of those cohesive devices previously stated in their conversation. The examples of those cohesive devices in the utterances in the pretest are shown in Examples 8, 9, and 10, respectively.

### **In the pretest**

Example 8:

Interviewer 1: So, where should I go first?

Student 2: Go to “My computer”, **and** “properties” **and then** ... (working with the computer)... I forgot that hahaha (laughing). I'm sorry I forgot [how] to err ... ~~improve~~ [solve] this problem, **but** you can call ~~to~~ the ~~help~~ [call] center. I'm really sorry.

(Student 2, pretest task 1)

To answer the interviewer's question in Example 8, the student used “and” to add the information about the buttons on the computer screen when describing the steps to deal with the slow problem of SSD and also used the word “then” to indicate the order of the step that followed. In addition, the student used the word “but” to contrast the previous information about solving the problem that she forgot, so she used the word “but” to give another information for doing so.

Example 9:

Interviewer 2: Let's start the interview. Why do computer technology and products

make people have better lives?

Student 8: **Because** the technology ~~have~~ [makes] ah people ~~are~~ comfortable for their life **and** make[s] their life ~~is easily~~ [easier] **and** faster. **So**, the technology is important ~~in~~ [for] our life.

(Student 4, pretest task 2)

As shown in Example 9, the student used the word “because” to show the relationship between cause and effect by clarifying the reason (considered the cause) for the interviewer’s question (considered the effect). Like Example 8, the student used the word “and” to give more information about the reason that “computer technology and products make people have better lives.” Furthermore, the student also used the word “so” to indicate the relationship between cause and effect by giving the conclusion (considered the effect, referring to the interview’s question) for the preceding reasons (considered the cause).

It was interesting to find that the students sometimes used the cohesive devices unnecessarily and incorrectly in some situations in the pretest as shown in Example 10.

Example 10:

(The student is introducing the project for test task 3.)

Student 4: My name is Isara Kunudomchaiwat. **And** I’m here to present ~~you~~ [my] project, antivirus project. Yeah, **and in** today [the] world, it’s [the] information era. ... Everybody now can access [the] Internet with their phone with their computer, **and [but]** it isn’t safe anymore. ... Your children ~~could~~ [can] access ~~to~~ the sexual content or inappropriate content ~~on~~ [in the] online world. ...

(Student 4, pretest task 3)

As shown in Example 10, the student used the word “and” three times. The first two words “and” were unnecessarily used to begin the utterances in order to add more information about the project. The third “and” was incorrectly used to contrast the preceding positive information instead of the appropriate word “but.”

In the pretest, it could be seen from the examples previously discussed that the students used varied cohesive devices in the pretest as their functions in order to achieve

their communication purposes of each test task. However, the students sometimes used the cohesive devices unnecessarily to construct cohesive utterances and incorrectly used them not in line with their functions as previously discussed in Example 10.

In the posttest, the findings showed that the students used different words “and,” “so,” “because,” “then,” and “but” as cohesive devices similar to the pretest, and also the new ones “such as,” “first,” “next,” and “also” to combine the separate ideas or utterances into the coherent or related whole of logical responding utterances in conversation appropriately according to the functions of those cohesive devices. Moreover, the students used most of the cohesive devices correctly and appropriately when necessary, suggesting students’ development on English oral communication ability in coherence that they could use more varied cohesive devices correctly and appropriately when required to connect the separate utterances into the coherent whole of logical responding utterances in conversation in the posttest after taking the PBBCSI. The Examples of cohesive devices used in the posttest are demonstrated in Examples 11 to 17.

### **In the posttest**

Example 11:

Interviewer 1: Flash drive, and how about its specs? Could you tell me about its specs?

Student 2: Specs er ...[its capacity] is about 32 gigabyte[s].

Interviewer 1: Uh, anything else?

Student 2: Er if you don’t want to ~~storage~~ [store] a lot of data er ... 32 gigabytes is [are] enough, **but** if you ~~storage~~ [store] er a lot of data ... **[for] example**, picture[s], videos, or anything, er I ~~prefer~~ [offer] you something that [has] ~~lot of~~ [more] capacity ~~more~~ than this.

(Student 2, posttest task 1)

As shown in Example 11, the word “but” was used to contrast between the needs of the first drive having the storage capacity of 32 gigabytes and the second one having more storage capacity. In addition, the student also used the word “example” instead of “for example” to give examples of things that the second drive could store. The

reason that the student used only the word “example” might be due to that she applied the word “examples” from the text of the PBBCSI model in unit 4 in which the word “examples” functioning as a noun was used to give examples for any explanations in the text to use it as the cohesive devices in order to give examples in the posttest.

Apart from the word “for example,” the students also used the word of cohesive devices “such as” to give examples of the preceding utterances as seen in Example 12.

Example 12:

Student 3: Because today er everything in your life has a computer ~~in that~~, it's because [the] ~~embedded~~ [embedding] subject help ...helps... er anything [that] ~~have~~ [has a] computer ~~in there~~ [inside] **such as** your clock. ...

(Student 3, posttest task2)

In addition, the students used the words of cohesive devices “so” and “because” to indicate the relationship between cause and effect of the utterances in the posttest as demonstrated in Example 13.

Example 13:

Student 1: Er did you say, did you mean H..HDD?

Interviewer 1: Uh yes.

Student 1: Um...this ~~that~~ is a the old [one] and...and it's also er slow slower than this [one]...**so** if you...if you need ~~the~~ more one one thing that [is] a new thing, I recommend to buy this **because** it faster and lighter...it's small.

(Student 1, posttest task 1)

As shown in Example 13, the student used the word “so” to indicate the relationship between cause and effect by giving the details of the cause “this ~~that~~ is a the old [one] and...and it's also er slow slower than this [one]” for the effect “if you...if you need ~~the~~ more one one thing that [is] a new thing.” Like the function of the word “so,” the student also used the word “because” to express the relationship between



cause and effect by giving the reason of the effect “I recommend to buy this” for the cause “it faster and lighter...it’s small.”

Apart from the new words of cohesive devices “for example” and “such as” previously stated, the students also used other new words such as “first,” “then,” and “next” to show the sequence of utterances or information in conversation as displayed in Examples 14, 15, and 16, respectively.

Example 14:

Interviewer 3: Oh I see. And for the registered customers, can they get any compensation when their transaction has problems?

Student 4: Sure, but we will have to investigate **first** if it [is] coming from our software not their fault. I mean, yeah, but we have to investigate **first**.

(Student 4, posttest task 3)

Example 15:

Interviewer 1: And ... and how if I use it for sometimes ... and then it becomes slow, do you know what would you recommend any recommendations?

Student 2: When your SSD slow ... you can ..... (the student is working with the computer) ..... er search defragment, and **then** defragment this ... er..... You use the drive... the disk ... maybe I open this..... (the student is working with the computer) .....

(Student 2, posttest task 1)

Example 16:

Student 5: ... er the Avira can select the file or folder ...er if ~~for~~ you ~~to~~ scan this if you er... um... if you think it’s er dangerous for your computer. So **next** er the Avira is er... can er scan er or ..... filter ... can filter in er information in the Internet ...

(Student 5, posttest task 3)

Moreover, the students used other varied words of cohesive devices according to their functions in the posttest as shown in Example 17.

Example 17:

Student 4: Good afternoon. My name is Isara Kunudomchaiwat. I'm [a] computer engineering from the ABC company. Today, I am coming to present you a research on antivirus software. This presentation will take one or two minutes **and** there will be time for you ... ~~after that~~ if you have any question. So, are you ready?

Interviewer 3: Yes.

Student 4: Okay. My research on antivirus software I found ~~out~~ that ... most of the customers want to try to try our software before we are ... before they [are] actually buying them **and** ... they want our software to be cheap. Our objective of this survey is to find customer needs on antivirus software **and** we **also** found ~~out~~ that ... our software should keeping their children safe from the information on [the] Internet ... that can harm them or harm their emotional emotion. Alsay [slip of the tongue] also they **also** want to ... make sure that they have safe ... surfing ~~in~~ on the Internet **like** transaction. ... **And** this project will take around two millions baht.

Interviewer 3: Hmm.

Student 4: ~~And~~ that's all for my presentation, do you have any question?

Interviewer 3: Yes, I have some questions, please sit down.

Student 4: Okay.

(Student 4, posttest task 3)

As seen in Example 17, the student employed the word “and” and the new word “also” to give more information for the preceding utterances. In addition, he also used the word “like” to give examples of the preceding utterances similar to the words “for example” and “such as” as demonstrated previously in Examples 11 and 12, respectively.

To summarize, in the aspect of coherence, the students employed varied words of cohesive devices such as “and,” “so,” “because,” and “but” as cohesive devices both in the pretest and posttest, and the new ones like “such as,” “first,” “next,” “then,” “also,” “like,” and “for example” in the posttest in order to relate the separate ideas or

utterances into the coherent whole of logical and meaningful responding utterances according to their functions in conversation, comprising 1) addition such as “*and*” and “*also*” for adding some information to the preceding utterances, 2) result such as “*so*,” and “*because*,” for showing the relationship between cause and effect of the information in the utterances, 3) exemplification such as “*for example*,” “*such as*,” and “*like*,” for giving examples to clarify the preceding utterances, 4) sequencing: “*first*,” “*next*,” and “*then*” for indicating a series of related things or events, or the order of information in the utterances, and 5) contrast: “*but*” for connecting ideas that contrast in the utterances as previously discussed.

When compared with the pretest, it was evident that the students performed better in using more varied words of cohesive devices correctly and appropriately when necessary in the posttest than the pretest, indicating students’ development on English oral communication ability in coherence after taking the PBBCSI model, and thus supporting the quantitative results that there was highly significant development on students’ pretest and posttest scores of coherence with the high improvement in their level of English oral communication ability in coherence from the medium to the high level after taking the PBBCSI model.

### **The PBBCSI effects on English oral communication ability in pronunciation**

“Pronunciation” of the recent study refers to the extent to which the students can employ correct pronunciation of word (sounds), word and sentence stress, and intonation to produce utterances with high comprehensibility.

With respect to the pronunciation errors that affected the English oral communication ability in pronunciation, they were categorized into two main errors: *minor pronunciation* errors that refer to the errors that do not obscure or hardly obscure the meaning of utterances and *major pronunciation* errors that refer to the errors that obscure the meaning of utterances.

Referring to the quantitative results in Table 22, there was significant development on students’ pretest and posttest scores of pronunciation with no change in their level of English oral communication ability, staying at the moderate level.

In the pretest, it was revealed that most of the students had pronunciation problems with sounds, word and sentence stress, and intonation.

As for the pronunciation of word (sounds), most of the students produced the utterances with pronunciation errors in some consonant and vowel sounds of the words in all word positions (i.e. initial, medial, and final positions).

Concerning the consonant sounds, most of the students encountered the pronunciation problems with some consonant sounds like /r/, /v/, /θ/, /ð/, and /dʒ/ and replaced the correct sounds with the similar Thai sounds such as “read” /l/ instead of /r/, “invent” /w/ instead of /v/, “other” /t/ instead of /ð/, “third” /t/ instead of /θ/, “they” /d/ instead of /ð/, and “storage” /d/ instead of /dʒ/.

Furthermore, they faced the problems with consonant cluster pronunciation in all word positions by deleting one sound of the clusters such as “create” /k-/ instead of /kr-/; “drink” /d-/ instead of /dr-/; “apply” /-p-/ instead of /-pl-/; “problem” /p-, -b-/ instead of /pr-, -bl-/; and “help” /-p/ instead of /-lp/.

With respect to the vowel sounds, most of the students expressed pronunciation errors in some vowel sounds such as /e/, /ə/, /æ/, /ɛ/, and /ʊ/ by substituting the correct vowel sounds with the incorrect ones such as “dangerous” /æ/ instead of /e/, “problem” /æ/ instead of /ə/, “their” /e/ instead of /ɛ/, “guarantee” /a/ instead of /æ/ or /ɛ/, and “graduate” /u/ instead of /ʊ/.

It seemed that the students did not have the pronunciation problems with the compound vowel sounds, including /aɪ/, /aʊ/, and /ɔɪ/. This might be due to the fact that these compound vowel sounds are similar to Thai compound sounds and the students might be familiar with compound vowel pronunciation in English, thus they did not have pronunciation problems with the compound vowel sounds.

Concerning the pronunciation of word and sentence stress in the pretest, most of the students also had pronunciation problems with word and sentence stress of most of their utterances in conversation. For normal sentence stress, the students tended to stress all words of the utterances with more or less equal pitch, meaning that they spoke without giving the primary stress on the last content word of phrases or sentences and the secondary stress on other content words of phrases or sentences such as “Yes, 'SSD 'can 'store 'your 'data 'in 'your note'book” (student 2, pretest task 1) instead of “Yes, ,SSD can ,store your ,data in your 'notebook” (see Table 34) that they should have put

the primary stress ( ' ) on the last content word of phrases or sentences and the secondary stress ( , ) on other content words of phrases or sentences. More examples are demonstrated in Table 31.

*Table 31: Examples of Sentence Stress in the Pretest*

Students' Sentence Stress	Correct Sentence Stress
<p>“Yes, <b>'SSD 'can 'store 'your 'data 'in 'your note'book.</b>” (Student 2, pretest task 1)</p>	<p>“Yes, ,SSD can ,store your ,data in your 'notebook.”</p>
<p>“<b>'Create er... 'it's 'smart 'smart 'button.</b>” (Student 6, pretest task 2)</p>	<p>“Cre'ate er... it's [a] ,smart ,smart 'button.”</p>
<p>“... <b>'it 'will 'be er 'dangerous 'from 'your com'puter ..... and pro'tect ... pro'tect er 'send 'firewall.</b>” (Student 5, pretest task 3)</p>	<p>“... it will be er ,dangerous <del>from</del> [for] your com,puter ..... and pro ,tect ... pro ,tect er [from] ,send[ing] 'firewall.”</p>

The **bold** words refer to the words uttered with the incorrect word and sentence stress.

( ' ) This symbol refers to the primary stress on the last content word of each phrase or sentence, while ( , ) refers to the secondary stress on the other content words. [ ] refers to the components added to make the utterances sound grammatical.

As shown in Table 31, the students did not assign the primary stress ( ' ) on the last content word of phrases or sentences and the secondary stress ( , ) on other content words of phrases or sentences, but they stressed all the words of the utterances with more or less equal pitch instead, resulting in the pronunciation errors in word and sentence stress as previously described.

With respect to the intonation pronunciation in the pretest, most of the students encountered pronunciation problems with intonation on statements, wh-questions, and yes-no questions in conversation in that they incorrectly spoke with flat intonation in substitution of rising-falling intonation on statements and wh-questions, and rising intonation on yes-no questions as seen in Table 32.

Table 32: Examples of Intonation Pronunciation in the Pretest

Students' Intonation	Correct Intonation
Statement: flat intonation I think that's like a half ... half of budget. (Student 4, pretest task 3)	Statement: rising-falling intonation I think that's like [almost] a half ... half of [the] budget.
Wh-question: flat intonation ...what is "invent"? (Student 6, pretest task 2)	Wh-question: rising-falling intonation ...what is [the meaning of] "invent"?
Yes-no question: flat intonation Er... Did you mean HDD? (Student 2, pretest task 1)	Yes-no question: rising intonation Er... Did you mean <del>that</del> HDD?

→ refers to the flat intonation of utterances, [ ] refers to the words added to construct the grammatical structures of utterances.  
 → refers to the rising-falling intonation of utterances, → refers to the rising intonation of utterances.

In the posttest, it was revealed that most of the students still had pronunciation problems with sounds, word and sentence stress, and intonation. However, their pronunciation errors of those features in the posttest seemed to be fewer than those occurred in the pretest.

Concerning the pronunciation of sounds, like the pretest, most of the students produced the utterances with pronunciation errors in some consonant and vowel sounds of the words in all word positions.

Regarding the consonant sounds, similar to the pretest, most of the students faced the pronunciation problems with some consonant sounds like /r/, /v/, /θ/, /ð/, /dʒ/. They replaced the correct sounds with the similar Thai sounds such as “rice” /l/ instead of /r/, “invent” /w/ instead of /v/, “other” /t/ instead of /ð/, “they” /d/ instead of /ð/, and “storage” /d/ instead of /dʒ/. It was evident that all of the problematic consonant sounds were the same ones and mostly in the same words of the pretest, confirming that these consonant sounds /r/, /v/, /θ/, /ð/, and /dʒ/ were really problematic for the students, suggesting that pronunciation errors in consonant sounds affected their development on English oral communication ability in pronunciation.

Like the pretest, the students also encountered the problems with consonant cluster pronunciation in all word positions in the posttest by deleting one sound of the clusters such as such as “create” /k-/ instead of /kr-/, “drink” /d-/ instead of /dr-/, “defragment” /-f-/ instead of /-fr-/, “problem” /p-, -b-/ instead of /pr-, -bl-/, “help” /-p/ instead of /-lp/, and “ask” /-k/ instead of /-sk/. It was indicated that students’ pronunciation errors in consonant clusters also negatively affected their development on English oral communication ability in pronunciation.

Regarding the vowel sounds, similar to the pretest, most of the students had pronunciation errors with some vowel sounds like /e/, /ə/, /æ/, /ɛ/, and /ʊ/ by replacing the correct vowel sounds with the incorrect ones such as “dangerous” /æ/ instead of /e/, “problem” /æ/ instead of /ə/, “their” /e/ instead of /ɛ/, “defragment” /a/ instead of /æ/, and “graduate” /u/ instead of /ʊ/. It was evident that all of those problematic vowel sounds were the same ones and mostly in the same words of the pretest, confirming that these vowel sounds were really problematic for the students and also affected students’ development on English oral communication ability in pronunciation.

Similar to the pretest, it seemed that the students did not have the pronunciation problems with the compound vowel sounds, including /aɪ/, /aʊ/, and /ɔɪ/. As previously discussed, it might be due to the fact that these compound vowel sounds are similar to Thai compound sounds and the students might have been familiar with compound vowel pronunciation in English, thus they did not have pronunciation problems with compound vowel sounds both in the pretest and posttest.

As for the pronunciation of word and sentence stress in the posttest, most of the students still had pronunciation problems with word and sentence stress of most of their utterances in conversation. For normal sentence stress, the students tended to stress all words of the utterances with more or less equal pitch, indicating that they spoke without giving the primary stress on the last content word of phrases or sentences and the secondary stress on other content words of phrases or sentences such as “**'Flash 'drive 'can 'storage er 'the 'data 'that 'you 'want**” (student 2, posttest task 1) instead of “,Flash ,drive can storage [store] er the ,data that you 'want” (see Table 33) that they should have assigned the primary stress ( ' ) on the last content word of phrases or sentences and the secondary stress ( , ) on other content words of phrases or sentences. More examples are seen in Table 33.



Table 33: Examples of Sentence Stress in the Posttest

Students' Sentence Stress	Correct Sentence Stress
'Flash 'drive 'can 'storage er 'the 'data 'that 'you 'want. (Student 2, posttest task 1)	,Flash ,drive can storage [store] er the ,data that you 'want.
Er 'smart'phone, 'it 'can 'help 'people 'talk 'and 'video 'call ... (Student 6, posttest task 2)	Er 'smart,phone, it can ,help ,people ,talk and 'video ,call ...
...'it's er 'harm 'or 'dangerous 'for 'your 'children. (Student 5, posttest task 3)	...'it's er ,harm[ful] or ,dangerous for your 'children.

The **bold** words refer to the words uttered with the incorrect word and sentence stress.

( ' ) This symbol refers to the primary stress on the last content word of each phrase or sentence, while ( , ) refers to the secondary stress on the other content words. [ ] refers to the components added to make the utterances sound grammatical.

As seen in Table 33, most of the students still stressed all words of the utterances with more or less equal pitch, confirming that pronunciation errors in word and sentence stress were really problematic for the students and also affected students' development on English oral communication ability in pronunciation.

As for the intonation pronunciation in the posttest, like the pretest, most of the students faced pronunciation problems with intonation on statements and wh-questions as they incorrectly spoke them with flat intonation in replacement of rising-falling intonation. Interestingly, all of the purposively-selected students correctly produced the utterances of yes-no questions with rising intonation, indicating students' improvement on English oral communication ability in intonation pronunciation of yes-no questions, but not statements and wh-questions, resulting in students' little development on English oral communication ability in intonation pronunciation. Examples of students' intonation pronunciation are shown in Table 34.

Table 34: Examples of Intonation Pronunciation in the Posttest

Students' Intonation	Correct Intonation
Statement: flat intonation ... the main cost of software is mostly from maintenance. (Student 4, posttest task 3)	Statement: rising-falling intonation ... the main cost of [the] software is mostly from [the] maintenance.
Wh-question: flat intonation What is mean er "invent"? (Student 6, posttest task 2)	Wh-question: flat intonation What is [does it] mean er "invent"?
Yes-no question: (students did not have problems) -	Yes-no question: rising intonation For your notebook?

→ refers to the flat intonation of utterances, [ ] refers to the words added to construct the grammatical structures of utterances.  
 → refers to the rising-falling intonation of utterances, [ ] refers to the rising intonation of utterances, and [ ] refers to the grammatical structures of utterances.

Concerning the categories of pronunciation errors, since the interlocutors in both pretest and posttest are Thai nationalities that are familiar with Thai students' pronunciation, they can comprehend the meanings of the utterances with students' pronunciation errors. Therefore, all of the students' problematic utterances previously discussed were considered minor pronunciation errors both in the pretest and posttest as they did not obscure or hardly obscure the meaning of utterances. Although the interlocutors might encounter some difficulties in following and comprehending students' minor pronunciation errors, they were still comprehensible and did not cause any miscomprehension in communication. This might be due to that the interlocutors used the context in conversation to help interpret the meanings of the utterances with pronunciation errors.

Compared with the pretest, the students seemed to perform better in their pronunciation of sounds, word and sentence stress, and intonation as their minor pronunciation errors of those features as previously stated tended to be more found in the pretest than in the posttest according to the details previously discussed, suggesting students' development on English oral communication ability in their level of English oral communication ability, thus supporting the quantitative results that there was significant development on students' pretest and posttest scores of pronunciation. However, there was no change in their level of English oral communication ability, staying at the moderate level, possibly because of many pronunciation errors they produced that affected their ability to accomplish the higher level of English oral communication ability in pronunciation.

To conclude, in the aspect of pronunciation, the students faced more pronunciation problems with sounds, word and sentence stress, and intonation in the pretest than posttest as their pronunciation errors of those three main components were likely to be more found in the pretest than in the posttest as previously discussed, indicating students' development on English oral communication ability in pronunciation. However, there was no change in their level of English oral communication ability, staying at the moderate level, possibly because of many pronunciation errors they produced that affected their ability to achieve the higher level of English oral communication ability in pronunciation.

In summary, overall, the quantitative findings from the English oral communication ability pretest and posttest revealed that there was the significant development in undergraduate engineering students' English oral communication ability of overall six aspects of English oral communication ability in range, accuracy, fluency, interaction, coherence, and pronunciation, and overall three test tasks after the PBBCSI implementation with a change in students' levels of English oral communication ability from a moderate to a high level.

Of each aspect of English oral communication ability of overall test tasks, the students also showed significant development with changes in their levels of English oral communication ability in three aspects of range, interaction, and coherence with large effect sizes, and without changes in their levels of English oral communication ability, staying at a moderate level in three aspects of accuracy, fluency, and pronunciation with moderate effect sizes.

Concerning English oral communication ability in each test task, the students had significant improvement in all six aspects in test task 1, and in five aspects in test tasks 2 and 3 in which they did not show significant improvement in aspects of interaction and pronunciation, respectively.

As for the qualitative findings, they supported the quantitative findings of each aspect of English oral communication ability and indicated the evidence of students' development in those aspects as follows.

Regarding English oral communication ability in range, the students had significant development in this aspect with the change in their level of English oral communication ability from the moderate to high level after taking the PBBCSI due to the evidence showing that they used a large variety of four categories of content words, including nouns, verbs, adjectives, and adverbs mainly relevant to computer technology and computer engineering to achieve communication purposes of different topics or functions of each test task. In addition, they also produced longer utterances of information with new word items, more varied word items of all four categories of content words, and less minor errors without major errors of word choice in the posttest.

Concerning English oral communication ability in accuracy, the students showed significant development in this aspect after taking the PBBCSI without improvement in their level of English oral communication ability, staying at the

moderate level due to the findings that the students had many grammatical errors that caused their difficulties to achieve the higher level of English oral communication ability in accuracy. Concerning the grammatical errors, the students had more problems with the minor errors than major ones both in the pretest and posttest. The students' specific types of errors based on the linguistic descriptions consisted of word form, verb form, article, preposition, pronoun, subject-verb agreement, plural form, question, tense, and negation.

With regard to English oral communication ability in fluency, the students demonstrated significant development in this aspect after taking the PBBCSI due to the findings revealing that they produced longer utterances with more varied fillers and hesitation devices such as “er,” “ah,” “uhm,” “well,” and the new one “actually” in the posttest with less short and long pauses to gain more thinking time to further their utterances, and also employed fillers and hesitation devices with pauses to gain more thinking time to self-correct the problem utterances, thus generating more smooth and effortless flow of longer utterances in communication with the interlocutors to accomplish communication purposes in different situations.

Regarding English oral communication ability in interaction, the students expressed significant development in this aspect after taking the PBBCSI due to the results showing that the three communication strategies taught in model, namely, asking for clarification, asking for confirmation, and the use of fillers and hesitation devices were more employed in the posttest according to their functions as previously discussed for tackling the target problem utterances, interacting, and taking turns with other people in conversation to achieve communication purposes in different situations. In addition, the students preferred to employ the expressions related to the taught communication strategies rather than initiating the new topics or ideas.

As for the asking for clarification strategy, the students made more different choices of clarifying questions when they encountered the target problem utterances and the problem utterances related to the word meanings considered the English oral communication ability in range, and selected the appropriate choice (or form) of clarifying questions to tackle their different problem utterances in conversation in order to achieve communication purposes of different situations.

With respect to the asking for confirmation strategy, the students also made more different choices of confirming questions by means of making confirmation check to confirm what the interlocutor understood or heard was correct and comprehension check to make sure if the speaker understood what the interlocutor said, and selected the appropriate choice of confirming questions to tackle their problem utterances in conversation to achieve their communication purposes of different situations.

Considering the use of fillers and hesitation devices, the students often employed the non-lexical words “er,” “ah,” “uhm” and the lexical words “well” and “actually” to gain more thinking time for continuing further utterances in conversation. Also, they were more used with the asking for clarification and asking for confirmation strategies in the posttest to deal with the problem utterances, interact, and take turns with other people in conversation to achieve their communication purposes in different situations.

As for English oral communication ability in coherence, the students expressed significant development in this aspect after taking the PBBCSI due to the findings revealing that they used more varied words of cohesive devices correctly and appropriately when necessary and were employed more extensively used in the posttest than the pretest to relate the separate ideas or utterances into the coherent whole of logical and meaningful responding utterances according to their functions in conversation. Those cohesive devices included “and,” “so,” “because,” and “but” as cohesive devices both in the pretest and posttest, and the new ones in the posttest like “such as,” “first,” “next,” “then,” “also,” “like,” and “for example” and were used according to their functions comprising 1) addition such as “and” and “also” for adding some information to the preceding utterances, 2) result such as “so,” and “because,” for showing the relationship between cause and effect of the information in the utterances, 3) exemplification such as “for example,” “such as,” and “like,” for giving examples to clarify the preceding utterances, 4) sequencing: “first,” “next,” and “then” for indicating a series of related things or events, or the order of information in the utterances, and 5) contrast: “but” for connecting ideas that contrast in the utterances as previously discussed.

Concerning English oral communication ability in pronunciation, the students demonstrated significant development in this aspect after taking the PBBCSI due to the

findings revealing that they performed better in their pronunciation of sounds, word and sentence stress, and intonation as their minor pronunciation errors of those features were likely to be more found in the pretest than in the posttest according to the details previously discussed. Remarkably, the students produced utterances without major pronunciation errors both in the pretest and posttest. Despite having significant development in pronunciation, there was no improvement in students' level of English oral communication ability, staying at the moderate level due to many pronunciation errors they produced that affected their ability to accomplish the higher level of English oral communication ability in pronunciation.



## 4.2 Results of Research Question 2

*Research Question 2: What are the effects of PBBCSI on learner autonomy of undergraduate engineering students?*

*Hypothesis 2: After implementation of the PBBCSI, there would be changes in the posttest mean score of learner autonomy of undergraduate engineering students.*

This research question aimed to investigate the effects of project-based blended learning with communication strategy instruction (PBBCSI) on learner autonomy of undergraduate engineering students. The quantitative data from the pre-learner autonomy questionnaire (Pre-LAQ) and the post-learner autonomy questionnaire (Post-LAQ) were used to investigate students' learner autonomy differences before and after taking the PBBCSI. The Pre-LAQ and Post-LAQ were the same in Part 1. The Pre-LAQ consisted of Part 1 only, while the Post-LAQ comprised Part 1 and 2 as follows:

Part 1 explored three main components of the six aspects of learner autonomy, comprising three sections: personal responsibilities (34 items), personal capabilities (34 items), and independent learning (20 items), and

Part 2 investigated students' opinions toward the PBBCSI model, consisting of 48 items.

To answer Research Question 2, the results based on the Pre-LAQ scores before taking the PBBCSI and the Post-LAQ scores after taking the PBBCSI of Part 1 can be illustrated in Table 35.



Table 35: Pre-LAQ and Post-LAQ Scores of Overall Components and Aspects of Learner Autonomy

	Mean (M)	Median (Mdn)	Meaning (median- based) <sup>a</sup>	Mean Diff <sup>b</sup>	Median Diff <sup>c</sup>	Z <sup>d</sup>	p	Effect Size r
Pre- LAQ	2.87	2.83	Moderate	.71	.67	-3.81	.00*	-.60
Post- LAQ	3.58	3.50	Moderate					

\*p < .05, n = 20

<sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup> Mean Diff refers to Mean Difference; <sup>c</sup> Median Diff refers to Median Difference; <sup>d</sup>Z refers to the test statistic value calculated by SPSS and its negative sign (-) is ignored for data analysis (Field, 2009), the same way as for the effect size r.

The results in Table 35 indicated the students' significant improvement ( $Z = -3.81$ ,  $p < .05$ ) in Pre-LAQ and Post-LAQ scores of overall three main components and six aspects of learner autonomy as previously stated after the fifteen-week implementation of the PBBCSI with no change in their level of learner autonomy, remaining at a moderate level ( $Mdn_{Pre-LAQ} = 2.83$ ,  $Mdn_{Post-LAQ} = 3.50$ ).

The significant improvement was shown in an increase of the Post-LAQ median scores of .67 points. The effect size r of the Pre-LAQ and Post-LAQ median scores was -.60 which was considered a large effect size (Cohen, 1988; Rosenthal, 1996). This indicated the students' significant improvement of learner autonomy after taking the PBBCSI model. Therefore, Research Hypothesis 2 of Research Question 2, i.e. *After implementation of the PBBCSI model, there would be changes in the posttest mean score of learner autonomy of undergraduate engineering students* was accepted.

To determine if the PBBCSI significantly improved the Pre-LAQ and Post-LAQ scores of each learner autonomy component of overall aspects, another Wilcoxon signed rank test was conducted. The findings of each learner autonomy component are shown in Table 36.

*Table 36: Pre-LAQ and Post-LAQ Scores of Each Learner Autonomy Component of Overall Aspects*

Learner Autonomy Components	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>	Mean Diff	Median Diff	Z	p	Effect Size r
P Res <sup>b</sup> Pre-LAQ	3.23	3.32	Moderate	.75	.59	-3.81	.00*	-.60
P Res Post-LAQ	3.98	3.91	High					
P Cap <sup>c</sup> Pre-LAQ	2.95	3.01	Moderate	1.04	.87	-3.82	.00*	-.60
P Cap Post-LAQ	3.99	3.88	High					
IL <sup>d</sup> Pre-LAQ	2.12	2.00	Low	.11	.23	-.79	.43	NA <sup>e</sup>
IL Post-LAQ	2.23	2.23	Low					

\* $p < .05$ ,  $n = 20$

<sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup> P Res refers to Personal Responsibilities, <sup>c</sup> P Cap refers to Personal Capabilities, <sup>d</sup> IL refers to Independent Learning, <sup>e</sup> NA refers to the effect size of the non-significant results that was not reported.

The findings in Table 36 exhibited the students' Pre-LAQ and Post-LAQ scores of each learner autonomy component of overall six aspects as previously mentioned. The findings indicated the students' significant improvement in personal responsibilities and personal capabilities ( $Z = -3.81$  and  $-3.82$ , respectively,  $p < .05$ ) after the implementation of the PBBCSI with changes in their levels of learner autonomy from a moderate to a high level in two components; namely, personal responsibilities (Mdn<sub>Pre-LAQ</sub> = 3.32, Mdn<sub>Post-LAQ</sub> = 3.91,  $r = -.60$ ) and personal capabilities (Mdn<sub>Pre-LAQ</sub> = 3.01, Mdn<sub>Post-LAQ</sub> = 3.88,  $r = -.60$ ), both indicating the large effect sizes.

On the other hand, the students did not show significant development in independent learning ( $Z = -.79$ ,  $p = .43$ ) at .05 significance level with no change in their level of learner autonomy, remaining at a low level (Mdn<sub>Pre-LAQ</sub> = 2.00, Mdn<sub>Post-LAQ</sub> = 2.23) which might be due to the fact that their increased scores were not enough to achieve the higher level.

It could be concluded that students significantly developed their learner autonomy in personal responsibilities and capabilities after the implementation of the

PBBCSI while they still had problems to develop their learner autonomy in independent learning in their learning process.

In addition, the Wilcoxon signed rank test was conducted with each of the three main components of learner autonomy on the Pre-LAQ and Post-LAQ to get more insights into students' responses to each main component.

### **A. Personal responsibilities**

Table 37 shows the students' Pre-LAQ and Post-LAQ scores of each aspect of personal responsibilities. The findings indicated the students' significant development in four out of six aspects of learner autonomy which included taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the procedure of doing the tasks and the project, and evaluating the completed tasks and the project ( $Z = -2.64, -3.78, -3.81, \text{ and } -2.45$ , respectively,  $p < .05$ ) after the implementation of the PBBCSI with changes in their levels of learner autonomy from a moderate level to a high level in taking the initiative ( $\text{Mdn}_{\text{Pre-LAQ}} = 3.07, \text{Mdn}_{\text{Post-LAQ}} = 3.86, r = -.42$ ) and evaluating the completed tasks and the project ( $\text{Mdn}_{\text{Pre-LAQ}} = 3.00, \text{Mdn}_{\text{Post-LAQ}} = 4.00, r = -.39$ ), both indicating a moderate effect size, and making decisions on selecting methods or techniques, communication strategies, and resources ( $\text{Mdn}_{\text{Pre-LAQ}} = 3.36, \text{Mdn}_{\text{Post-LAQ}} = 4.14, r = -.60$ ) and monitoring the task and the project completion procedures ( $\text{Mdn}_{\text{Pre-LAQ}} = 3.00, \text{Mdn}_{\text{Post-LAQ}} = 4.00, r = -.60$ ), both reflecting a large effect size.

However, the students did not demonstrate significant improvement in determining the goals and objectives ( $\text{Mdn}_{\text{Pre-LAQ}} = 3.33, \text{Mdn}_{\text{Post-LAQ}} = 3.83, Z = -1.84$ ) with a change in their level of learner autonomy from a moderate level to a high level and defining the learning processions ( $\text{Mdn}_{\text{Pre-LAQ}} = 4.00, \text{Mdn}_{\text{Post-LAQ}} = 4.00, Z = .00$ ) without a change in their level of learner autonomy due to the fact that increased scores remained the same at a high level.

*Table 37: Pre-LAQ and Post-LAQ Scores of Each Aspect of Personal Responsibilities*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>Personal responsibilities</b>	<b>3.32</b> [Moderate]	<b>3.91</b> [High]	<b>.59</b>	<b>-3.81</b>	<b>.00*</b>	<b>-.60</b>
A. Determining the goals and the objectives	3.33 [Moderate]	3.83 [High]	.50	-1.84	.07	NA <sup>c</sup>
B. Defining the learning progressions	4.00 [High]	4.00 [High]	.00	.00	1.00	NA
C. Taking the initiative	3.07 [Moderate]	3.86 [High]	.79	-2.64	.01*	-.42
D. Making decisions on selecting methods or techniques, communication strategies, and resources	3.36 [Moderate]	4.14 [High]	.78	-3.78	.00*	-.60
E. Monitoring the task and the project completion procedures	3.00 [Moderate]	4.00 [High]	1.00	-3.81	.00*	-.60
F. Evaluating the completed tasks and the project	3.00 [Moderate]	4.00 [High]	1.00	-2.45	.01*	-.39

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference, <sup>c</sup>NA refers to the effect size of the non-significant results that was not reported.

Overall, it could be concluded that after taking the PBBCSI, the students significantly developed their learner autonomy in four out of six aspects, indicating that they were willing to take responsibilities in those four aspects, including taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project to complete the online tasks and eventually the independent project with changes in their level of learner autonomy from a moderate level to a high level. In addition, the students were willing to determine the goals and objectives, and define the learning processions despite no significant improvement in these two aspects of learner autonomy, at a high level in order to conduct their outside tasks and the independent project.

The Pre-LAQ and Post-LAQ scores of personal responsibilities were further examined to reflect more insights on each of the six aspects of personal responsibilities, namely, determining the goals and the objectives, defining the learning progressions, taking the initiative, on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project.

To do so, the data of the first main component of learner autonomy (i.e. personal responsibilities) were analyzed and its findings of each aspect were demonstrated as follows.

#### **Personal responsibilities: Determining the goals and the objectives**

As for personal responsibilities in determining the goals and the objectives, the findings in Table 38 did not demonstrate the students' significant development in determining the goals and the objectives. The insignificant findings included setting the goals of learning in this model (Item 1,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -1.78$ ) and determining the objectives of the online tasks (Item 2,  $Mdn_{Pre-LAQ} = 3.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -.88$ ) with the improved level of learner autonomy from the moderate level to the high level.

It was interesting that the significant evidence was found in setting the objectives of the independent project (Item 3,  $Mdn_{Pre-LAQ} = 3.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.18$ ,  $r = -.42$ ) with the improved level of learner autonomy from the moderate level to the high level, reflecting the moderate effect size.

Table 38: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Determining the Goals and the Objectives

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>A. Determining the goals and the objectives</b>	<b>3.33</b> [Moderate]	<b>3.83</b> [High]	<b>.50</b>	<b>-1.84</b>	<b>.07</b>	<b>NA<sup>c</sup></b>
1. I am willing to set my goals of learning in this model.	3.00 [Moderate]	4.00 [High]	1.00	-1.78	.08	NA
2. I am happy to determine the objectives of the online tasks.	3.50 [Moderate]	4.00 [High]	0.50	-.88	.38	NA
3. I feel good to set the objectives of the independent project.	3.50 [Moderate]	4.00 [High]	0.50	-2.18	.03*	-.34

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference, <sup>c</sup>NA refers to the effect size of the non-significant results that was not reported.

It could be seen that although the students did not significantly develop their learner autonomy in determining the goals and the objectives after taking the PBBCSI, they significantly improved in an element of this aspect in setting the objectives of the independent project, suggesting that they were willing to take responsibilities to set the objectives of the independent project with the increased level of learner autonomy from the moderate level to the high level. Moreover, the students were willing to set the goals of learning in this model and determine the objectives of the online tasks in spite of no significant development in these two elements, with the increased level from the moderate level to the high level after the implementation of the PBBCSI.

#### **Personal responsibilities: Defining the learning progressions**

Concerning personal responsibilities in defining the learning progressions, overall, the findings in Table 39 did not demonstrate the students' significant development in defining the learning progressions. However, the significant findings were found in all of the target elements of this aspect of learner autonomy which included setting the expected progression scores of the English oral communication

ability test (Item 4,  $Mdn_{Pre-LAQ} = 3.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.34$ ,  $r = -.37$ ), defining the expected progression scores of the tasks (Item 5,  $Mdn_{Pre-LAQ} = 3.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.02$ ,  $r = -.32$ ), and setting the expected progression scores of the project (Item 6,  $Mdn_{Pre-LAQ} = 3.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.12$ ,  $r = -.34$ ) with the increased level of learner autonomy from the moderate level to the high level, indicating the moderate effect size.

*Table 39: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Defining the Learning progressions*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>B. Defining the learning progressions</b>	<b>4.00 [High]</b>	<b>4.00 [High]</b>	<b>.00</b>	<b>.00</b>	<b>1.00</b>	<b>NA<sup>c</sup></b>
4. I am willing to set the expected progression scores of the English oral communication ability test.	3.50 [Moderate]	4.00 [High]	.50	-2.34	.02*	-.37
5. I am happy to define the expected progression scores of the tasks.	3.50 [Moderate]	4.00 [High]	.50	-2.02	.04*	-.32
6. I feel good to set the expected progression scores of the project.	3.50 [Moderate]	4.00 [High]	.50	-2.12	.03*	-.34

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference, <sup>c</sup>NA refers to the effect size of the non-significant results that was not reported.

It could be seen that despite no significant development in defining the learning progressions, the students significantly developed all of the elements of this aspect of learner autonomy, suggesting that they were willing to take responsibilities for setting the expected progression scores of the English oral communication ability test, defining the expected progression scores of the tasks, and setting the expected progression scores of the project with the improved level of learner autonomy from the moderate level to the high level to complete the tasks and the independent project after the implementation of the PBBCSI.

### Personal responsibilities: Taking the initiative

With respect to personal responsibilities in taking the initiative, Table 40 shows the students' significant development in taking the initiative. The significant findings were found in the following target elements of this aspect of learner autonomy which included self-initiating to take the following actions: new actions for completing the face-to-face activities after the instructor or peers start taking actions (Item 8,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.14$ ,  $r = -.34$ ), common actions according to the work prompts for completing the online tasks after the instructor or peers start taking actions (Item 9,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.58$ ,  $r = -.41$ ), new actions for completing the online tasks after the instructor or peers start taking actions (Item 10,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.51$ ,  $r = -.40$ ), common actions according to the work prompts for completing the project (Item 12,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.67$ ,  $r = -.42$ ), and new actions for completing the project (Item 13,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.13$ ,  $r = -.34$ ) with the improved level of learner autonomy from the moderate level to the high level, all indicating the moderate effect size.

Table 40: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Taking the Initiative

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>C. Taking the initiative</b>	<b>3.07</b> [Moderate]	<b>3.86</b> [High]	<b>.79</b>	<b>-2.64</b>	<b>.01*</b>	<b>-.42</b>
7. After the instructor or peers start taking actions for learning and teaching, I am willing to self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the face-to-face activities</u> .	3.00 [Moderate]	4.00 [High]	1.00	-1.55	.12	NA <sup>c</sup>
8. After the instructor or peers start taking actions for learning and teaching, I am willing to self-initiate to take <u>new actions</u> that I	3.00 [Moderate]	4.00 [High]	1.00	-2.14	.03*	-.34



newly create for completing the face-to-face activities.						
9. After the instructor or peers start taking actions for learning and teaching, I am happy to self-initiate to take <u>common actions</u> according to the work prompts for completing the <u>online tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-2.58	.01*	-.41
10. After the instructor or peers start taking actions for learning and teaching, I am happy to self-initiate to take <u>new actions</u> for completing the <u>online tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-2.51	.01*	-.40
11. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am willing to self-initiate to take <u>new actions</u> that I newly create for completing the <u>face-to-face activities</u> .	3.00 [Moderate]	3.50 [Moderate]	.50	-1.86	.06	NA
12. I am happy to self-initiate to take <u>common actions</u> according to the work prompts for completing my <u>project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-2.67	.01*	-.42
13. I am willing to self-initiate to take <u>new actions</u> for completing my <u>project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-2.13	.03*	-.34

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference, <sup>c</sup>NA refers to the effect size of the non-significant results that was not reported.

In addition, the findings did not indicate the students' improvement in self-initiating to take common actions according to the work prompts for completing the face-to-face activities after the instructor or peers start taking actions (Item 7,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -1.55$ ) with the improved level of learner autonomy from the moderate level to the high level and new actions for completing the face-to-face activities although the instructor or peers do not take actions (Item 11,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 3.50$ ,  $Z = -1.86$ ) which the level of learner autonomy remained at the moderate level.

Overall, it could be concluded that after taking the PBBCSI, the students significantly developed their learner autonomy in taking the initiative in the elements of self-initiating to take different actions, indicating that they were willing to take responsibilities for self-initiating to take different actions as follows: new actions for completing the face-to-face activities after the instructor or peers start taking actions, common actions according to the work prompts for completing the online tasks after the instructor or peers start taking actions, new actions for completing the online tasks after the instructor or peers start taking actions, common actions according to the work prompts for completing the project, and new actions for completing the project with changes in their level of learner autonomy from the moderate level to the high level to carry out the tasks and the project successfully.

Despite no significant improvement in the two elements, the students were willing to self-initiate to take common actions according to the work prompts for completing the face-to-face activities after the instructor or peers start taking actions with a change in their level of learner autonomy from the moderate level to the high level and new actions for completing the face-to-face activities with no change in their level of learner autonomy which remained at the moderate level after taking the PBBCSI.

**Personal responsibilities: Making decisions on selecting methods or techniques, communication strategies, and resources**

Concerning personal responsibilities in making decisions on selecting methods or techniques, communication strategies, and resources, the findings in Table 41 showed the students' development in 'making decisions on selecting methods or techniques, communication strategies, and resources.

*Table 41: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Making Decisions on Selecting Methods or Techniques, Communication Strategies, and Resources*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>D. Making decisions on selecting methods or techniques, communication strategies, and resources</b>	<b>3.36</b> [Moderate]	<b>4.14</b> [High]	<b>.78</b>	<b>-3.78</b>	<b>.00*</b>	<b>-.60</b>
14. I am willing to make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the face-to-face activities</u> .	3.00 [Moderate]	4.00 [High]	1.00	-2.63	.01*	-.42
15. I am willing to make decisions on selecting the appropriate <u>resources</u> to achieve <u>the face-to-face activities</u> .	4.00 [High]	4.00 [High]	.00	-2.95	.00*	-.47
16. I am pleased to make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the tasks</u> .	3.00 [M]	4.00 [High]	.1.00	-3.46	.00*	-.55
17. I am pleased to make decisions on selecting the appropriate <u>resources</u> to achieve <u>the tasks</u> .	4.00 [High]	4.00 [High]	.00	-2.80	.01*	-.44
18. I am happy to make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.49	.00*	-.55
19. I am happy to make decisions on selecting the appropriate <u>resources</u> to achieve <u>the project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.15	.00*	-.50
20. I am willing to choose the appropriate <u>communication strategies or language expressions</u> related to communication strategies to overcome	3.00 [Moderate]	4.00 [High]	1.00	-2.74	.01*	-.43

communication problems or maintain the conversations.						
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\* $p < .05$ ,  $n = 20$ , <sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup> Mdn Diff refers to Median Difference

Table 41 demonstrates the significant findings in all of the target elements of aspect of making decisions on selecting methods or techniques, communication strategies, and resources which consisted of making decisions on selecting the appropriate elements as follows: methods or techniques to achieve the face-to-face activities (Item 14,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.63$ ,  $r = -.42$ ), methods or techniques to achieve the tasks (Item 16,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.46$ ,  $r = -.55$ ), methods or techniques to achieve the project (Item 18,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.49$ ,  $r = -.55$ ), resources to achieve the project (Item 19,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.15$ ,  $r = -.50$ ), communication strategies or language expressions related to communication strategies to overcome communication problems or maintain the conversations (Item 20,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.74$ ,  $r = -.43$ ) with the improved level of learner autonomy from the moderate level to the high level, all indicating the moderate effect size.

In addition, the findings also indicated the students' improvement in making decisions on selecting the following appropriate elements: resources to achieve the face-to-face activities (Item 15,  $Mdn_{Pre-LAQ} = 4.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.95$ ,  $r = -.47$ ) and resources to achieve the tasks (Item 17,  $Mdn_{Pre-LAQ} = 4.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.80$ ,  $r = -.44$ ) without a change in their level of learner autonomy due to the fact that the increased scores remained at the same at the high level.

It could be concluded that after taking the PBBCSI, the students significantly developed their learner autonomy in making decisions on selecting methods or techniques, communication strategies, and resources in all of the elements, suggesting that they were willing to be responsible for making decisions on selecting the following elements: methods or techniques to achieve the face-to-face activities, methods or techniques to achieve the tasks, methods or techniques to achieve the project, resources to achieve the project, and communication strategies or language

expressions related to communication strategies to overcome communication problems or maintain the conversations with changes in their level of learner autonomy from the moderate level to the high level, while they were willing to make decisions on selecting the resources to achieve the face-to-face activities and resources to achieve the tasks with no change in their level, staying at the high level in order to complete the online tasks and the independent project.

### **Personal responsibilities: Monitoring the task and the project completion procedures**

With respect to personal responsibilities in monitoring the task and the project completion procedures, Table 42 demonstrates the students' significant development in monitoring the task and the project completion procedures.

*Table 42: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Monitoring the Task and the Project Completion Procedures*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>E. Monitoring the task and the project completion procedures</b>	<b>3.00</b> [Moderate]	<b>4.00</b> [High]	<b>1.00</b>	<b>-3.81</b>	<b>.00*</b>	<b>-.60</b>
21. I am happy to check my steps of doing <u>the tasks</u> in the following aspects in the student log (for the task and the project)						
21.1 Time (duration of doing each step)	3.00 [Moderate]	4.00 [High]	1.00	-2.68	.01*	-.42
21.2 Place	3.00 [Moderate]	4.00 [High]	1.00	-3.54	.00*	-.56
21.3 Pace (duration of doing the entire work)	3.00 [Moderate]	4.00 [High]	1.00	-2.84	.01*	-.45
21.4 Respondents	3.00 [Moderate]	4.00 [High]	1.00	-3.20	.00*	-.51
21.5 Resources	3.00 [Moderate]	4.00 [High]	1.00	-3.59	.00*	-.57
22. I am willing to check my steps of doing the project in the following aspects in the student log (for the task and the project)						

22.1 Time (duration of doing each step)	3.00 [Moderate]	4.00 [High]	1.00	-3.94	.00*	-.62
22.2 Place	3.00 [Moderate]	4.00 [High]	1.00	-3.64	.00*	-.58
22.3 Pace (duration of doing the entire work)	3.00 [Moderate]	4.00 [High]	1.00	-3.57	.00*	-.56
22.4 Respondents	3.00 [Moderate]	4.00 [High]	1.00	-3.37	.00*	-.53
22.5 Resources	3.00 [Moderate]	4.00 [High]	1.00	-3.34	.00*	-.53

\* $p < .05$ ,  $n = 20$ , <sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup> Mdn Diff refers to Median Difference

According to Table 42, the significant findings were discovered in all of the target elements of this aspect of learner autonomy which included checking the steps of doing the tasks in the student log in the following elements: time (Item 21.1,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.68$ ,  $r = -.42$ ), place (Item 21.2,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.54$ ,  $r = -.56$ ), pace (Item 21.3,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.84$ ,  $r = -.45$ ), respondents (Item 21.4,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.20$ ,  $r = -.51$ ), resources (Item 21.5,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.59$ ,  $r = -.57$ ) with the improved level of learner autonomy from the moderate level to the high level, the effect sizes of which were ranged from moderate to large.

It was remarkable that the significant findings were also found in checking the steps of doing the project in the student log in the following elements: time (Item 22.1,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.94$ ,  $r = -.62$ ), place (Item 22.2,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.64$ ,  $r = -.58$ ), pace (Item 22.3,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.57$ ,  $r = -.56$ ), respondents (Item 22.4,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.37$ ,  $r = -.53$ ), resources (Item 22.5,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.34$ ,  $r = -.53$ ) with the increased level of learner autonomy from the moderate level to the high level, all reflecting the large effect size.

It could be seen that after taking the PBBCSI, the students significantly developed their learner autonomy in monitoring the task and the project completion procedures in all of the target elements, suggesting that they were willing to take responsibilities to check the steps of doing the tasks and the project in the essential elements which included time, place, pace, respondents, and resources with changes

in their level of learner autonomy from the moderate level to the high level in order to complete their tasks and the project successfully.

**Personal responsibilities: Evaluating the completed tasks and the project**

In consideration of the sixth aspect of personal responsibilities in evaluating what has been acquired and performed in the tasks and the project, Table 43 reveals the students' significant development in evaluating the completed tasks and the project.

*Table 43: Pre-LAQ and Post-LAQ Scores of Personal Responsibilities: Evaluating the Completed Tasks and the Project*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>F. Evaluating the completed tasks and the project</b>	<b>3.00 [Moderate]</b>	<b>4.00 [High]</b>	<b>1.00</b>	<b>-2.45</b>	<b>.01*</b>	<b>-.39</b>
23. I am pleased to <u>evaluate</u> the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-2.55	.01*	-.40
24. I am happy to <u>evaluate</u> the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-3.20	.00*	-.51
25. I feel good to <u>make reflection</u> on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-2.95	.00*	-.47
26. I am willing to <u>make reflection</u> on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	4.00 [High]	4.00 [High]	.00	-1.81	.07	NA

\*p < .05, n = 20, <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and

4.51-5.00 = very high, <sup>b</sup> Mdn Diff refers to Median Difference, <sup>c</sup> NA refers to the effect size of the non-significant results that was not reported.

In Table 43, the significant findings were found in three elements of this aspect of learner autonomy as follows: evaluating the quality and English oral communication ability of the tasks (Item 23, Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $Z = -2.55$ ,  $r = -.40$ ), evaluating the quality and English oral communication ability of the project (Item 24, Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $Z = -3.20$ ,  $r = -.51$ ), making reflection on the quality and English oral communication ability of the tasks (Item 25, Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $Z = -2.95$ ,  $r = -.47$ ) with the improvement in their level of learner autonomy from the moderate level to the high level, indicating the moderate effect size.

Despite no significant improvement, the results revealed that the students were willing to make reflection on the quality and English oral communication ability of the project (Item 26, Mdn<sub>Pre-LAQ</sub> = 4.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $Z = -1.81$ ) without a change in their level of learner autonomy due to the fact that the increased scores kept at the same at the high level.

It could be seen that the students significantly developed their learner autonomy of personal responsibilities in evaluating the completed tasks and the project in three out of four elements of this aspect of learner autonomy, suggesting that after taking the PBBCSI, they were willing to take responsibilities for evaluating the completed tasks and the project in terms of evaluating the quality and English oral communication ability of the tasks, evaluating the quality and English oral communication ability of the project, and making reflection on the quality and English oral communication ability of the tasks with changes in their level of learner autonomy from the moderate level to the high level. Furthermore, they were willing to make reflection on the quality and English oral communication ability of their project in different aspects specified in the task and project rubric despite no significant improvement in this element, without the change of their level of learner autonomy which remained at the high level after taking the PBBCSI.



## B. Personal capabilities

According to Table 44, the findings revealed the students' Pre-LAQ and Post-LAQ scores of each aspect of personal capabilities. The findings indicated the students' significant development in all of the six aspects of learner autonomy which consisted of determining the goals and objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project ( $Z = -3.81, -3.41, -3.46, -3.79, -3.65, \text{ and } -3.38$ , respectively,  $p < .05$ ) after the implementation of the PBBCSI with changes in their levels of learner autonomy from a moderate level to a high level in determining the goals and objectives (Mdn<sub>Pre-LAQ</sub> = 2.83, Mdn<sub>Post-LAQ</sub> = 4.00,  $r = -.60$ ), defining the learning progressions (Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $r = -.54$ ), taking the initiative (Mdn<sub>Pre-LAQ</sub> = 2.85, Mdn<sub>Post-LAQ</sub> = 3.86,  $r = -.55$ ), making decisions on selecting methods or techniques, communication strategies, and resources (Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 3.93,  $r = -.60$ ), monitoring the task and the project completion procedures (Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $r = -.58$ ), and evaluating the completed tasks and the project (Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00,  $r = -.53$ ).

Table 44: Pre-LAQ and Post-LAQ Scores of Each Aspect of Personal Capabilities

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>Personal capabilities</b>	<b>3.01</b> [Moderate]	<b>3.88</b> [High]	<b>.87</b>	<b>-3.82</b>	<b>.00*</b>	<b>-.60</b>
A. Determining the goals and the objectives	2.83 [Moderate]	4.00 [High]	1.17	-3.81	.00*	-.60
B. Defining the learning progressions	3.00 [Moderate]	4.00 [High]	1.00	-3.41	.00*	-.54
C. Taking the initiative	2.85 [Moderate]	3.86 [High]	1.01	-3.46	.00*	-.55
D. Making decisions on selecting methods or techniques, communication strategies, and resources	3.00 [Moderate]	3.93 [High]	.93	-3.79	.00*	-.60

E. Monitoring the task and the project completion procedures	3.00 [Moderate]	4.00 [High]	1.00	-3.65	.00*	-.58
F. Evaluating the completed tasks and the project	3.00 [Moderate]	4.00 [High]	1.00	-3.38	.00*	-.53

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference

Overall, it could be summarized that after taking the PBBCSI, the students significantly developed their learner autonomy in all of the six aspects of personal capabilities, suggesting that they were confident in their capabilities in those six aspects with changes in their levels of learner autonomy from the moderate level to the high level in order to successfully carry out the online tasks and the independent project.

The Pre-LAQ and Post-LAQ scores of personal capabilities were further analyzed to disclose more insights on each of the six aspects of personal capabilities, namely, determining the goals and the objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project as follows.

#### **Personal capabilities: Determining the goals and the objectives**

The findings in Table 45 showed the students' significant development in determining the goals and the objectives. The significant evidence included setting the goals of learning in this model (Item 27,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.26$ ,  $r = -.52$ ) and setting the objectives of the independent project (Item 29,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.78$ ,  $r = -.60$ ) with the improved level of learner autonomy from the moderate level to the high level, and determining the objectives of the online tasks (Item 28,  $Mdn_{Pre-LAQ} = 2.50$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.58$ ,  $r = -.57$ ) with the improved level of learner autonomy from the low level to the high level, all indicating the large effect size.

*Table 45: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Determining the Goals and the Objectives*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>A. Determining the goals and the objectives</b>	<b>2.83</b> [Moderate]	<b>4.00</b> [High]	<b>1.17</b>	<b>-3.81</b>	<b>.00*</b>	<b>-.60</b>
27. I am confident I can set my goals of learning in this model.	3.00 [Moderate]	4.00 [High]	1.00	-3.26	.00*	-.52
28. I am confident I can determine the objectives of the online tasks.	2.50 [Low]	4.00 [High]	1.50	-3.58	.00*	-.57
29. I am sure I can set the objectives of the independent project.	3.00 [Moderate]	4.00 [High]	1.00	-3.78	.00*	-.60

\*p < .05, n = 20, <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup> Mdn Diff refers to Median Difference

It could be seen that after taking the PBBCSI, the students significantly developed their learner autonomy in determining the goals and the objectives in all of the elements of this aspect of learner autonomy, suggesting that they were confident in their capabilities of determining the goals and the objectives in terms of setting the goals of learning in this model and setting the objectives of the independent project with the increased level of learner autonomy from the moderate level to the high level, and determining the objectives of the online tasks with the improved level of learner autonomy from the low level to the high level in order to successfully complete the tasks and the project.

#### **Personal capabilities: Defining the learning progressions**

In Table 46, the findings showed the students' significant development in defining the learning progressions in all of the target elements of this aspect of learner autonomy which included setting the expected progression scores of the English oral communication ability test (Item 30, Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00, Z = -3.17, r = -.50), defining the expected progression scores of the tasks (Item 31, Mdn<sub>Pre-LAQ</sub> = 3.00, Mdn<sub>Post-LAQ</sub> = 4.00, Z = -2.96, r = -.47) with the increased level

of learner autonomy from the moderate level to the high level which indicated the large effect size, and setting the expected progression scores of the project (Item 32,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.46$ ,  $r = -.55$ ) with the increased level of learner autonomy from the moderate level to the high level, reflecting the large effect size.

*Table 46: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Defining the Learning Progressions*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>B. Defining the learning progressions</b>	<b>3.00</b> [Moderate]	<b>4.00</b> [High]	<b>1.00</b>	<b>-3.41</b>	<b>.00*</b>	<b>-.54</b>
30. I am confident I can set the expected progression scores of the English oral communication ability test.	3.00 [Moderate]	4.00 [High]	1.00	-3.17	.00*	-.50
31. I am sure I can define the expected progression scores of the tasks.	3.00 [Moderate]	4.00 [High]	1.00	-2.96	.00*	-.47
32. I am confident I can set the expected progression scores of the project.	3.00 [Moderate]	4.00 [High]	1.00	-3.46	.00*	-.55

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference

It could be seen that after the implementation of the PBBCSI, the students significantly developed their learner autonomy in defining the learning progressions in all of the elements of this aspect of learner autonomy, reflecting that they were confident in their capabilities of defining the learning progressions in terms of setting the expected progression scores of the English oral communication ability test, defining the expected progression scores of the tasks, and setting the expected progression scores of the project with the improved level of learner autonomy from the moderate level to the high level in order to successfully complete the tasks and the independent project.

### Personal capabilities: Taking the initiative

In Table 47, the findings revealed the students' significant development in taking the initiative in all of the target elements of this aspect of learner autonomy.

Table 47: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Taking the Initiative

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>C. Taking the initiative</b>	<b>2.85</b> [Moderate]	<b>3.86</b> [High]	<b>1.01</b>	<b>-3.46</b>	<b>.00*</b>	<b>-.55</b>
33. After the instructor or peers start taking actions for learning and teaching, I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the face-to-face activities</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.00	.00*	-.47
34. After the instructor or peers start taking actions for learning and teaching, I am sure I can self-initiate to take <u>new actions</u> that I newly create for completing <u>the face-to-face activities</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.03	.00*	-.48
35. After the instructor or peers start taking actions for learning and teaching, I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the online tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.17	.00*	-.50
36. After the instructor or peers start taking actions for learning and teaching, I am confident I can self-initiate to take <u>new actions</u> for completing <u>the online tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.14	.00*	-.50
37. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am confident I can self-initiate to take <u>new actions</u> that I newly	3.00 [Moderate]	4.00 [High]	1.00	-2.63	.01*	-.42

create for completing the <u>face-to-face activities</u> .						
38. I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing my <u>project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.09	.00*	-.49
39. I am sure I can self-initiate to take <u>new actions</u> for completing my <u>project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.29	.00*	-.52

\* $p < .05$ ,  $n = 20$ , <sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup> Mdn Diff refers to Median Difference

Table 47 shows significant findings of students' development in taking the initiative in all of the target elements which included self-initiating to take the following actions: common actions according to the work prompts for completing the face-to-face activities after the instructor or peers start taking actions (Item 33,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.00$ ,  $r = -.47$ ), new actions for completing the face-to-face activities after the instructor or peers start taking actions (Item 34,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.03$ ,  $r = -.48$ ), common actions according to the work prompts for completing the online tasks after the instructor or peers start taking actions (Item 35,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.17$ ,  $r = -.50$ ), new actions for completing the online tasks after the instructor or peers start taking actions (Item 36,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.14$ ,  $r = -.50$ ), new actions according to the work prompts for completing the face-to-face activities although the instructor or peers do not take actions (Item 37,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.63$ ,  $r = -.42$ ), and common actions according to the work prompts for completing the project (Item 38,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.09$ ,  $r = -.49$ ) with the improved level of learner autonomy from the moderate level to the high level which indicated the moderate effect size, and new actions for completing the project (Item 39,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.29$ ,  $r = -.52$ ) with the improved level of learner autonomy from the moderate level to the high level which reflected the large effect size.

To conclude, after taking the PBBCSI, the students significantly developed their learner autonomy in taking the initiative in all of the elements of this aspect of learner autonomy, indicating that they were confident in their capabilities of taking the initiative' in terms of self-initiating to take the following actions which included

common actions according to the work prompts for completing the face-to-face activities after the instructor or peers start taking actions, new actions for completing the face-to-face activities after the instructor or peers start taking actions, common actions according to the work prompts for completing the online tasks after the instructor or peers start taking actions, new actions for completing the online tasks after the instructor or peers start taking actions, new actions according to the work prompts for completing the face-to-face activities although the instructor or peers do not take actions, common actions according to the work prompts for completing the project, and new actions for completing the project with changes in their level of learner autonomy from the moderate level to the high level to carry out the tasks and the project.

**Personal capabilities: Making decisions on selecting methods or techniques, communication strategies, and resources**

According to Table 48, the findings suggested the students' significant development in making decisions on selecting methods or techniques, communication strategies, and resources in all of the target elements of this aspect of learner autonomy.

*Table 48: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Making Decisions on Selecting Methods or Techniques, Communication Strategies, and Resources*

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>D. Making decisions on selecting methods or techniques, communication strategies, and resources</b>	<b>3.00</b> [Moderate]	<b>3.93</b> [High]	<b>.93</b>	<b>-3.79</b>	<b>.00*</b>	<b>-.60</b>
40. I am confident I can make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the face-to-face activities</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.54	.00*	-.56
41. I am confident I can make decisions on selecting the appropriate <u>resources</u> to	3.00 [Moderate]	4.00 [High]	1.00	-3.01	.00*	-.48

achieve <u>the face-to-face activities</u> .						
42. I am sure I can make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.08	.00*	-.49
43. I am confident I can make decisions on selecting the appropriate <u>resources</u> to achieve <u>the tasks</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.51	.00*	-.56
44. I am sure I can make decisions on selecting the appropriate <u>methods or techniques</u> to achieve <u>the project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.57	.00*	-.56
45. I am confident I can make decisions on selecting the appropriate <u>resources</u> to achieve <u>the project</u> .	3.00 [Moderate]	4.00 [High]	1.00	-3.46	.00*	-.55
46. I am confident I can choose the appropriate <u>communication strategies or language expressions</u> related to communication strategies to overcome communication problems or maintain the conversations.	3.00 [Moderate]	4.00 [High]	1.00	-3.26	.00*	-.52

\* $p < .05$ ,  $n = 20$ , <sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup> Mdn Diff refers to Median Difference

According to Table 48, it could be seen that the significant findings of students' development were found in making decisions on selecting methods or techniques, communication strategies, and resources which consisted of making decisions on selecting the appropriate elements as follows: methods or techniques to achieve the face-to-face activities (Item 40,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.54$ ,  $r = -.56$ ), resources to achieve the tasks (Item 43,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.51$ ,  $r = -.56$ ), methods or techniques to achieve the project (Item 44,  $Mdn_{pretest} = 3.00$ ,  $Mdn_{Pre-LAQ} = 4.00$ ,  $Z = -3.57$ ,  $r = -.56$ ), resources to achieve the project (Item 45,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.46$ ,  $r = -.55$ ), and communication strategies or language expressions related to communication strategies to overcome communication problems or maintain the conversations (Item



46,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.26$ ,  $r = -.52$ ) with the improved level of learner autonomy from the moderate level to the high level which indicated the large effect size, and resources to achieve the face-to-face activities (Item 41,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.01$ ,  $r = -.48$ ), methods or techniques to achieve the tasks (Item 42,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.08$ ,  $r = -.49$ ) with the increased level of learner autonomy from the moderate level to the high level which reflected the moderate effect size.

It could be concluded that after taking the PBBCSI, the students significantly developed their learner autonomy in making decisions on selecting methods or techniques, communication strategies, and resources in all of the elements of this aspect of learner autonomy, suggesting that they were sure in their capabilities of making decisions on selecting the following elements: methods or techniques to achieve the face-to-face activities, resources to achieve the face-to-face activities, methods or techniques to achieve the tasks, resources to achieve the tasks, methods or techniques to achieve the project, resources to achieve the project,' and communication strategies or language expressions related to communication strategies to overcome communication problems or maintain the conversations' with changes in their level of learner autonomy from the moderate level to the high level in order to accomplish the online tasks and the independent project.

**Personal capabilities: Monitoring the task and the project completion procedures**

With respect to personal capabilities in monitoring the task and the project completion procedures, Table 49 shows the students' significant development in monitoring the task and the project completion procedures in all of the target elements of this aspect of learner autonomy.

Table 49: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Monitoring the Task and the Project Completion Procedures

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>E. Monitoring the task and the project completion procedures</b>	<b>3.00 [Moderate]</b>	<b>4.00 [High]</b>	<b>1.00</b>	<b>-3.65</b>	<b>.00*</b>	<b>-.58</b>
47. I am confident I can check my steps of doing <u>the tasks</u> in the following aspects in the student log (for the task and the project):						
47.1 Time (duration of doing each step)	3.00 [Moderate]	4.00 [High]	1.00	-3.23	.00*	-.51
47.2 Place	3.00 [Moderate]	4.00 [High]	1.00	-3.14	.00*	-.50
47.3 Pace (duration of doing the entire work)	3.00 [Moderate]	4.00 [High]	1.00	-3.49	.00*	-.55
47.4 Respondents	3.00 [Moderate]	4.00 [High]	1.00	-3.46	.00*	-.55
47.5 Resources	3.00 [Moderate]	4.00 [High]	1.00	-3.10	.00*	-.49
48. I am sure I can check my steps of doing <u>the project</u> in the following aspects in the student log (for the task and the project):						
48.1 Time (duration of doing each step)	3.00 [Moderate]	4.00 [High]	1.00	-2.89	.00*	-.46
48.2 Place	3.00 [Moderate]	4.00 [High]	1.00	-3.76	.00*	-.59
48.3 Pace (duration of doing the entire work)	3.00 [Moderate]	4.00 [High]	1.00	-3.34	.00*	-.53
48.4 Respondents	3.00 [Moderate]	4.00 [High]	1.00	-3.51	.00*	-.56
48.5 Resources	3.00 [Moderate]	4.00 [High]	1.00	-3.84	.00*	-.61

\*p < .05, n = 20, <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup>Mdn Diff refers to Median Difference

According to Table 49, the significant findings of students' development in monitoring the task and the project completion procedures were found in all of the

target elements of this aspect of learner autonomy which included checking the steps of doing the tasks in the student log in the following elements: time (Item 47.1,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.23$ ,  $r = -.51$ ), place (Item 47.2,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.14$ ,  $r = -.50$ ), pace (Item 47.3,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.49$ ,  $r = -.55$ ), respondents (Item 47.4,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.10$ ,  $r = -.55$ ), resources (Item 47.5,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.10$ ,  $r = -.49$ ) with the improved level of learner autonomy from the moderate level to the high level, the effect sizes of which were ranged from moderate to large.

It was remarkable that the significant findings were also found in checking the steps of doing the project in the student log in the following elements: time (Item 48.1,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.89$ ,  $r = -.46$ ), place (Item 48.2,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.76$ ,  $r = -.59$ ), pace (Item 48.3,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.34$ ,  $r = -.53$ ), respondents (Item 48.4,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.51$ ,  $r = -.56$ ), resources (Item 48.5,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.84$ ,  $r = -.61$ ) with the increased level of learner autonomy from the moderate level to the high level, the effect sizes of which were classified into moderate to large.

It could be concluded that after taking the PBBCSI, the students significantly developed their learner autonomy in monitoring the task and the project completion procedures in all of the target elements, suggesting that they were confident in their capabilities of checking the steps of doing the tasks and the project in the essential elements which included time, place, pace, respondents, and resources with changes in their level of learner autonomy from the moderate level to the high level in order to complete their tasks and the project successfully.

#### **Personal capabilities: Evaluating the completed tasks and the project**

In Table 50, the students showed the significant development in evaluating the completed tasks and the project in all of the elements of this aspect of learner autonomy.

Table 50: Pre-LAQ and Post-LAQ Scores of Personal Capabilities: Evaluating the Completed Tasks and the Project

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>F. Evaluating the completed tasks and the project</b>	<b>3.00</b> [Moderate]	<b>4.00</b> [High]	<b>1.00</b>	<b>-3.38</b>	<b>.00*</b>	<b>-.53</b>
49. I am confident I can <u>evaluate</u> the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-2.75	.01*	-.44
50. I am sure I can <u>evaluate</u> the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-3.33	.00*	-.53
51. I am confident I can <u>make reflection</u> on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-2.70	.01*	-.43
52. I am confident I can <u>make reflection</u> on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	3.00 [Moderate]	4.00 [High]	1.00	-3.35	.00*	-.53

\* $p < .05$ ,  $n = 20$ , <sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high; <sup>b</sup> Mdn Diff refers to Median Difference

According to Table 50, it could be seen that the significant findings of students' development in evaluating the completed tasks and the project were found in all of the elements of this aspect of learner autonomy which included evaluating the quality and English oral communication ability of the tasks in different aspects specified in the task and project rubric (Item 49, Mdn Pre-LAQ = 3.00, Mdn Post-LAQ = 4.00,  $Z = -2.75$ ,  $r = -.44$ ) and making reflection on the quality and English oral

communication ability of the tasks in different aspects specified in the task and project rubric (Item 51,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -2.70$ ,  $r = -.43$ ) with the improvement in their level of learner autonomy from the moderate level to the high level, indicating the moderate effect size, and evaluating the quality and English oral communication ability of the project in different aspects specified in the task and project rubric (Item 50,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 4.00$ ,  $Z = -3.33$ ,  $r = -.53$ ) and making reflection on the quality and English oral communication ability of the project in different aspects specified in the task and project rubric (Item 51,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{posttest} = 4.00$ ,  $Z = -3.35$ ,  $r = -.53$ ), both reflecting the high effect size.

It could be seen that the students significantly developed their learner autonomy in evaluating the completed tasks and the project in all of the elements of this aspect of learner autonomy, suggesting that after taking the PBBCSI, they were confident in their capabilities of evaluating the quality and English oral communication ability of the tasks, evaluating the quality and English oral communication ability of the project, making reflection on the quality and English oral communication ability of the tasks and making reflection on the quality and English oral communication ability of the project with changes in their level of learner autonomy from the moderate level to the high level.

### C. Independent Learning

Table 51 shows the students' Pre-LAQ and Post-LAQ scores of each aspect of independent learning. The findings did not indicate the students' significant development in all of the six aspects of learner autonomy which consisted of determining the goals and the objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project ( $Z = -1.08$ ,  $-1.36$ ,  $-.85$ ,  $-.35$ ,  $-.26$ , and  $-.15$ , respectively,  $p < .05$ ) with no changes of their level of learner autonomy which remained at a low level.

Table 51: Pre-LAQ and Post-LAQ Scores of Each Aspect of Independent Learning

Statements	Median (Mdn) Pre [Meaning <sup>a</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>b</sup>	Z	p	Effect Size r
<b>Independent learning</b>	<b>2.00 [Low]</b>	<b>2.23 [Low]</b>	<b>.23</b>	<b>-.79</b>	<b>.43</b>	<b>NA<sup>c</sup></b>
A. Determining the goals and the objectives	2.00 [Low]	2.00 [Low]	.00	-1.08	.28	NA
B. Defining the learning progressions	2.00 [Low]	2.33 [Low]	.33	-1.36	.17	NA
C. Taking the initiative	2.00 [Low]	2.00 [Low]	.00	-.85	.40	NA
D. Making decisions on selecting methods or techniques, communication strategies, and resources	2.00 [Low]	2.00 [Low]	.00	-.35	.72	NA
E. Monitoring the task and the project completion procedures	2.00 [Low]	2.00 [Low]	.00	-.26	.79	NA
F. Evaluating the completed tasks and the project	1.81 [Low]	2.00 [Low]	.19	-.15	.88	NA

\* $p < .05$ ,  $n = 20$ , <sup>a</sup>Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>b</sup>Mdn Diff refers to Median Difference, <sup>c</sup>NA refers to the effect size of the non-significant results that was not reported.

It could be seen that after the implementation of the PBBCSI, the students did not significantly develop their learner autonomy in all of the six aspects of independent learning, suggesting that they could not control their own responsibilities and capabilities in those six aspects of learner autonomy for carrying out the online tasks and the independent project.

The Pre-LAQ and Post-LAQ scores of independent learning were further examined to reveal more information on each of the six aspects of independent learning as demonstrated in Table 52.

Table 52: Pre-LAQ and Post-LAQ Scores of Independent Learning<sup>a</sup>

Statements	Median (Mdn) Pre [Meaning <sup>b</sup> Pre]	Median (Mdn) Post [Meaning Post]	Mdn Diff <sup>c</sup>	Z	p	Effect Size r
<b>A. Determining the goals and the objectives</b>	<b>2.00</b> [Low]	<b>2.00</b> [Low]	<b>.00</b>	<b>-1.08</b>	<b>.28</b>	<b>NA<sup>c</sup></b>
54. I like the instructor and/or peers to decide the goals of learning in the PBBCSI model and the objectives of doing the independent project.	2.00 [Low]	2.00 [Low]	.00	-1.08	.28	NA
<b>B. Defining the learning progressions</b>	<b>2.00</b> [Low]	<b>2.33</b> [Low]	<b>.33</b>	<b>-1.36</b>	<b>.17</b>	<b>NA</b>
55. I want the instructor and/or peers to set the expected progression scores of the following works:						
55.1 Online tasks	2.00 [Low]	2.00 [Low]	.00	-1.01	.31	NA
55.2 Independent project	2.00 [Low]	2.00 [Low]	.00	-.22	.83	NA
55.3 English oral communication ability test	2.00 [Low]	2.50 [Low]	.00	-1.71	.09	NA
<b>C. Taking the initiative</b>	<b>2.00</b> [Low]	<b>2.00</b> [Low]	<b>.00</b>	<b>-.85</b>	<b>.40</b>	<b>NA</b>
56. I want the instructor and/or peers to offer new choices, ideas, and ways for learning all the time.	2.00 [Low]	2.00 [Low]	.00	-.85	.40	NA
<b>D. Making decisions on selecting methods or techniques, communication strategies, and resources</b>	<b>2.00</b> [Low]	<b>2.00</b> [Low]	<b>.00</b>	<b>-.35</b>	<b>.72</b>	<b>NA</b>
57. I prefer my instructor and/or peers to select the methods or techniques, communication strategies, and resources for learning all the time.	2.00 [Low]	2.00 [Low]	.00	-.35	.72	NA
<b>E. Monitoring the task and the project completion procedures</b>	<b>2.00</b> [Low]	<b>2.00</b> [Low]	<b>.00</b>	<b>-.26</b>	<b>.79</b>	<b>NA</b>
58. I want the instructor and/or peers to check my working steps in the following aspects						

in the student log (for the task and the project).						
58.1 Time (duration of doing each step)	2.00 [Low]	2.00 [Low]	.00	-.82	.42	NA
58.2 Place	2.00 [Low]	2.00 [Low]	.00	-.26	.80	NA
58.3 Pace (duration of doing the entire work)	2.00 [Low]	2.00 [Low]	.00	.00	1.0 0	NA
58.4 Respondents	2.00 [Low]	2.00 [Low]	.00	-.39	.69	NA
58.5 Resources	2.00 [Low]	2.00 [Low]	.00	-.73	.47	NA
<b>F. Evaluating the completed tasks and the project</b>	<b>1.81</b> [Low]	<b>2.00</b> [Low]	<b>.19</b>	<b>-.15</b>	<b>.88</b>	<b>NA</b>
53. **I like the instructor and/or peers to support me all the time so that I can be confident in my learning.	2.00 [Low]	2.00 [Low]	.00	-.79	.43	NA
59. I believe that evaluation on the works needs to be done by the instructor and/or peers only.	2.00 [Low]	2.00 [Low]	.00	-.37	.71	NA
60. **I like the instructor and/or peers to <u>identify</u> weak points and errors of English oral communication ability in the following works:						
60.1 Face-to-face activities	2.00 [Low]	2.00 [Low]	.00	-.47	.64	NA
60.2 Online tasks	2.00 [Low]	2.00 [Low]	.00	.00	1.0 0	NA
60.3 Independent project	2.00 [Low]	2.00 [Low]	.00	-.50	.61	NA
61. **I prefer the instructor and/or peers to <u>correct</u> weak points and errors of English oral communication ability in the following works:						
61.1 Face-to-face activities	2.00 [Low]	2.00 [Low]	.00	-.88	.38	NA
61.2 Online tasks	2.00 [Low]	2.00 [Low]	.00	-.85	.40	NA
61.3 Independent project	2.00 [Low]	2.00 [Low]	.00	-.45	.65	NA
<b>Overall opinions</b>						
62. I believe that I can achieve in completing the independent project independently of instructor and peer control of	4.00 [High]	4.00 [High]	.00	-.88	.38	NA



responsibilities and capabilities.						
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\* $p < .05$ , \*\*Adapted from Alrabai (2017), Channuan (2012), and Swatevacharkul (2006).

$n = 20$ , <sup>a</sup> Items 53-61 were *reverse coded items*, <sup>b</sup> Meaning (median-based) refers to the classified or interpreted level of learner autonomy: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high, <sup>c</sup> Mdn Diff refers to Median Difference, <sup>e</sup> NA refers to the effect size of the non-significant results that was not reported.

According to Table 52, the findings showed that the students did not have significant development in all of the elements of six aspects of independent learning with no changes in their levels of learner autonomy which remained at the low level.

With respect to determining the goals and the objectives, the students did not demonstrate significant development in its element of deciding the goals of learning in the PBBCSI and the objectives of doing the independent project (Item 54,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -1.08$ ), suggesting that they preferred their instructor and/or peers to help them to set the goals and the objectives for their learning.

As for defining the learning progressions, the students did not show significant development in the elements of setting the expected progression scores of the following works: online tasks (Item 55.1,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -1.01$ ), independent project (Item 55.2,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.22$ ), and English oral communication ability test (Item 55.2,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.50$ ,  $Z = -1.71$ ), indicating that they wanted their instructor and/or peers to support them to define their learning progressions in the learning process.

Considering the aspect of taking the initiative, the students did not have significant development in its element of offering new choices, ideas, and ways for learning all the time (Item 56,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.85$ ), reflecting that they preferred their instructor and/or peers to initiate in taking actions for their learning.

In regard to making decisions on selecting methods or techniques, communication strategies, and resources, the students did not reveal their significant development in its element of 'selecting the methods or techniques, communication strategies, and resources for learning all the time' (Item 57,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.35$ ), suggesting that they preferred their instructor and/or peers to make decisions on selecting appropriate methods or techniques,

communication strategies, and resources for carrying out the activities, the tasks, and the project.

With respect to monitoring the task and the project completion procedures, the students did not show significant development in the elements of checking the working steps in the student log in terms of time (Item 58.1,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.82$ ), place (Item 58.2,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.26$ ), pace (Item 58.3,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = .00$ ), respondents (Item 58.4,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.39$ ), and resources (Item 58.5,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.73$ ), reflecting that they preferred their instructor and/or peers to help them to do so.

When considering the aspect of evaluating the completed tasks and the project, the students did not demonstrate significant development in all of the elements of this aspect of learner autonomy which included supporting me (the student) all the time so that I (the student) can be confident in my (his or her) learning (Item 53,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.79$ ), evaluation on the works needs to be done by the instructor and/or peers only (Item 59,  $Mdn_{Pre-LAQ} = 3.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.37$ ), identifying weak points and errors of English oral communication ability in terms of face-to-face activities (Item 60.1,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.47$ ), online tasks (Item 60.2,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = .00$ ), and independent project (Item 60.3,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.50$ ), correcting weak points and errors of English oral communication ability in terms of face-to-face activities (Item 61.1,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.88$ ), online tasks (Item 61.2,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.85$ ), and independent project (Item 61.3,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.45$ ) which reflected that they needed their instructor and/or peers to support them to have more confidence in their learning, help them evaluate their works, as well as identify and correct their weak points and errors of English oral communication when conducting their inside and outside works, as well as their independent project.

Remarkably, although the students did not show significant development for their overall opinions toward the independent learning (Item 61.3,  $Mdn_{Pre-LAQ} = 2.00$ ,  $Mdn_{Post-LAQ} = 2.00$ ,  $Z = -.45$ ) with no improvement in their level of learner autonomy

which remained at the high level, the students were still confident in completing the independent project without direct instruction and control of the instructor.

To summarize, after taking the PBBCSI, the quantitative findings showed that the students demonstrated significantly great development in both personal responsibilities and personal capabilities with the improvement in their levels of learner autonomy from the moderate to the high level. However, they did not show significant improvement in independent learning without the improvement in their level of learner autonomy, remaining at the low level in most of the elements of independent learning.

To support the findings of the Pre-LAQ and Post-LAQ of each main component of learner autonomy (i.e. personal responsibilities, personal capabilities, and independent learning), qualitative data were drawn from student logs of the two pairs of focused students whose data were collected during phases 1 to 6, semi-structured interviews with twelve purposively-selected students whose data were collected at the end of the course to support some aspects of learner autonomy, and observation checklists which consisted of the face-to-face observation checklist which observed the two pairs of focused students who were video-recorded while studying in class during phases 1 to 4 and the online observation checklist which observed those two pairs of focused students during phases 1 to 5 performing on Facebook such as posting the videos of online tasks and projects, making comments on their peer online tasks and projects. One occurrence of observed behaviors in each of the face-to-face and online observation checklists, and the student logs was counted as one occurrence according to the criteria as specified in the observation checklists and the student logs (see Appendices D and F). Qualitative data from those sources were analyzed according to three main components: personal responsibilities, personal capabilities, and independent learning in the six aspects of learner autonomy as previously described.

Concerning the results of the observation checklists, behaviors of some aspects of learner autonomy did not occur in both of or either face-to-face environment or online environment because of the reason that the objectives of the face-to-face activities and online tasks were not aimed to elicit behaviors in some aspects in those environments such as determining the goals and the objectives, defining the learning progressions, making decisions on selecting methods or techniques, communication

strategies, and resources, and monitoring the task and the project completion procedures.

As for reliability of the quantitative data of the pretest and posttest scores, the online tasks, and the projects, each of which was verified by the two experts (see Appendix P) for its inter-rater reliability. With respect to qualitative data, it was assured by the intra-rater reliability for researcher's self-consistency in coding information at one-month interval where disagreement needed to be rechecked and revised. The qualitative findings were reported as follows.

### **Determining the goals and the objectives**

With respect to determining the goals and the objectives, according to the student logs of the two pairs of focused students in terms of determining the goals during phases 1 to 6, the findings showed the students' development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in terms of determining the goals and the objectives, initially with little instructor support (e.g. some comments on student logs) and peer support (because of task characteristics that needed the students to work in pairs) and eventually without direct instruction, instructor and peer support, and control of the instructor to complete their independent projects.

In the student logs, the students attempted at and were capable of writing the goals related to applying the knowledge to their future careers and everyday life situations with few grammatical errors for tasks 1, 2, and 3 of phases 1, 2, and 3, respectively, initially with little instructor support on giving comments and suggestions on their student logs and eventually without instructor and peer support when coming to carry out their independent projects of phases 4 to 6 after they got training on how to set and write the goals and the objectives on the introduction week such as "*Apply the knowledge acquired on the job and can be applied to everyday*" (Focused pair 1, task 1), "*We can communicate more pronunciation and fluently*" (Focused pair 2, task 3), and "*Apply the knowledge acquired on the job and can be applied to everyday*" (Focused student 1, project).

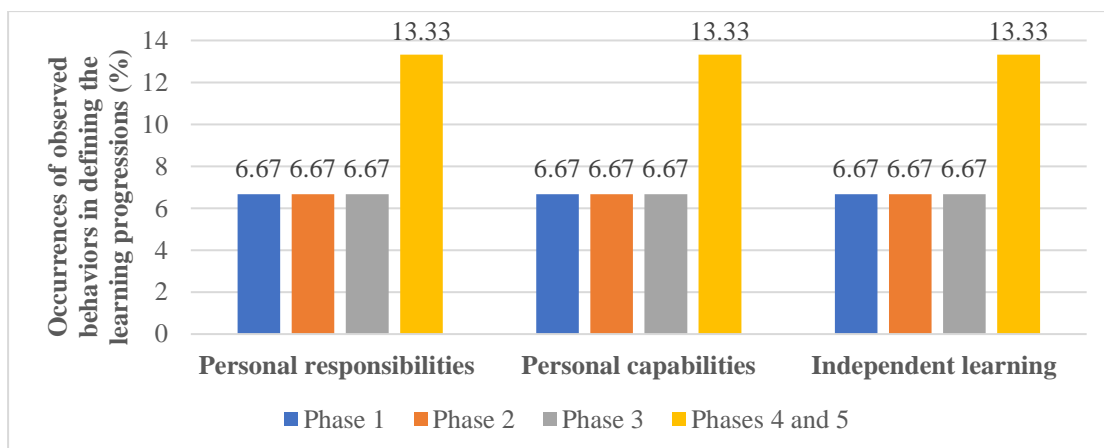
Likewise, as for the determining the objectives, the students demonstrated their attempts and capabilities to write the objectives specified for improving their language skills, especially grammar and communication skills for tasks 1, 2, and 3 of

phases 1, 2, and 3, respectively, initially with little instructor support on giving comments and suggestions on their student logs and eventually without instructor and peer support when dealing with their independent projects of phases 4 to 6 such as “*Practice using grammar and speaking English*” (Focused pair 1, task 1), “*Can use English skill for communication*” (Focused pair 2, task 2), “*Able to analyze and summarize data from questionnaires*” (Focused pair 1, task 3), and “*Apply the knowledge to solve communication problems ex. asking for confirmation or get more information*” (Focused student 2, project).

As such, the behaviors of determining the goals and the objectives as previously described showed that the students gradually developed their learner autonomy of personal responsibilities, personal capabilities, and independent learning in the aspect of determining the goals and the objectives to conduct their online tasks, initially with little instructor support on comments and suggestions on the student logs, and peer support on working in pairs, and eventually without instructor and peer support when they came to carry out their projects, thus indicating that they were willing to take responsibilities for and confident in their capabilities of determining the goals and the objectives to complete their independent projects without direct instruction, instructor and peer support, and control of the instructor to complete their independent projects after taking the PBBCSI. These findings indicated the discrepancy against the quantitative findings that the students did not significantly develop their learner autonomy of personal responsibilities (see Table 37) and independent learning (see Table 51) in the aspect of ‘determining the goals and the objectives’ after taking the PBBCSI.

### **Defining the learning progressions**

When considering the aspect of defining the learning progressions, the occurrences of observed behaviors of three main components of learner autonomy including personal responsibilities, personal capabilities, and independent learning from the online observation checklist were plotted into different graphs as demonstrated in Figure 10.



*Figure 10: Occurrences of Observed Behaviors in Defining the Learning Progressions in Online Environment*

According to Figure 10, the occurrences of observed behaviors of learner autonomy of three main components in defining the learning progressions were equal and remained at 6.67 percent during phases 1 to 3, and then increased to 13.33 percent in phases 4 and 5. During phases 1 to 3, one pair of focused students did not submit their tasks before the due date and time, but in phases 4 and 5 all of the four focused students submitted their independent projects before the due date and time. It could be seen that the students' development in learner autonomy of three main components in defining the learning progressions in aspect of submitting their tasks and projects before due date and time was at a standstill before moving up to achieve their learner autonomy, since some students could submit their tasks before the due date and time at the beginning and during of the model with little instructor support via specifying the due date and time on the PBBSCI syllabus, and with peer support because of characteristics of pair tasks, and eventually without instructor and peer support when dealing with their projects. This was because all of the students developed themselves well in three main components of learner autonomy when they submitted their independent projects before the due date and time.

It was interesting that the occurrences of observed behaviors of learner autonomy of three main components in defining the learning progressions in terms of submitting their tasks and projects before the due date and time were equal which suggested that there was relationship between personal responsibilities, personal capabilities, and independent learning as one interviewed student pointed out in the

semi-structured interviews that *“Like previous tasks, confidence leads to willingness to do works. It means it must start from confidence, so we want to do [them]”* (Student 7). However, the relationship between personal responsibilities, personal capabilities, and independent learning was beyond the objective of this present study, so more details of this point were not discussed.

As for the findings from the student logs in the aspect of defining the learning progressions, two pairs of the focused students attempted and were able to give expected progression scores on the task and project rubric for all of the three tasks without instructor support but with peer support due to characteristics of pair tasks. Eventually, all of the four focused students also showed their attempts and capabilities to mark the expected progression scores on the task and project rubric for the independent projects without instructor and peer support. These findings showed that they gradually developed their learner autonomy of personal responsibilities, personal capabilities, and independent learning in defining the learning progressions by means of giving expected progression scores on the task and project rubric to complete the tasks with peer support (due to task characteristics of tasks that needed the students to work in pairs) and eventually without direct instruction, instructor and peer support, and control of the instructor when completing their independent projects.

Therefore, the findings from the student logs also showed the students' development of learner autonomy of personal responsibilities, personal capabilities, and independent learning in defining the learning progressions similar to the findings from the online observation checklist previously described, thus suggesting that the students were willing to take responsibilities for and were confident in their capabilities of defining their learning progressions in order to complete their independent projects eventually without direct instruction, instructor and peer support, and control of the instructor after taking the PBBCSI. However, these findings indicated the discrepancy against the quantitative findings that the students did not significantly develop their learner autonomy of personal responsibilities (see Table 37) and independent learning (see Table 51) in the aspect of defining the learning progressions after taking the PBBCSI.

### Taking the initiative

As for taking the initiative, consistent with some quantitative findings, the findings from the face-to-face observation checklist indicated the students' development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in taking the initiative that could be reflected through the occurrences of observed behaviors as illustrated in Figure 11.

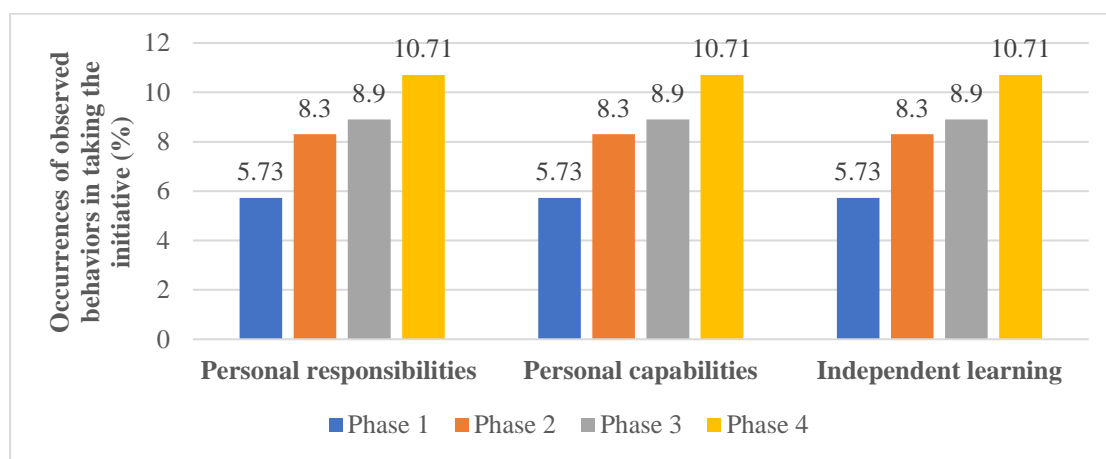


Figure 11: Occurrences of Observed Behaviors in Taking the Initiative: Face-to-face Environment

According to Figure 11, the occurrences of observed behaviors in three main components of learner autonomy in taking the initiative in face-to-face environment were at 5.73 percent in phase 1, rose to 8.30, 8.90, and 10.71 in phases 2, 3, and 4, respectively, suggesting that the students gradually developed themselves to achieve learner autonomy of personal responsibilities, personal capabilities, and independent learning in taking the initiative after taking the PBBCSI. To complete the activities in the face-to-face environment during phases 1 to 4, the students attempted at and were capable of self-initiating to take many actions in three main categories: *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the activities according to the work prompt of instructions, *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning, and *self-initiation without instructor-or-peer initiation to take new actions* for learning.



As for *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the activities according to the work prompt of instructions, the evidence of this category included that the students formed the pairs, listened to and watched YouTube clips, discussed and noted down their ideas and shared them to their pairs, helped type answers on the Google Doc tables, and participated in presenting face-to-face activities in front of the class in order to be commented by instructor and peers. These common actions emerged when the students attempted and were able to do the face-to-face activities after the instructor gave and explained the instructions with some examples and suggestions. Moreover, their peers might explain and give ideas to them so that they could complete the activities.


With respect to *self-initiation with (after) instructor-or-peer initiation to take new actions* that the students newly created for learning, they encouraged their pairs to participate in doing the activities by turning to their pairs to start doing the activities. They also acted as leaders in doing activities such as asking their pairs to repeat the questions. In addition, they asked other pairs about what they were not sure.

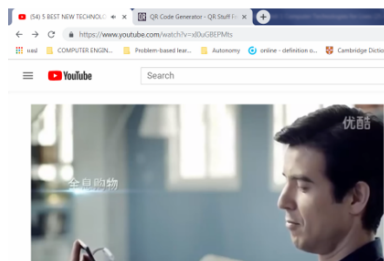
To deal with their face-to-face activities, they initially needed instructor and peer support which could be seen when the focused students asked questions with their adjacent peers to clarify the points that they had problems with in order to complete their activities. The students' occurrences of asking questions with the instructor and peers reduced when they came to deal with the activities in phases 3 and 4 since they had learning experience from previous phases.

When facing more problems with vocabulary although the activities were equipped with 'Video Vocabulary' (see Figure 12), they looked up the word meaning on online dictionary while listening to YouTube clips and other face-to-face activities, and sometimes opened scripts when listening to YouTube clips in order to complete the activities. These new actions occurred when the students attempted and were able to do the face-to-face activities after the instructor gave and explained the instructions with some examples and suggestions. In addition, their peers might explain and give ideas to them, so the students chose their new choices that they self-created to take new actions in order to complete their activities effectively.

### Inside Class Learning and Teaching Steps

#### 1. Preparation

- A.  **VIDEO** Watch the video on YouTube at <https://www.youtube.com/watch?v=xI0uGBEPMts> (time: 00.51-02.10 and 04.09-04.59).  
What kinds of computer technology are mentioned in the video?



Video Vocabulary	
1. track (v.)	= follow
2. dizziness (n.)	= the quality of confusing and very fast
3. thrilling (adj.)	= very exciting
4. approach (v.)	= come near to something or someone

Figure 12: Unit 1, Activity A with the Supplementary 'Video Vocabulary'

With regard to *self-initiation without instructor-or-peer initiation to take new actions* for learning, the students looked up the word meaning on online dictionary (most of the times, English-Thai dictionary, and sometimes, Thai-English dictionary) when dealing with activities of step 2 'Presentation' of Activity A, 'Vocabulary before listening' and Activity B, and 'Listening comprehension' (see Figure 13). This new action emerged when the individual students chose their own choice that they self-created to take this new action to complete their activities effectively which showed that the individual students attempted at and were capable of dealing with the face-to-face activities without the instructor and peer support such as instructions, explanations, and suggestions.

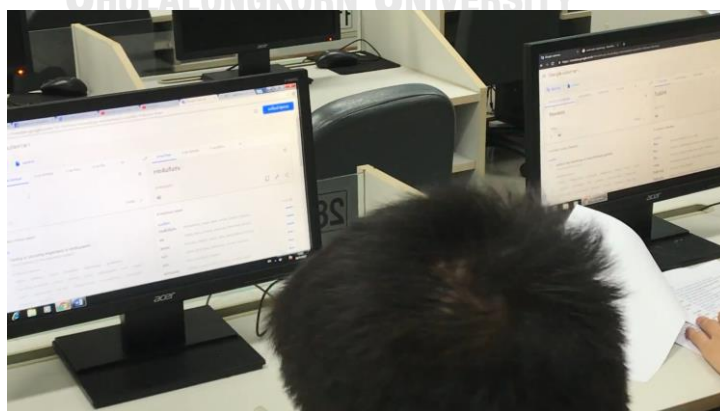


Figure 13: Unit 2, Students' Looking up the Word Meaning on Online Dictionary

Similar to the findings from the face-to-face observation checklist, the findings from the online observation checklist also indicated the students' development in learner autonomy of three main components which included personal responsibilities, personal capabilities, and independent learning in the aspect of taking the initiative that could be seen through the occurrences of observed behaviors as illustrated in Figure 14.

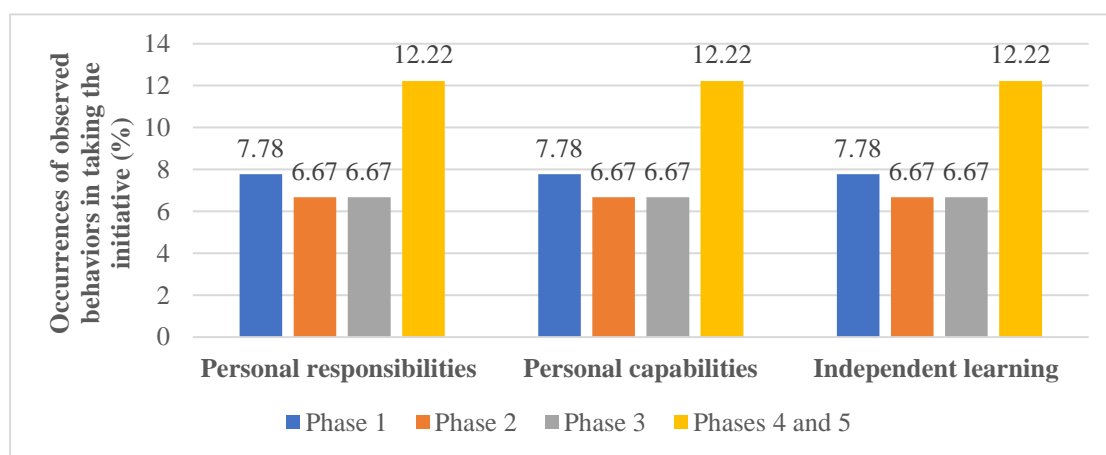


Figure 14: Occurrences of Observed Behaviors in Taking the Initiative: Online Environment

According to Figure 14, the occurrences of observed behaviors in three main components of learner autonomy in taking the initiative in online environment were at 7.78 percent in phase 1, slightly decreased to 6.67 percent in phases 2 and 3, and rose to 12.22 percent in phases 4 and 5, indicating the students' development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in taking the initiative with some inconsistent development (i.e. a bit decrease and increase in learner autonomy development) during their development process to achieve learner autonomy. To complete the tasks and the independent projects in the online environment during phases 1 to 5, the students exhibited their attempts and capabilities to self-initiate to do many actions in two main categories which consisted of *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the online tasks and the independent projects according to the work prompt of instructions and *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning.

As for *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the online tasks and the independent projects according to the work prompt of instructions, overall, after the students received the instructor's and peers' instructions, explanations, or suggestions on the tasks and the projects, the students attempted at and were capable of completing them according to the instructions without instructor support for the tasks, and without direct instruction, instructor and peer support, and control of the instructor for the projects. In addition, they posted their videos of tasks and projects on the Facebook group, and gave comments on them before the due date and time.

With respect to *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning in phase 1, one focused student encouraged her peers to give comments on the videos posted on Facebook. However, the behavior in encouraging peers to give comments on the videos did not occur again since phase 2, causing a little decrease of occurrences of behaviors in this kind of actions during phases 2 and 3 (see Figure 14). In phases 4 and 5, the occurrences of behaviors in this kind of actions rose again when carrying out their independent projects. For instance, focused student 1 self-initiated to take new actions by posting the correct way to submit their projects in .pptx form (PowerPoint form) (see Figure 15) in the 'consultation box' on Facebook group in which the students asked the instructor or peers the questions to deal with their works.

It was interesting that the characteristics of questions in phases 1 and 5 were different in that in phase 1 the questions were mainly about how to do the tasks but in phase 5 the questions were about project submission because the students needed to make sure they submitted their projects before the due date and time.

However, there were no occurrences of behaviors related to *self-initiation without instructor-or-peer initiation to take new actions* for learning when compared with the findings from the face-to-face observation checklist. It might be due to the reason that the students attempted to complete the tasks according to the instructions only.

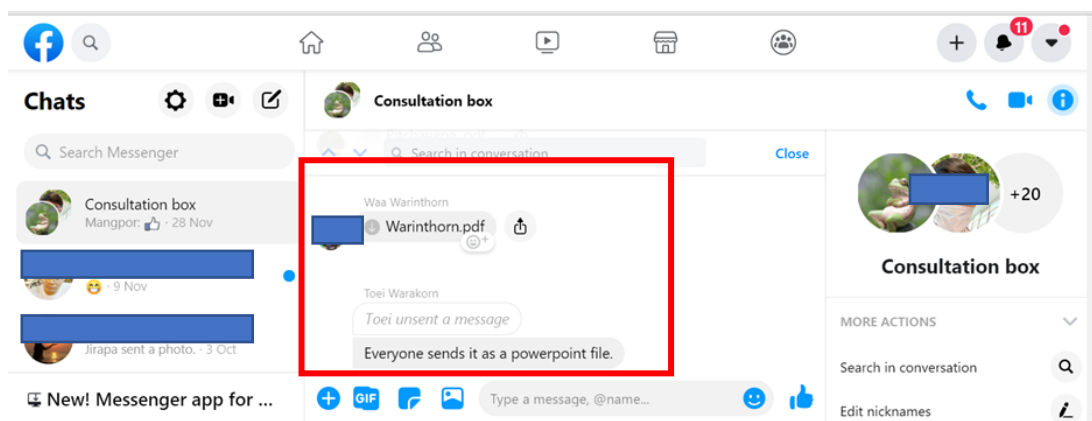


Figure 15: Correct Way to Submit the Independent Projects Posted by Focused Student 1

To conclude, the findings from both the face-to-face and online observation checklists reflected that the students gradually developed their learner autonomy of personal responsibilities, personal capabilities, and independent learning in taking the initiative which initially they needed instructor's and peers' initiation on task explanations and suggestions in phase 1, and as such they were willing to and able to complete the tasks without instructor and peer support in phases 2 and 3. Then, they applied what they learned and practiced to start carrying out their independent projects since phase 4. However, the findings from the checklists were limited in phases 1 to 4 in face-to-face environment and phases 1 to phase 5 in online environment. Therefore, these findings needed to be supported by the findings from the student logs and the semi-structured interviews in the following sections.

Congruent with the findings from both the face-to-face and online observation checklists, the findings from the student logs demonstrated the students' development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in taking the initiative during phases 1 to 6 which the students showed their attempts and capabilities of self-initiating to take many actions in two main categories which consisted of *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the online tasks and the independent projects according to the work prompt of instructions and *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning.

When considering *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the online tasks and the independent projects

according to the work prompt of instructions, the students gradually developed themselves for filling out the student logs with more details task by task and eventually their independent projects (see Appendices H and I).

With regard to *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning, the students changed to use self-selected platforms such as ‘Discord’ instead of instructor-recommended ones such as Skype, Facebook Messenger, etc. for oral communication platforms, and ‘Bandicam’ instead of ‘Ocam’ for recording the screen while doing the tasks and the projects.

As such, these findings of students’ self-initiation after instructor-or-peer initiation to take common and new actions previously described suggested that the students were willing and able to self-initiate to do many common and new actions to complete their tasks and independent projects.

Similar to the findings from the online observation checklist, the findings from the student logs did not show the occurrences of observed behaviors of students’ self-initiation without instructor-or-peer initiation to take new actions for carrying out the tasks and the projects because they filled out the information according to the requirements of each part of the student log and carried out the tasks and the projects according to the instructions of the tasks and the projects, and according to their application of what they learned and practiced in the previous tasks of previous phases.

Also, from the semi-structured interviews, most of the interviewed students reflected their willingness to take responsibilities for and confidence in their capabilities in taking different actions which contributed to their independent learning in order to complete the face-to-face activities, the online tasks, and the independent project or so-called works as follows.

With respect to *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the works according to the work prompt of instructions (e.g. giving explanations, examples, guidelines, choices, or ideas), most of the interviewed students were willing to self-initiate to take common actions as previously described such as forming pairs, listened to and watched YouTube clips, discussed and shared ideas with their peers, giving comments on peers’ tasks and projects before the due date and time, etc. because self-initiating to take common

actions helped them develop their English oral communication ability, especially their vocabulary.

*“I am willing to do so because we are studying this [doing tasks and projects], if we want to improve what we want to understand, we must practice or work on it as assigned in order to develop our skills [English oral communication ability].”*

*(Student 1)*

*“I am willing to do so because it’s an opportunity to learn new words and watch YouTube clips. When I don’t know the meaning of words, I search [on the Internet], making me want to learn and feel more confident in using words.”*

*(Student 4)*

In addition, one interviewed student pointed out that *self-initiation with (after) instructor-or-peer initiation* gave benefits for further doing works (i.e. face-to-face activities, online tasks, and independent projects).

*“I am willing to do so because after the instructor or peers say [or explain], this makes us know what we should start, so it also makes us confident to do right things.”* *(Student 12)*

In terms of confidence in capabilities to do works after instructor-or-peer initiation to take common actions, most of the interviewed students reflected that they were more confident in the dealing with works after they got instructor explanations, especially on the concepts and the steps of doing works.

*“I feel more confident. I mean if the instructor explains about works or explains about the concepts and steps of works, this makes me confident of what I am going to do is correct, so I feel more confident to start doing works.”* *(Student 1)*

*“It means after getting the instructor’s explanations, I understand what the instructor wants me to do, so I do works with confidence.”* *(Student 3)*

In addition, the finding revealed that the students showed their attempts to complete works by different ways to increase their confidence in their capabilities to tackle works.

*“Before starting to work, I myself read instructions again...to make sure there are no missing points to do works.” (Student 7)*

*“I try on searching [information] by myself. I want to do it by myself and search by myself. If there are words that I don't know their meanings, I try on looking up their meanings on the dictionary and remember them.” (Student 4)*

As for *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning, most of the interviewed students reflected that they were willing to conduct their works because the new actions were useful for them to complete the works. To do so, they searched for new knowledge to solve problems by means of different ways such as looking up the meaning of words on online dictionary, searching more information on the Internet, etc.

*“I may feel willing because I can look up word meaning on a dictionary [online dictionary]... when I want to know word meaning, I go search for the meaning.” (Student 3)*

*“I am willing to do so like the previous question. I can learn new things that I don't know, so I try to search for [more information].” (Student 4)*

In addition, some interviewed students also reported that they were willing to self-initiate to take new actions with (after) instructor-or-peer initiation after they had ideas, so they could initiate their peers to complete the works.

*“I am willing to do so because after I have ideas, I will initiate my pair that I have this idea, how about you? And then conclude the ideas before conducting the works.” (Student 12)*



*“Most of the times I initiate my pair and tell her to start doing works.”*

*(Student 7)*

One interviewed student added that score rewarding was one reason that he was willing to self-initiate to take new actions after instructor-or-peer initiation to complete the works.

*“...Actually, the works must be completed. And scores are one of the reasons that the works must be completed...” (Student 8)*

In terms of confidence in capabilities to do works after instructor-or-peer initiation to take new actions, most of the interviewed students revealed that they were confident in their capabilities in dealing with the works because they required better ways to complete their works.

*“I am confident because if there is another way to do works, and if I have better ways to do so I will propose them [to my pair] or apply them to conduct works successfully.” (Student 1)*

*“...I am confident because everything should start from confidence that is enough to initiate peers to do works, activate them to do works, look for appropriate ways, or search more information for more appropriate ways to carry out the project.” (Student 7)*

Regarding *self-initiation without instructor-or-peer initiation to take new actions* for learning, most of the interviewed students reflected that the main factor if they were willing to self-initiate to take new actions without instructor-or-peer initiation depended on their understanding of works.

*“If I don’t understand the works, I don’t want to do them, but if I understand them, I am willing to conduct and find better ways to deal with them successfully.”*

*(Student 1)*

*“When I understand the work, it means its scope is clear, so I can start doing the work, so I can initiate my peers to do the work.” (Student 7)*

Interestingly, one interviewed student reflected a self-awareness of taking responsibilities for doing the works that taking new actions without instructor-or-peer initiation in order to complete the works was such a thing that the students had to do because it was their responsibilities or duties as shown in this conversation:

Interviewer: How can you know that you have to do works?

Student 8: *I have to do.*

Interviewer: Why do you have to do them?

Student 8: *They are duties.*

When considering the confidence in capabilities of doing works without instructor-or-peer initiation to take new actions, most of the interviewed students were confident in their capabilities of conducting the works due to availability of various choices to complete the works which meant that they felt confident in their capabilities of searching for and selecting the appropriate choices to deal with their works successfully as demonstrated in the following excerpts of their answers.

*“Because I think there are many choices to get answers such as online dictionary, Google that the answers can be found there.” (Student 8)*

*“I am confident because we have to search for many ways to conduct the works successfully.” (Student 12)*

In addition, one interviewed student also pinpointed that “needs to learn” (Student 1) were one of the reasons that helped her feel confident in her capabilities in taking new actions to tackle the works without instructor-or-peer initiation.

To summarize, it was evident that the findings from the face-to-face and online observation checklists, and the student logs indicated the students’ development in learner autonomy of personal responsibilities, personal capabilities, and independent

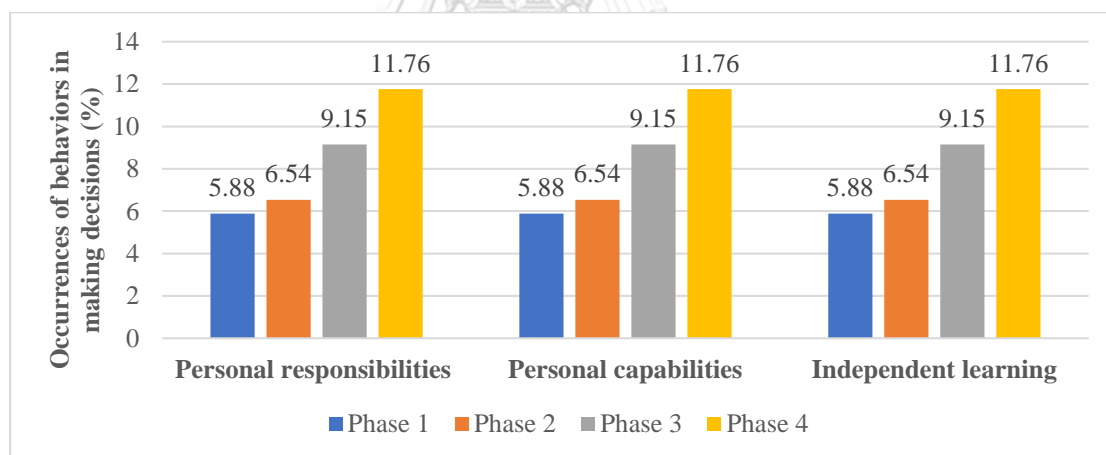
learning in terms of taking the initiative with gradual development in face-to-face environment, and with some inconsistent development (i.e. a bit decrease and increase in learner autonomy development) before rising up in their learner autonomy development in online environment. To complete the works, the students mainly performed three kinds of actions which included *self-initiation with (after) instructor-or-peer initiation to take common actions* necessary for completing the works (i.e. the activities, the tasks, and the projects) according to the work prompt of instructions, *self-initiation with (after) instructor-or-peer initiation to take new actions* that they newly created for learning, and *self-initiation without instructor-or-peer initiation to take new actions* for learning as previously described. The students demonstrated all of three kinds of actions in face-to-face environment to carry out the face-to-face activities, while they performed the first two kinds of actions in online environment and in the student logs to conduct the online tasks and eventually the independent projects which might be caused by the main reasons that the students filled out the information on the student logs according to their requirements and conducted the online tasks and the projects according to their instructions.

As such, these two kinds of actions showed that the students were willing to take responsibilities for and confident in their capabilities of taking the initiative after they initially gained instructor-or-peer initiation (e.g. instructions, explanation, suggestions) so that eventually they completed their projects without direct instruction, instructor and peer support, and control of the instructor.

The findings from the semi-structured interviews gave more details and were also in congruence with the findings of the face-to-face and online observation checklists, and the student logs. In addition, the qualitative findings from all of the sources as previously mentioned were consistent with the quantitative findings of two main components of learner autonomy that overall the students had the development in learner autonomy of personal responsibilities (see Table 37) and personal capabilities (see Table 44) in taking the initiative, while the qualitative findings showed the discrepancy against the quantitative findings which the students did not demonstrate their significant development in learner autonomy of independent learning (see Table 51) in the aspect of taking the initiative for completing the works as previously described.

### **Making decisions on selecting methods or techniques, communication strategies, and resources**

With respect to making decisions on selecting methods or techniques, communication strategies, and resources, the findings from the face-to-face observation checklist in the face-to-face environment indicated the students' development in the aspects of personal responsibilities, personal capabilities, and independent learning in making decisions on selecting methods or techniques and resources, except communication strategies as shown in Figure 16. The occurrences of observed behaviors in this aspect were at 5.88 percent in phase 1, went up to 6.54, 9.15, and 11.76 percent in phases 2, 3, and 4, respectively, suggesting that the students gradually developed themselves to achieve learner autonomy of personal responsibilities, personal capabilities, and independent learning in the aspect of making decisions on selecting methods or techniques and resources after taking the PBBCSI.

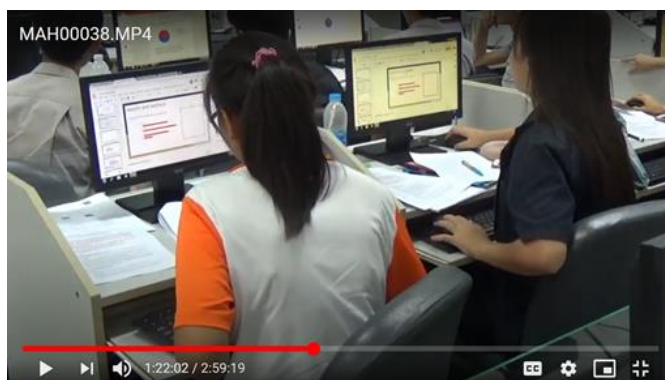


*Figure 16: Occurrences of Observed Behaviors in Making Decisions on Selecting Methods or Techniques, Communication Strategies, and Resources in Face-to-face Environment*

The occurrences of observed behaviors in face-to-face environment previously mentioned included that the students attempted to collaboratively (i.e. working together on the same steps of doing the activities) conduct the activities most of the times due to the time constraint to complete them within the allocated time. For example, they tried to work on Google slides so they could help each other

collaboratively work on the same slides at the same time but from different computers (see Figure 17). In addition, after the students received instructions, explanations, and suggestions to carry out the activities, initially they needed little instructor support on suggestions to deal with their activities, but still needed peer support when working in pairs. The occurrences of observed behaviors in completing the activities by means of using different methods or techniques and resources, initially with peer support and eventually without instructor support as previously described on making decisions on selecting methods or techniques and resources suggested the students' willingness to take responsibilities for and confidence in their capabilities of carrying out the activities in face-to-face environment, contributing to their development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in making decisions on selecting methods or techniques and resources.

It was noted that the occurrences of observed behaviors in making decisions on selecting communication strategies both in face-to-face and online environments were not collected because in face-to-face environment, it was very difficult to collect and analyze students' decisions on selecting communication strategies. Moreover, due to time constraints, the students planned to use the communication strategies for the activities, but the planned-to-use communication strategies were not gathered as empirical evidence in this environment. In online environment, the students needed to reflect their decisions on selecting communication strategies on the student logs in 'Planning the procedure' for doing their online tasks and independent projects. However, they did not do so, but used communication strategies in their videos of online tasks and projects.



*Figure 17: Students' Collaboration on Google Slides*

Similar to the findings from the face-to-face observation checklist, the findings from the student logs in terms of making decisions on selecting methods or techniques and resources during phases 1 to 6 revealed the students' attempts and confidences in capabilities to make decisions on selecting methods or techniques and resources initially with little instructor support (e.g. giving some comments on their student logs) and peer support (due to characteristics of tasks that needed them to work in pairs) for dealing with their tasks (phases 1 to 3) and eventually without instructor and peer support for completing their independent projects (phases 4 to 6).

Concerning selecting methods or techniques, on part III 'Planning the procedure' on the student logs (see Appendices H and I), the students changed to use self-selected oral communication platforms as their new choices which were more appropriate for doing the following online tasks and projects such as 'Discord' instead of instructor-recommended platforms such as Skype, Facebook Messenger, etc. and 'Bandicam' instead of 'Ocam' for recording the screen when carrying out their online tasks and projects as previously described in self-initiating to take new actions in order to accommodate their working process according to time, place, and pace as specified in the table of 'Planning the procedure.'

Regarding selecting another methods or techniques as reflected in the column of 'Respondents' in which the students assigned responsibilities for each person when conducting tasks 1 to 3 of phases 1 to 3 (see Figure 19). In doing so, the students cooperatively conducted task 1 in which they allocated each person to take responsibilities for each step of doing the entire work. For the following tasks, they collaboratively (i.e. both students worked together for each step of the entire work) and cooperatively carried out the tasks in order to facilitate their working process according to time (duration of doing each step of the entire work), place (meeting places and selected social platforms), and pace (duration of doing the entire work), in order to carry out their tasks before the due date and time with little instructor support (e.g. giving some comments on student logs) and peer support (due to task characteristics that needed them to work in pairs) and eventually to complete their independent projects without instructor and peer support on selecting methods or techniques and resources, as well as communication strategies that were shown in their videos but not analyzed in this study.

With respect to selecting resources as demonstrated in the column of ‘Resources’ (see Figure 18), the students selected appropriate resources on the Internet to best conduct their tasks and independent projects.

What websites?

**III. Planning the procedure:**  
1. How do you do the task or the project?

Working steps	Respondent (Who?)	Resources (Write T if available from the textbook, F if from Facebook, N if they are new, and name who suggests them.)	Time (duration of doing each step)	Place (meeting places and selected social platforms)	Pace (duration of doing the entire work)
1. Choose a topic.....	Warakorn	N (Google, Youtube)	15 mins	Line	1.30 hour
2. Define scope a topic.....	Warakorn	N (Google, Youtube)	15 mins	Line	
3. Discuss about the content.....	Warakorn		40 mins	Line	
4. Record about the content.....	Wanvipa		10 mins	Bandicam	
5. Post video on the Facebook.....	Wanvipa		10 mins	Home	
6. ....					✓
7. ....					

New ideas, methods or techniques, expressions, and names who suggest them:  
.....  
.....  
.....

Figure 18: ‘Planning the procedure’ on the Student Log

It was evident that students’ behaviors reflected from the student logs in ‘Planning the procedure’ in terms of selecting new methods or techniques using self-selected oral communication platforms, allocating work via cooperation and collaboration, and choosing appropriate resources to complete the purposes of different tasks and independent projects supported the students’ development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in the aspect of making decisions on selecting methods or techniques and resources, initially with little instructor support (e.g. giving some comments on student logs) and peer support (due to task characteristics that needed them to work in pairs) and eventually without instructor and peer support to complete their independent projects.

Evidence of behaviors in making decisions on selecting communication strategies was not found in the face-to-face and online observation checklists, and even the student logs since this aspect was not investigated both in face-to-face and

online environments. As for the student logs, the students did not report the use of communication strategies in ‘Planning the procedure,’ but those communication strategies were employed in the videos of the online tasks and the independent projects which were not analyzed in this study. However, from the researcher’s observation while scoring students’ tasks and projects, the students mainly employed three communication strategies, including asking for clarification, asking for confirmation, and the use of fillers and hesitation devices, while the circumlocution strategy was rarely used in their tasks and was not used in projects. These findings were in line with the quantitative findings from the test tasks previously described that the students employed only three communication strategies, consisting of asking for clarification, asking for confirmation, and the use of fillers and hesitation devices, except the circumlocution strategy that is used for describing the target words that the speaker cannot remember, possibly due to the fact that the students were studying in the computer engineering field, thus having no difficulty using the technical terms related to different topics of test tasks naturally.

Furthermore, based on the semi-structured interviews, the interviewed students employed those three frequently used communication strategies in order to solve communication problems as follows.

As for the asking for clarification strategy, it was used to inquire the speaker or interlocutor to explain the target problem utterances: *“I have little knowledge of vocabulary, so I ask my friends about its meaning.” (Student 4)*

With respect to the asking for confirmation, it was used to check if the interlocutor understood what the speaker has said or to confirm what the speaker has heard or understood was correct: *“I usually use this strategy with my friends, sometimes I ask my instructor if what I have understood is correct, or if it means like this, so I ask for raising my confidence.” (Student 7)*

Regarding the use of fillers and hesitation devices, it was employed to obtain more time to think before continuing further utterances:

*“I use this strategy to buy time to think about appropriate vocabulary because I have limited knowledge of vocabulary.” (Student 1)*



*“Sometimes when my friends speak to me and I cannot answer immediately, so I need to extend more time to think to avoid dead air.” (Student 12)*

As for the circumlocution strategy, the reasons that most of the interviewed students did not use this strategy because it was more difficult for them to describe the target words due to their limited language knowledge, so they tried to use other words instead.

*“...because I am not good at English. It needs to explain [the target words] a lot and I have to know their meanings.” (Student 4)*

*“It’s difficult to explain the words, so I use other words instead.” (Student 1)*

*“...because when explaining something, it needs a combination of words, possibly it needs more than that combination, so it is difficult for me to do so...” (Student 8)*

To conclude, the findings from the face-to-face and online observation checklists, and the student logs reflected that the students gradually developed their personal responsibilities, personal capabilities, and independent learning in making decisions on selecting methods or techniques and resources, especially on new methods and resources as their new choices which were more appropriate to support their working process according to time, place, and pace in order to accomplish their activities, tasks, and projects effectively, initially with little instructor support (e.g. giving some comments on student logs) and peer support (because of task characteristics that needed the students to work in pairs) and eventually without instructor and peer support to complete their independent projects which meant that the students were willing to take responsibilities for and confident in their capabilities of making decisions on selecting methods or techniques and resources to complete their independent projects without direct instruction, instructor and peer support, and control of the instructor after taking the PBBCSI. These qualitative findings were in

accordance with the quantitative findings that overall the students showed their development of personal responsibilities (see Table 37) and personal capabilities (see Table 44) in making decisions on selecting methods or techniques and resources, except communication strategies which were not found in the qualitative sources because this aspect was not investigated in the face-to-face observation checklists and were not found in the online observation checklists, and the students did not mention the use of communication strategies in the student logs as previously described.

However, the qualitative findings from the face-to-face and online observation checklists, and the student logs showed the discrepancy against the quantitative findings that the students did not have significant development in independent learning (see Table 51) in the aspect of making decisions on selecting methods or techniques, communication strategies, and resources.

#### **Monitoring the task and the project completion procedures**

With respect to monitoring the task and the project completion procedures, the findings from the student logs (see Appendices H and I) in terms of monitoring the task and the project completion procedures during phases 1 to 6 showed the students' development in learner autonomy of personal responsibilities, personal capabilities, and independent learning in terms of monitoring the task and the project completion procedures, initially with little instructor support (e.g. giving some comments on student logs) and peer support (because of task characteristics that the students needed to work in pairs) and eventually without instructor and peer support to complete their independent projects.

In phase 1, one pair of the focused students did not monitor their working steps on the student log. Later, two pairs of focused students gave more information on their monitoring the task and the project completion procedures when they stepped into more phases of doing online tasks and projects and reflected that checking the steps of doing those works helped them “*work in a sequence of steps and accommodate [doing] the tasks efficiently*” (Focused pair 1, task 2), especially phase 3 (task 3) and phases 4 to 6 (independent project) in which they gave specific details to improve their tasks and more details of their monitoring as follows:

*“[We] should add a plan to review the data we analyze and summarize to increase the efficiency of the work and complete the work with perfection.” (Focused pair 1, task 3)*

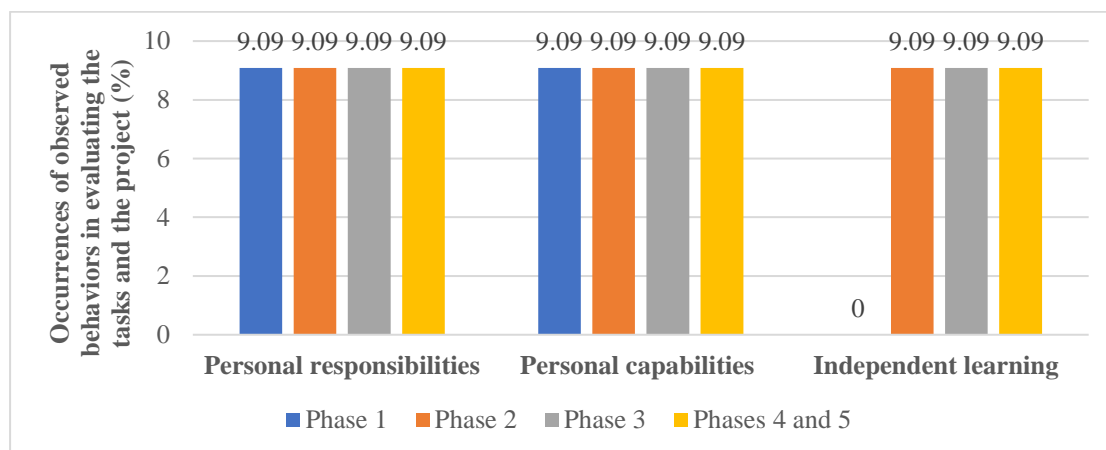
*“The plan helps achieve the project effectively. It helps me save time for doing project because the plan makes me know what to do next and resources that should be used to do the project.” (Focused student 3, independent project)*

According to the students’ reflections on the student logs, it could be seen that the students attempted at and were able to give more information on their monitoring the task and the project completion procedures when they stepped into more phases of doing tasks and projects, initially with little instructor support (e.g. giving some comments on student logs) and peer support (due to pair task characteristics) and eventually without instructor and peer support to complete their independent projects, suggesting the students’ development of personal responsibilities, personal capabilities, and independent learning in monitoring the task and the project completion procedures which meant that they become more willing to take responsibilities for and confident in their capabilities of monitoring their working process for completing their independent projects without direct instruction, instructor and peer support, and control of the instructor, thus supporting the quantitative findings that the students significantly developed their learner autonomy of personal responsibilities (see Table 37) and personal capabilities (see Table 44) in monitoring the task and the project completion procedures, but showed the discrepancy against the quantitative findings of independent learning in this aspect (see Table 51).

### **Evaluating the completed tasks and the project**

In consideration of evaluating the completed tasks and the project, Figure 19 shows the occurrences of observed behaviors of three main components of learner autonomy consisting of personal responsibilities, personal capabilities, and independent learning from the online observation checklist in online environment which remained at 9.09 percent during phases 1 to 5 for personal responsibilities and personal capabilities. As for independent learning, the occurrences of observed behaviors were

at 0 percent, then increased and remained at 9.09 percent the same as those of the first two components.



*Figure 19: Occurrences of Observed Behaviors in Evaluating the Completed Project in Online Environment*

However, the graph of the occurrences could not reveal real occurrences of observed behaviors in this aspect due to the fact that their occurrences of observed behaviors came to the optimal point that they could not go beyond that point because when one focused student gave comments on their peer works in Facebook group, it was interpreted as one occurrence of this behavior. Therefore, when all of the four focused students gave comments on peer works of all phases, resulting in equal occurrences of observed behaviors of all investigated phases which seemed to show no development of their learner autonomy in this aspect, but in fact, it was not like that. All of the students of the class including all of the four focused students gave comments under their peers' videos of tasks and projects in Facebook group in relation to the criteria of the task and project rubric (see Figures 20 and 21).

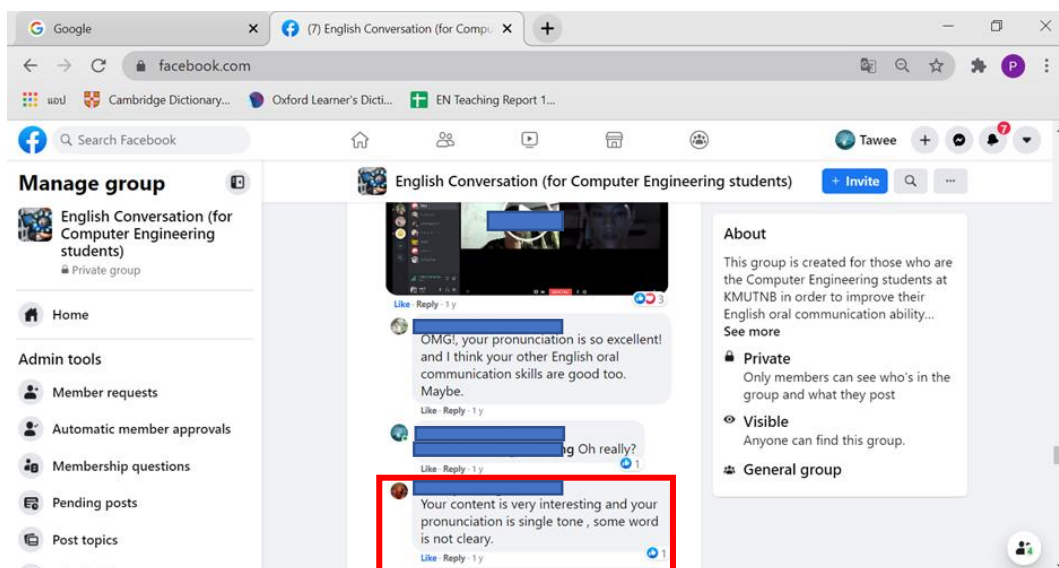


Figure 20: Focused Student 2's Comments on Peer Online Task 1

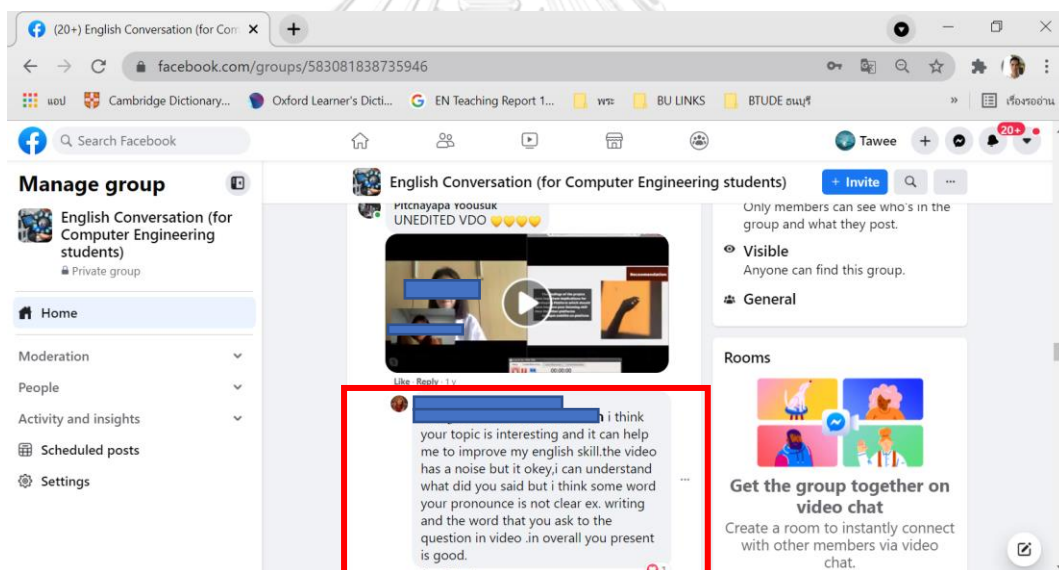


Figure 21: Focused Student 2's Comments on Peer Independent Project

With respect to students' comments in the Facebook group, they were categorized into two aspects according to the criteria of the task and project rubric as follows:

1) the task and project quality, especially on content of the tasks and projects such as *"This is a good content that you talk about e-wallet"* (Student 1) and use of methods or techniques *"...the video is frozen."* (Student 3)

2) English oral communication ability, especially on range (vocabulary), fluency, and pronunciation such as *“But sometimes there are monotone and not fluency. A little wrong pronunciation”* (Student 2) and *“Sometimes speaking is not fluent, some pronunciation is incorrect.”* (Student 4)

According to students' comments in Figures 20 and 21, they had more details when the students came to deal with the following tasks with little instructor and peer support (noted that for task 1, the instructor had to encourage one focused student to tell other students to give comments on their peer videos, and each student commented the videos without instructor support since phase 2) and eventually without instructor and peer support when they stepped into conducting their independent projects, suggesting the students' gradual development of personal responsibilities, personal capabilities, and independent project in evaluating the completed tasks, initially with little instructor and peer support, and eventually without instructor and peer support when completing their independent projects which meant that they became more willing to take responsibilities for and confident in their capabilities of evaluating the independent projects without direct instruction, instructor and peer support, and control of the instructor for their learning after taking the PBBCSI.

Interestingly, concerning the optimal point that the students could not move beyond that point, it also confirmed that there was relationship between personal responsibilities, personal capabilities, and independent learning previously described in the section of defining the learning progressions in that when the occurrences of one component increased, the occurrences of other components also increased. However, this relationship was not always consistent as could be seen in phase 1 in Figure 19 when the occurrences of observed behaviors of personal responsibilities and personal capabilities rose up, but no occurrences in independent learning emerged because the instructor had to encourage one focused student to tell other students to evaluate their peers' videos in Facebook group which meant that they needed instructor and peer support for doing so. Further details of this relationship were not investigated and analyzed since they were beyond the objectives of this study.

Consistent with the findings from the online observation checklist, the findings from the student logs also suggested the students' development of personal

responsibilities, personal capabilities, and independent learning in evaluating the completed tasks and the project.

During phases 1 to 6, all of the four focused students evaluated all of their online tasks and projects by giving the self-assessment scores on the task and project rubric, the scores of which were not analyzed in this present study. In addition, the students made reflections on their tasks and projects on all of the questions with more details when coming to task 3, initially with little instructor support via comments and suggestions on the student logs, and peer support via working in pairs, and eventually without instructor and peer support when conducting their independent projects, suggesting that they became more willing to take responsibilities for and confident in their capabilities of evaluating and making reflections on independent projects without direct instruction, instructor and peer support, and control of the instructor when they had enough learning experiences and ideas to do so independently as seen in the part 'Reflection' of the student logs (see Appendices H and I).

In summary, the qualitative findings from the face-to-face and online observation checklists, and student logs showed the students' gradual development in learner autonomy of three main components which consisted of personal responsibilities, personal capabilities, and independent learning in all of the six aspects which included determining the goals and the objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project, initially with little instructor support such as comments and suggestions both in face-to-face and online environments during phases 1 to 3, and with some peer support due to the characteristics of activities and tasks that needed the students to work in pairs, and eventually without instructor and peer support when they came to conduct their independent projects since phase 4, thus indicating that the students became more willing to take responsibilities, confident in their capabilities, and independent for doing their independent projects. As such, they became able to take control on their responsibilities, capabilities, and independent learning for dealing with the six aspects of learner autonomy in order to complete their independent projects without direct instruction, instructor and peer support, and control of the instructor for their

independent learning after they took the PBBCSI, thereby confirming most of the quantitative findings that the students significantly developed their learner autonomy of personal responsibilities and personal capabilities, but indicated the discrepancy against the quantitative findings that the students did not have significant development in independent learning.

Moreover, the students showed inconsistent development in three aspects of learner autonomy which included defining the learning progressions in terms of submitting the tasks and the projects before the due date and time in online environment in which the students showed standstill development in early PBBCSI phases before moving up to achieve their learner autonomy (see Figure 11); taking the initiative in online environment in which the students demonstrated their rising-falling-standstill-rising learner autonomy development (see Figure 15); and evaluating the completed tasks and the project in online environment in which the students' occurrences of observed behaviors reached their optimal point that they could not move beyond that point, resulting in standstill development which seemed to show no development in learner autonomy, but in fact there was students' development in learner autonomy as previously described.

### 4.3 Results of Research Question 3

**Research Question 3:** *What are students' opinions toward the PBBCSI?*

In response to this research question, the data from the post-learner autonomy questionnaire (Post-LAQ) in Part 2 consisting of 48 items were used to uncover undergraduate engineering students' opinions toward the PBBCSI after taking this instructional model.

To answer Research Question 3, the results based on the post-learner autonomy questionnaire (Post-LAQ) scores after taking the PBBCSI of Part 2 were analyzed and illustrated in Table 53.



Table 53: Students' Opinions toward the PBBCSI

	Mean (M)	Median (Mdn)	Meaning (median-based) <sup>a</sup>
<b>Overall opinions</b>	<b>3.86</b>	<b>3.73</b>	<b>High</b>
<b>I. Learning and teaching steps for doing the online tasks and the independent project</b>			
63. The following learning and teaching steps help develop my <u>English oral communication ability</u> for doing the <u>online tasks</u> .			
63.1 Face-to-face environment	3.90	4.00	High
63.2 Online environment	3.70	4.00	High
64. The following learning and teaching steps help develop my <u>English oral communication ability</u> for carrying out the <u>independent project</u> .			
64.1 Face-to-face environment	3.75	4.00	High
64.2 Online environment	3.75	4.00	High
65. The following learning and teaching steps help develop my <u>responsibilities</u> (willingness to take responsibilities) for doing the <u>online tasks</u> .			
65.1 Face-to-face environment	3.80	4.00	High
65.2 Online environment	3.65	4.00	High
66. The following learning and teaching steps help develop my <u>responsibilities</u> for carrying out the <u>independent project</u> .			
66.1 Face-to-face environment	3.95	4.00	High
66.2 Online environment	3.90	4.00	High
67. The following learning and teaching steps help develop my <u>capabilities</u> (confidence in your abilities) for doing the <u>online tasks</u> .			
67.1 Face-to-face environment	4.05	4.00	High
67.2 Online environment	4.05	4.00	High
68. The following learning and teaching steps help develop my <u>capabilities</u> for doing the <u>independent project</u> .			
68.1 Face-to-face environment	4.10	4.00	High
68.2 Online environment	4.10	4.00	High
<b>II. PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project</b>			
69. The following phases of the PBBCSI model help develop my <u>English oral communication ability</u> for completing the independent project.			
69.1 Initiation	3.80	4.00	High
69.2 Inquiry	3.70	4.00	High
69.3 Analysis	3.65	4.00	High
69.4 Solution	3.80	4.00	High
69.5 Assessment and reflection	3.90	4.00	High
69.6 Revision and publication	3.85	4.00	High
70. The following phases of the PBBCSI model help develop my <u>responsibilities</u> for completing the independent project.			
70.1 Initiation	3.85	4.00	High
70.2 Inquiry	3.90	4.00	High
70.3 Analysis	3.85	4.00	High
70.4 Solution	3.85	4.00	High
70.5 Assessment and reflection	4.05	4.00	High

70.6 Revision and publication	4.00	4.00	High
71. The following phases of the PBBCSI model help develop my <u>capabilities</u> in completing the independent project.			
71.1 Initiation	3.70	4.00	High
71.2 Inquiry	3.80	4.00	High
71.3 Analysis	3.85	4.00	High
71.4 Solution	3.75	4.00	High
71.5 Assessment and reflection	3.80	4.00	High
71.6 Revision and publication	3.75	4.00	High
79. The wrap-up at the end of each unit helps me better understand the concept of each phase for performing the independent project.	4.10	4.00	High
<b>III. Benefits of instructor's and peers' comments and suggestions, and self-selected choices on completing the online tasks and the independent project</b>			
72. **In case, I attended the instructor-student project consultation, I benefit from instructor's comments and suggestions.	2.80	4.00	High
73. **I benefit from <u>peers'</u> comments and suggestions about my <u>online tasks</u> on Facebook.	3.75	4.00	High
74. **I benefit from <u>peers'</u> comments and suggestions about my <u>independent project</u> on Facebook.	3.75	4.00	High
75. **I benefit from <u>instructor's</u> comments and suggestions about my <u>online tasks</u> on the task and project rubric.	4.20	4.00	High
76. **I benefit from <u>instructor's</u> comments and suggestions about my <u>independent project</u> on the task and project rubric.	4.20	4.00	High
77. **I benefit from <u>instructor's and peers'</u> comments and suggestions about my <u>independent project</u> in the instructor-student project consultation.	4.10	4.00	High
78. I benefit from making and selecting choices for learning and doing works.	4.10	4.00	High
<b>IV. Preferences of the PBBCSI on the development of English oral communication ability and learner autonomy</b>			
80. **In overall, I think the PBBCSI model improves my <u>English oral communication ability</u> to perform:			
80.1 Face-to-face activities	3.80	4.00	High
80.2 Online tasks	4.05	4.00	High
80.3 Independent project	4.00	4.00	High
81. In overall, I think the PBBCSI model has increased my <u>responsibilities</u> to perform:			
81.1 Face-to-face activities	4.05	4.00	High
81.2 Online class tasks	3.80	4.00	High
81.3 Independent project	3.80	4.00	High
82. In overall, I think the PBBCSI model has enhanced my <u>capabilities</u> in the six aspects of learner autonomy to perform:			
82.1 Face-to-face activities	3.85	4.00	High
82.2 Online tasks	3.90	4.00	High
82.3 Independent project	3.80	4.00	High
83. I think the PBBCSI model can give me benefits for my future careers.	3.95	4.00	High

\*p < .05, n = 20, \*\*Adapted from Channuan (2012).

<sup>a</sup> Meaning (median-based) refers to the classified or interpreted level of opinions: 1.00-1.50 = very low, 1.51-2.50 = low, 2.51-3.50 = moderate, 3.51-4.50 = high, and 4.51-5.00 = very high

The findings in Table 53 demonstrated that overall the students had positive opinions toward the PBBCSI after the fifteen-week intervention at a high level (Mdn = 3.73). In addition, the findings also revealed the students' positive opinions towards the PBBCSI in all of the items of the four domains which consisted of learning and teaching steps for doing the online tasks and the independent project; PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project; benefits of instructor's and peers' comments and suggestions, and self-selected choices on completing the online tasks and the independent project; and preferences of the PBBCSI on the development of English oral communication ability and learner autonomy.

To support the findings of the Post-LAQ, the qualitative data were collected and analyzed from semi-structured interviews with the twelve students who were purposively-selected for the interviews as previously described. These students were the same as those who paired up by themselves to perform the online tasks and were willing to give responses to the questions.

### **Domain 1: Learning and teaching steps for doing the online tasks and the independent project**

When considering the first domain learning and teaching steps for doing the online tasks and the independent project, the students reflected the positive opinions towards all of the elements of this domain at the high level (Mdn = 4.00, for each element) which learning and teaching steps in both the face-to-face and online environments helped the students develop English oral communication ability for completing the online tasks and the independent project, and responsibilities and capabilities for doing the online tasks and the independent project.

Interestingly, the data obtained from the semi-structured interviews revealed the benefits of blended learning of the seven learning and teaching steps of the face-to-face and online environments in the PBBCSI which enabled the students to apply what they acquired and practiced about the communication strategies to solve communication problems and the ways to perform the independent project in each PBBCSI phase from the face-to-face environment (i.e. preparation, presentation, rehearsal, and feedback) to conduct the online tasks in the online environment (i.e. expansion and evaluation).

The data obtained from the semi-structured interviews also revealed the benefits of blended learning in the PBBCSI on students' English oral communication ability and three main components of learner autonomy (i.e. personal responsibilities, personal capabilities, and independent learning) as follows.

In terms of the benefits of blended learning on English oral communication ability, most of the interviewed students reflected that blended learning helped them increase their English oral communication ability and confidence when communicating with other people.

*“It helps me, I mean it makes me feel more confident when speaking. There are vocabulary, strategies, and techniques that I don't know, and it also helps me better understand Computer Engineering such as specific vocabulary I learn from this model. It also helps me improve my working skills in terms of systematic working.” (Student 1)*

*“It helps me, I think I'm better than the past that I didn't dare speak. It's quite better.” (Student 5)*

With respect to the benefits of blended learning on personal responsibilities, most of the interviewed students pointed out that blended learning developed their systematically planning management, resulting in that they were willing to take responsibilities to carry out the online works.

*“It helps me a lot because we learn how to work in a systematic way. For example, we plan that each work should be completed within our due date and must complete it due to prior plan that makes us more responsible.” (Student 1)*

*“...because we have the planning table that tells us what to do and we have an exact due time that makes us more active to complete our works as scheduled ... I don't know, I feel that we should complete works as our schedule, so this activates us to work.” (Student 2)*

One interviewed student also added that an awareness of duties or responsibilities in the blended learning helped them develop their personal responsibilities to be willing to conduct their works.

*“It’s possible because no matter I am assigned to do whatever works, I think everyone must be responsible for them.” (Student 9)*

In addition, another one student said that blended learning also improved their presentation skills in that “... it [blended learning] helps me know presentation steps such as the use of ‘first’ and what I should say at the end.” (Student 9)

Regarding the benefits of blended learning on personal capabilities, most of the interviewed students reflected that blended learning promoted their sequencing management, so they felt more confident in their capabilities to deal with the works.

*“We have learned the steps of doing the project about what we should have, we think about the driving question and deeper questions. These things help arrange the sequence of doing works and make me become confident.” (Student 3)*

*“It’s helpful. If I don’t study [the steps of doing the project], I won’t be confident. Actually, we have already studied each step of doing the project, making me more confident.” (Student 1)*

Concerning the benefits of blended learning on independent learning, the interviewed students pointed out three main reasons of its benefits that eventually contributed to conducting their projects independently of instructor and peer support as follows:

1) Learning engagement between inside and outside classes

Most of the interviewed students revealed that blended learning engaged learning between inside and outside classrooms that enabled them to apply what they learned and practiced face-to-face to outside class.

*“I think it’s good because I can apply what I learn face-to-face to outside class. In that way, we can review our knowledge we learn to do works outside class.”*  
(Student 3)

*“... I think I can apply what I learn face-to-face to do works and the project.”*  
(Student 9)

## 2) Compensation for weakness of face-to-face learning and teaching

Some interviewed students revealed that blended learning could compensate weakness of less practice in face-to-face environment for more practice in outside class environment.

*“I think If we work in class only, there is no enough communicative interaction. If we work outside class, we can apply what we learn and practice face-to-face for more communication.”* (Student 1)

*“I think it’s not enough for me to learn face-to-face only. As I said earlier, it’s like a self-review. If there is an face-to-face learning only without working outside class, possibly I forget some parts of I have learned, but if I review them, I can remember them.”* (Student 9)

## 3) Promotion of learning convenience and time saving

One interviewed student pointed that blended learning promoted convenience and time saving for learning that the students could do their works anywhere and anytime they wanted that eventually facilitated them to complete the project independently of instructor and peer support.

*“It [blended learning] is good. It’s convenient for us to make a video call, so we don’t need to meet each other at one place. We can stay home, chat online, and see each other.”* (Student 3)

## **Domain 2: PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project**

With respect to the PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project, the students expressed positive opinions towards all of the elements of this domain at the high level (Mdn = 4.00, for each element) which all of the six PBBCSI phases (i.e. initiation, inquiry, analysis, solution, assessment and reflection, and revision and publication) contributed to students' development in English oral communication ability and learner autonomy in completing the independent project.

The data obtained from the semi-structured interviews reflected the benefits of project-based language learning in the PBBCSI on students' English oral communication ability and three main components of learner autonomy (i.e. personal responsibilities, personal capabilities, and independent learning) as follows.

Most of the interviewed students reflected that the ways and the steps to conduct the independent project they learned and practiced in each PBBCSI phase such as thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc. helped them develop their English oral communication ability as the following reasons.

### 1) Step-by-step development on English oral communication ability

Most of the interviewed students pinpointed that the ways and the steps they learned and practiced in each PBBCSI phase enabled them to improve their English oral communication ability step by step.

*“For pair tasks, they help improve [English oral communication ability]. After learning face-to-face, we don't practice speaking enough, but when doing these tasks that we don't study face-to-face, I feel I can speak more fluently.” (Student 12)*

*“It's helpful because each step [of doing the project] is identified to tell us how to do it. This improves skills in dealing with that step that means it helps improve [English oral communication ability].” (Student 11)*

*“It’s helpful. There are steps of doing the project step by step, step one leads to step two, etc. I think the first step about the driving question is the most helpful for initiating other steps.” (Student 4)*

## 2) Development on project presentation skills

Some of the interviewed students reflected that the ways and the steps of doing the project helped them develop their project presentation skills which are considered as English oral communication ability.

*“They [the ways and the steps] are helpful for presentation because before presenting [the project], we have to think [prepare data] and then give the presentation to other people.” (Student 6)*

## 3) Planning development

A few interviewed students reflected that the ways and the steps of doing the project contributed to their planning development, resulting in developing their English oral communication ability.

*“... driving question and deeper questions are the guidelines for what we should ask to get enough information that depends on our plan to speak in order to get answers.” (Student 7)*

## 4) Identification on communication scopes

A few interviewed students reflected that the ways and the steps of doing the project they learned and practiced helped them identify communication scopes to achieve their communication purposes.

*“They [the ways and the steps] can help me because when we know the objectives that we want to do, we can do [whatever] to achieve our objectives, so they help me.” (Student 5)*



*“The [the ways and the steps] help me. Likewise, they can specify our objectives, what we speak, and scopes [of the project].” (Student 8)*

With respect to the benefits of project-based language learning on students' learner autonomy in terms of personal responsibilities, most of the interviewed students reflected that the ways and the steps to conduct the independent project they learned and practiced in each PBBCSI phase made them become willing to take responsibilities for doing the works (i.e. tasks and projects) because of different aspects of motivation such as **interesting topics or contents** “...because it makes me interested in what I learned, so I want to learn more in that thing on how to do it in each step” (Student 1), **program requirement** “It's like it's important to do [works] because when we register to study [this course] we need scores and pass this course. It's because [works] are our responsibilities in learning.” (Student 12), **needs to find answers** “when we set the driving question, we want to know [the answers], so I search for the answers. This makes me want to do and find the answers.” (Student 4), and **needs to develop English oral communication ability** “Doing works can improve language skills, so I want to do them.” (Student 6).

However, one interviewed student pointed out that he was not sure if those steps of doing the project made him feel willing to do it because he reflected that those steps were not involved in willingness to take responsibilities for carrying out the project. In fact, the ways and steps of doing the project were instructed in order to assure that the students had knowledge to do their independent projects and applied what they learned and practiced in each PBBCSI phase to conduct their projects. Therefore, it was possible that some students might not feel willing to do so during the working process.

When considering the benefits of project-based language learning on students' learner autonomy in terms of personal capabilities, most of the interviewed students revealed that practical and clear knowledge of doing the project step by step enabled them to feel confident in their capabilities to carry out their works (i.e. tasks and projects).

*“I feel more confident. At first, I don’t know about the working steps, but after studying I feel confident that what I do is correct. I do according to the steps that I have planned.” (Student 1)*

*“I feel more confident because I study for the guideline of doing the project. As I study, it makes me more understand the steps of doing the project step by step, making me know what to do next.” (Student 12)*

Concerning the benefits of project-based language learning on students’ learner autonomy in terms of independent learning, most of the interviewed students indicated that the ways and the steps of doing the project enabled them to apply knowledge for doing their independent project independently of instructor and peer support.

*“They are helpful because I can apply what I learned inside and outside classrooms to do my project. Inside and outside class learning is enough for doing an assignment [an outside class task] each week and the project, so I don’t need to ask the instructor and peers.” (Student 1)*

*“They are helpful because when I know the steps of doing the project, I can apply them to do my project by myself without asking anybody or asking for help from anyone because I know [those steps of doing the project].” (Student 3)*

In addition, one interviewed student pinpointed that the ways and the steps of doing the project helped learn more in another new viewpoints “...they make me study more in other points that are different from usual study.” (Student 8)

Regarding the benefits of communication strategy instruction that was implemented in each PBBCSI phase on students’ English oral communication ability, most of the interviewed students reflected three main reasons that helped them improve their English oral communication ability.

### 1) Promotion of clear communication

Most of the interviewed students said that communication strategies that were instructed in each PBBCSI phase contributed to clear communication.

*“They are useful. Clarification makes me better understand and asking can help me practice pronunciation, too. My friends will give me the meaning with correct pronunciation, so I can apply it to my speaking.” (Student 4)*

*“They help me, so I have ways [strategies] to make clearer conversations.”  
(Student 12)*

### 2) Application for real-life situations

Some of the interviewed students pointed out that they could apply communication strategies that they learned and practiced in each PBBCSI phase to real-life situations.

*“They are helpful because they can be used in real-life situations and used with foreigners for better understanding [in conversation].” (Student 1)*

*“... [those communication strategies] can be applied in conversations.”  
(Student 4)*

### 3) Solutions for communication problems

Some interviewed students suggested that communication strategies that were implemented in each PBBCSI phase helped solve communication problems.

*“... [communication strategies] help develop what I speak to be better when having communication problems.” (Student 1)*

*“They help me because when I have some words that I don’t understand I can ask the speaker. For example, there are some words that I am not sure, so I ask for*

*confirmation to check if what I understand is correct. If there is something not correct, the speaker can correct it.” (Student 6)*

When considering the benefits of communication strategy instruction that was implemented in each PBBCSI phase on learner autonomy in terms of personal responsibilities, most of the interviewed students reflected that they were willing to take responsibilities for doing the works because the communication strategies they learned made their working process easier.

*“...because some [communication] strategies make our working better and communicate better.” (Student 8)*

*“They are helpful because they help in communication. I think that they lead to easier communication, making me want to work and making the work not difficult. And when I feel that the work is not difficult, so I can do it.” (Student 4)*

Moreover, one interviewed student added that the communication strategies caused confidence in communication.

*“...those communication strategies make me become more confident in a way that I have to do [speak] like this in order to complete the works...” (Student 7)*

With respect to the benefits of communication strategy instruction that was implemented in each PBBCSI phase on learner autonomy in terms of personal capabilities, most of the interviewed students revealed that they were confident in their capabilities when doing works because they could apply the communication strategies they learned and practiced in each PBBCSI phase to solve communication problems and have smooth and effortless flow of utterances in conversation.

*“I feel confident because if I don’t know something, at least, I can ask my friend [the speaker] ... when I’m not sure about some words I can ask [the speaker].”*  
(Student 6)

*“They help me confident to speak and ask more.” (Student 1)*

*“We can employ these communication strategies to communicate smoother and make the important messages not to be missing.” (Student 4)*

With respect to the benefits of communication strategy instruction that was implemented in each PBBCSI phase on learner autonomy in the aspect of independent learning, most of the interviewed students suggested that the communication strategies that were instructed in PBBCSI phases enabled them to tackle communication problems while doing the works without instructor and peer support.

*“When I don’t know the meanings of some words such as specific works in my field, I can ask the speaker to clarify the word meanings and I can learn those words at the same time.” (Student 3)*

*“I think they help me. For example, when doing the project, I can’t remember one word, so I can buy time to think and ask the interlocutor to clarify that word.” (Student6)*

**Domain 3: Benefits of instructor’s and peers’ comments and suggestions, and self-selected choices on completing the online tasks and the independent project**

Concerning the benefits of instructor’s and peers’ comments and suggestions, and self-selected choices on completing the online tasks and the independent project, the students also had positive opinions towards all of the elements of this domain at the high level (Mdn = 4.00, for each element) that they got benefits from the following elements: peers’ comments and suggestions about the online tasks and the independent project on Facebook, instructor’s comments and suggestions about the online tasks and the independent project on the tasks and project rubric, and instructor’s comments and suggestions about the independent project in the instructor-student project consultation.

The data obtained from the semi-structured interviews showed the benefits of instructor's and peers' comments and suggestions, and self-selected choices on completing the online tasks and the independent project according to the three elements previously mentioned as follows:

With respect to peers' comments and suggestions about the online tasks and the independent project on Facebook, most of the interviewed students reflected that they gained the benefits from peers' comments and suggestions on their works (i.e. tasks and projects) in Facebook group because those comments and suggestions could improve their English oral communication ability such as "*...I get benefits in speaking such as accent and vocabulary...*" (Student 9) and "*They [peers] give comments on the points that I ignore such as slide presentation, speaking mistakes and dead air time [periods of silence in conversation].*" (Student 12), and enhance their task and project quality such as "*They are beneficial because there are many tasks to be completed and after getting comments on each task, we can apply them to improve the following tasks and we also get benefits from knowing in which points we are weak.*" (Student 1).

When considering the benefits of instructor's comments and suggestions about the online tasks and the independent project on the task and project rubric, most of the interviewed students pointed out that those comments and suggestions were useful because the those comments and suggestions could be used to improve students' problems at the right points such as "*...the instructor gives comments on the rubric such as mispronunciation and ungrammatical structures that make me know in which points I make mistakes, so I can use them to improve my following tasks in a correct way.*" (Student 1) and "*They are useful like peers' comments but instructor's comments are more insightful, making me know my mistakes and taking them to solve [my problems].*" (Student 12).

Concerning the benefits of instructor's comments and suggestions about the independent project in the instructor-student project consultation, most of the interviewed students suggested that those comments and suggestions were useful because they are clear and relevant to their problems such as "*They are very useful because at that time I have a problem with the driving question and deeper questions that I have some misunderstanding, but after I ask the instructor and get some*

*comments, I can do the project.” (Student 9) and “I think they are useful because which point I don’t understand I can ask the instructor.” (Student 5).*

In addition, some of the interviewed students reflected that the instructor’s comments and suggestions in the instructor-student project consultation helped them reshape the ideas and scopes of their projects such as *“To do the project, first, I have to think about the questionnaire which did not answer the driving question. After receiving instructor’s comments and suggestions, I add and correct it [the questionnaire].” (Student 1) and “I get benefits because at first I set the driving question too broad and the questionnaire seemed to answer the deeper questions, but after I talked to the instructor, I thought it twice if they were what I thought or not.” (Student 12).*

In consideration of the benefits of self-selected choices on completing the online tasks and the independent project, all of the interviewed students reflected that the self-selected choices for completing the works enabled them to have more opportunities for selecting the appropriate choices for their learning and doing the works such as *“I think they are useful. For programs, I use another program ‘OBS’ that I can capture the parts and the voice I want. This is more convenient for me because I don’t need to edit the video again. And if the screen is too small, I can enlarge it proportionally. It’s more convenient and time saving.” (Student 8).*

#### **Domain 4: Preferences of the PBBCSI on English oral communication ability and learner autonomy development**

As for the preferences of the PBBCSI on English oral communication ability and learner autonomy development, like previous domains, the students reflected positive opinions towards all of the elements of this domain at the high level (Mdn = 4.00, for each element) that overall the PBBCSI helped them improve English oral communication ability and learner autonomy to perform the face-to-face activities, online tasks, and the independent project. In addition, the students reflected that the PBBCSI was beneficial for their future careers.

The data obtained from the semi-structured interviews showed the students’ preferences of the PBBCSI on the development of English oral communication ability and learner autonomy as follows:

In terms of the students' preferences of the PBBCSI on the development of English oral communication ability, most of the interviewed students reflected that they preferred this model because it increased more opportunities for speaking practice such as *"I feel this model makes me communicate more in conversation. When I studied Eng 1 [English 1] and Eng 2 [English 2] with foreign instructors, I studied based on the textbooks too much. When doing the videos [in those courses], there were no interaction, but in this model I did the tasks every week and also got feedback."* (Student 8) and *"When doing the video tasks, I could improve my speaking skills. It [this model] is useful."* (Student 11).

When considering the students' preferences of the PBBCSI on the development of learner autonomy, some interviewed students revealed that this model enabled them to develop their planning management to do work step by step and became confident to speak. Eventually, this could help them complete their independent projects independently of instructor and peer support. They said *"... it helps me know that planning to do the project is useful because I can apply it [planning] to give a presentation. I know the patterns and dare to speak."* (Student 9) and *"This model helps us complete the works step by step as we want."* (Student 6).

However, few interviewed students did not like this PBBCSI model because of the following reasons: **workloads of other subjects** *"...there are many works of other subjects in Computer Engineering Department that I spend many days and hours a week on doing them."* (Student 12), **lack of practice with native speakers** *"I think communicating with classmates who have the similar accent, so it's not useful. We should have had chances to interview foreigners."* (Student 2), and **their weakness of English oral communication ability** *"...but my problems are about vocabulary... I'd like the instructor to add more vocabulary than steps of doing the project."* (Student 9).

To conclude, the quantitative findings from the questionnaire revealed that overall the students reflected the positive opinions towards the PBBCSI. Also, they demonstrated the positive opinions towards the PBBCSI in all of the four domains of opinions which included Learning and teaching steps for doing the online tasks and the independent project, PBBCSI phases on English oral communication ability and



learner autonomy for completing the independent project, benefits of instructor's and peers' comments and suggestions, and self-selected choices on completing the online tasks and the independent project, and preferences of the PBBCSI on the development of English oral communication ability and learner autonomy.

As for the qualitative findings from the semi-structured interviews, most of the interviewed students reflected positive opinions and reasons towards all of the four domains which were also congruent with the quantitative findings as previously described, suggesting that the PBBCSI model was effective to develop students' English oral communication ability and learner autonomy.

#### **4.4 Summary of the results**

##### **4.4.1 The effects of the PBBCSI on English oral communication ability of undergraduate engineering students**

Overall, the quantitative findings from the English oral communication ability pretest and posttest scores showed that the PBBCSI significantly developed students' English oral communication ability of overall six aspects of range, accuracy, fluency, interaction, coherence, and pronunciation with changes in their levels of English oral communication ability from a moderate level to a high level in range, interaction, and coherence, and without changes in their levels, remaining at the moderate level in accuracy, fluency, and pronunciation because the students produced many grammatical errors, fillers and hesitation devices, pauses, and pronunciation errors that caused them not to be able to achieve the higher level of English oral communication ability in accuracy, fluency, and pronunciation, respectively.

##### **4.4.2 The effects of the PBBCSI on learner autonomy of undergraduate engineering students**

Overall, the quantitative findings from the pre-learner autonomy and post-learner autonomy questionnaires revealed that the PBBCSI significantly developed students' learner autonomy in the two main components which consisted of personal responsibilities and personal capabilities in the six aspects of learner autonomy which were divided into determining the goals and the objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the

project completion procedures, and evaluating the completed tasks and the project. The qualitative findings of those two components were in congruence with the qualitative findings and showed the evidence of their learner autonomy development, but indicated the discrepancy against the quantitative findings that the students did not demonstrate significant development in their independent learning. The evidence showed that the students were eventually able to conduct their independent projects without direct instruction, instructor and peer support, and control of the instructor after taking the PBBCSI.

#### 4.4.3 The students' opinions toward the PBBCSI

Overall, students' opinions toward the PBBCSI were highly positive because they reflected that it increased their opportunities for speaking practice while conducting the online tasks and the projects and enabled them to develop their planning management to do works step by step and helped them become more confident in speaking, which gave them the benefits for their future careers.

## CHAPTER V

### DISCUSSION AND CONCLUSION

This chapter presents summary of research findings, discussion, conclusion, pedagogical implications, and recommendations for further studies drawn from the findings.

#### **5.1 Summary of the study**

This study aimed to investigate the effects of project-based blended learning with communication strategy instruction on English oral communication ability and learner autonomy of undergraduate engineering students. The main focus of the PBBCSI was to develop students' English oral communication ability in six aspects which included range, accuracy, fluency, interaction, coherence, and pronunciation based on the Common European Framework of Reference Languages (CEFR) 2017 (Council of Europe, 2017) and the three main components of learner autonomy in six aspects which consisted of determining the goals and the objectives; defining the learning progresses; taking the initiatives; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion procedures; and evaluating the completed tasks and the project.

The population of this study was 154 computer engineering students from the Department of Electrical and Computer Engineering, Faculty of Engineering, King Mongkut's University of Technology North Bangkok. The twenty students were purposively-selected from those who were enrolled in the English Conversation course offered in the first semester of the academic year 2019 to participated in the PBBCSI. All of the participants majored in computer engineering and had education and computer background conforming to the Computer Engineering Curriculum 2016. Hence, the participants shared similar characteristics with the population in terms of computer literacy and English learning background. This study was quasi-experimental research with a one-group pretest-posttest design. Data were collected and analyzed by means of both quantitative and qualitative methods, with the data collection instruments including the English oral communication ability test, English oral communication ability test rubric, tasks and the independent project, the task and project rubric, learner

autonomy questionnaires: pre-learner autonomy questionnaire (Pre-LAQ) and post-learner autonomy questionnaire (Post-LAQ), student log, observation checklists which included face-to-face observation checklist and online observation checklist, and semi-structured interview protocol.

Of the 20 participants, six were purposively selected for the language use analysis of range, accuracy, fluency, interaction, coherence, and pronunciation. In addition, data of the four focused students (i.e., two pairs of focused students) were collected from the student logs and observation checklists to be subsequently analyzed using the content analysis on three main components of learner autonomy in the six aspects as previously stated.

In order to investigate the effects of the PBBCSI on Thai engineering students' English oral communication ability, this study attempted to answer the following three research questions:

1. What are the effects of PBBCSI on English oral communication ability of undergraduate engineering students?
2. What are the effects of PBBCSI on learner autonomy of undergraduate engineering students?
3. What are students' opinions toward the PBBCSI?

Concerning English oral communication ability, the findings of the pretest and posttest scores of the three test tasks showed the students' significant improvement in all six aspects of English oral communication ability which included range, accuracy, fluency, interaction, coherence, and pronunciation with changes in their levels of English oral communication ability from a moderate to a high level in three aspects of range, interaction, and coherence, and without changes in their levels of English oral communication ability, remaining at the moderate level, in three aspects of accuracy, fluency, and pronunciation after the 15-week implementation of the PBBCSI.

Regarding learner autonomy, the findings of the Pre-LAQ and Post-LAQ scores indicated the students' significant development in learner autonomy of personal responsibilities and personal capabilities with changes in their levels of learner autonomy from the moderate to the high levels even though the students did not exhibit significant development in independent learning without changes in their level of learner autonomy, staying at the low level. However, the qualitative findings from the

face-to-face and online observation checklists as well as the student logs revealed the students' gradual development in all of the three main components (i.e., personal responsibilities, personal capabilities, and independent learning) and in all of the six aspects of learner autonomy which consisted of determining the goals and the objectives; defining the learning progressions; taking the initiative; making decisions on selecting methods or techniques, communication strategies, and resources; monitoring the task and the project completion procedures; and evaluating the completed tasks and the project.

With respect to the students' opinion toward the PBBCSI, the students reflected their positive opinions towards the PBBCSI in all of the four domains of opinions which comprised learning and teaching steps in face-to-face and online (i.e., blended learning) environments for doing the online tasks and the independent project, the PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project, the benefits of the instructor's and peers' comments and suggestions and self-selected choices on completing the online tasks and the independent project, and preferences of the PBBCSI on the development of English oral communication ability and learner autonomy.

## **5.2 Discussion**

The findings are discussed in three aspects: PBBCSI and gains in English oral communication ability, PBBCSI and gains in learner autonomy, and students' opinions toward the PBBCSI.

### **5.2.1 PBBCSI and gains in English oral communication ability**

The comparison of the English oral communication ability pretest and posttest scores demonstrated the students' significant improvement in all six aspects of English oral communication ability of range, accuracy, fluency, interaction, coherence, and pronunciation. In addition, the qualitative findings revealed more details on the quantitative findings of each aspect of English oral communication ability. It could be seen that the findings of the present study showed the positive effects of the PBBCSI on the students' improvement of each aspect of English oral communication ability. The plausible explanations are related to the integration of the three main components

in the PBBCSI which consisted of project-based language learning, blended learning, and communication strategy instruction.

### **Project-based language learning and English oral communication ability**

The findings of the present study showed the positive effects of the project-based language learning which was integrated into the PBBCSI on the development of each aspect of English oral communication ability. This could be explained that the use of project-based language learning encouraged the students to employ the communication strategies they had learned and practiced to conduct each online task, phase by phase, before eventually moving on to one independent project, with the topic being related to their job functions. To do so, the students had to communicate with their pairs whose levels of English oral communication ability were different from their own in order to carry out their online tasks and the project. They also had to use the communication strategies to deal with communication problems relevant to six aspects of English oral communication strategies to accomplish the communication purposes in different situations of the online tasks and the project phase by phase. Moreover, the project-based language learning enabled them to master each aspect of English oral communication ability when they tried to apply the vocabulary and pronunciation they learned in each phase. Simply put, the students had to practice different aspects of English oral communication ability in doing the online tasks and the project. Therefore, the use of communication strategies and the practice of each aspect of English oral communication ability while conducting the online tasks and the project enabled them to develop English oral communication ability. The findings of the present study were consistent with Xu et al.'s (2017) concept of project-based language learning. They point out that project-based language learning is “a language teaching method which organizes instructional activities around projects and is promoted as an effective way of facilitating students’ language learning, content learning, and integrated skill development” (p. 235). Furthermore, when the students were working with their peers, their English oral communication ability could be developed since the project-based language learning is seen as a “powerful means for facilitating students’ attainment of the higher-level competencies and transferable skills” (Ertmer & Glazewski, 2015, p. 89). The online tasks and the project used in this study were relevant to the students’ job functions, so they attempted to do their best to complete them. In so doing, they

chose the topics of tasks and projects that they were really interested in and planned well to accomplish those works. The findings were also consistent with Dooly and Masats' (2011) study that project-based language learning enabled students to be exposed to authentic materials and increased their opportunities to practice using their English language meaningfully, which resulted in an increase in oral English communication ability. The students who participated in this study had the opportunity to use authentic materials such as social platforms and resources to conduct their online tasks and the project corresponding to different computer engineering job functions. Evidently, this was different from most of the materials used in a traditional English class. According to Dooly and Masats (2011), when the students have a chance to practice English oral communication ability with authentic materials, and when materials are meaningfully relevant to their major field of study or future career, they are more likely to be interested in them and want to take responsibilities to carry out and complete the tasks. Thus, in this study, the students' oral communication scores increased. Moreover, such findings were in congruence with the findings of Oranpattanachai's (2018) who conducted a study to investigate the engineering students' perceptions of video projects and found that video projects could promote the students' vocabulary, grammar, speaking, and listening, all of which were considered similar to English oral communication ability explored in the present study.

#### **Blended learning and English oral communication ability**

In the online environment of the blended learning implemented in the present study, the students had more chances to practice their English oral communication ability while doing both the online tasks and the independent project. Evidently, a blended learning environment helped the students overcome the restrictions of pace, place, and time that were more common in the face-to-face learning environment in class. Such an online environment could contribute to the students' improvement in all six aspects of English oral communication ability because in this study, the students could work with their peers anywhere and anytime on their self-selected social platforms such as Discord, Skype, Line, etc. In so doing, they were able to control what, when, where, and for how long they wanted to complete their online tasks and projects. Therefore, their English oral communication ability could be developed because when compared with the traditional face-to-face environment, the students had

more time to design their tasks and projects, they had plenty of opportunity to search for as much relevant information on the Internet as they wanted to support their works, and had the liberty to practice their conversation until they were confident to perform their live conversation on their selected social platforms. This finding concurred with Bax's (2011) concept of using computer-mediated communication tools to support life and learning, stating that computer-mediated communication tools in a blended learning environment can promote students' learning anywhere and anytime beyond learning in traditional face-to-face classrooms, which means that students can choose what they want to study more, anytime and anywhere when they are convenient and ready to do. Also, such finding was in congruence with Richards' (2015) suggestion that computer-mediated communication tools increase more students' opportunities for negotiation of meaning, a context for interaction, and a social learning environment and also with Kintu et al.'s (2017) study that quality technology, online tools, resources, and peer support facilitate the students to self-regulate their learning in completing their work, thus contributing to the students' improvement of English oral communication ability since they have more opportunities and control over their working and learning process. In the present study, it could be seen that when the students could conveniently control their time, place, and pace of learning when carrying out their online tasks and projects, oral communication ability could be increased because the students could do their tasks and projects when they had the convenience to do so, on any platforms that they self-selected to ensure ease of access and use when dealing with their tasks and projects. Some students who were slow in learning could also practice more until they felt confident to do their tasks and projects.

Such findings also yielded support to previous studies (Chotipaktanasook, 2018; Pertiwi, 2018) that blended learning increased students' opportunities to exercise and develop their English oral communication ability, especially mastery of vocabulary as the students in the present study showed their highest improvement in range and vocabulary.

#### **Communication strategy instruction and English oral communication ability**

Communication strategy instruction in the present study was done with seven learning and teaching steps of the PBBCSI. It was found that such instruction enabled



the students to use the taught communication strategies to tackle communication problems to achieve communication purposes in different situations when working on the online tasks and the project. In addition to their application of the taught communication strategies, the students also acquired and practiced vocabulary and pronunciation, as well as made use of other English oral communication ability while doing the activities. In the face-to-face environment, they underwent the steps of preparation, presentation, rehearsal, performance, and feedback, and while in the online environment through the steps of expansion and evaluation, they practiced more and more on the use of communication strategies, vocabulary, language expressions, and pronunciation for their conversations and discussions while doing the online tasks and projects. Moreover, they gave comments on their peers' tasks and projects in terms of English oral communication ability, and they utilized their peers' comments to develop and further improve their tasks and projects in the following PBBCSI phases. Thus, the practice led to the development of English oral communication ability. The findings were consistent with a previous study which have reported that communication strategy instruction enabled students to employ more taught communication strategies in order to show their ideas when dealing with communication problems (Kongsom, 2016). In addition, communication strategy instruction taught them how to keep the conversation floor smooth and make their speech fluent. Also, they had a chance to learn to engage in negotiation of meaning through their use of communication strategies, thereby increasing more opportunities to check, clarify, and react to utterances in interaction, which was similar to what (Nakatani, 2010) has pointed out. Finally, the finding of the present study were similar to the finding of a study undertaken by Puripunyanich (2017) which has revealed that communication strategies enhanced students' English oral communication ability, especially their presentation skills, the skills were also included in the present study.

### **5.2.2 PBBCSI and gains in learner autonomy**

The findings revealed that the students exhibited significant improvement in two main components of learner autonomy—personal responsibilities and personal capabilities, but not independent learning. However, the qualitative findings from the face-to-face and online observation checklists and student logs indicated that the

students showed a gradual improvement in all of the three main components of learner autonomy which consisted of personal responsibilities, personal capabilities, and independent learning. The findings regarding students' development of learner autonomy can be discussed in the following topics: benefits of the integration of blended learning, benefits of communication strategy instruction, and integration of project-based language learning into the PBBCSI.

### **Project-based language learning and learner autonomy**

In this study, project-based language learning was adapted from Larmer's (2015, 2019) essential project design elements to form six phases in the PBBCSI to ensure that the students understood and were able to conduct each phase to complete their project independently without instructor and peer support.

One possible explanation why the PBBCSI could result in the students' gain in learner autonomy is the concept of zone of proximal development proposed by Vygotsky's (1978), which explains that this zone is the gap between what a student can do without help and what he or she can achieve with guidance and support from a more capable and knowledgeable person. This means that in order to help students achieve their learning, they may need some support from their instructors or peers. In this study, the students were instructed the ways to conduct their independent projects phase by phase, which could be seen as the scaffolding that supported them to "move beyond their current level of understanding" (Westwood, 2004, p. 23) of how to complete the projects, with some support from the instructors who gave comments and suggestions on their tasks, and with peer support when doing their pair tasks. Such support in the form of scaffolding enabled them to complete their project, and this might not have been possible without instructor and peer support due to a lack of necessary English oral communication ability.

The findings of the present study are consistent with Dooly and Masats' (2011) study that the project-based language learning of their study could develop the student-teachers' learner autonomy since they shared some responsibilities of teaching with their students and the students also had freedom to select the contents and the types of materials in order to produce their projects. As for the present study, the instructor support was gradually reduced in order to transfer instructor's responsibilities to the students in the PBBCSI. In a face-to-face environment, the instructor provided support

by giving detailed instructions of the online tasks written in the PBBCSI lessons and giving comments on the students' videos posted on the Facebook page. The amount of initial support the students received from the instructor was gradually reduced in PBBCSI phase 2: Inquiry, and it was not given at all in phase 3: Analysis. While the instructor gradually withdrew the support given, the students had to learn to take more charge of their learning. In other words, they had to struggle to complete the assigned tasks on their own. The support they initially received enabled them to continue carrying out the tasks on their own. When the students learned to take charge of their own learning without support from the instructors, their autonomy was fostered.

As Dooly and Masats (2011) have pointed out, the students need to have freedom to select the contents and the types of materials to produce their independent project, and such freedom of choice contributed to the development of their learner autonomy. In the present study, the students made their own choices to self-initiate different actions to perform so as to complete their works which included face-to-face activities, online tasks, and the independent project. The choices that they made included the choices that they newly created to complete their works *without* instructor-or-peer initiation, the choices that they newly created to complete their works *after or with* instructor-or-peer initiation, and the choices that they did not want to create any new choices but kept on following instructor-or-peer initiation according to the instructions of activities, tasks, and projects. These choices contributed to students' self-initiation to take different actions to complete their works, which was considered an indicator of learner autonomy.

Interesting evidence of the students' development of learner autonomy that emerged in this present study occurred at different points of time. At the beginning, during early PBBCSI phases, they did not show any sign of autonomy. However, after having engaged in the PBBCSI for a while, they began to learn to take the initiative in their learning when they came to do their online tasks in the first phase. They were required to give comments on their peers' tasks; however, they did not show any initiation to do so. Accordingly, the instructor had to ask one student to encourage the class to give the comments. After that, they learned that they needed to give comments on their peers' works once they posted them on the Facebook group in other phases. It is worth noting that the behavior in encouraging peers to give comments never

happened again nor did other initiatives in the following phases until they came to do the independent projects when one student showed initiation by posting the correct way to submit their projects in the PowerPoint format in the consultation box on the Facebook group without waiting for their instructor to do so. However, it is worth noting that development of learner autonomy in this study was more like a through rising-falling-standstill-rising pattern as sometimes the students did not exhibit any attempt to initiate their learning or completing the tasks assigned.

According to Little (1991), learner autonomy is not developed in a steady state and once the students achieve this construct, it does not mean that they are equipped with it forever. In other words, learner autonomy is a dynamic state, “its permanence cannot be guaranteed” (p. 4). Likewise, the students in the present study struggled to develop their learning autonomy, going through the rising-falling-standstill-rising pattern before their ability to take initiative in learning could be established.

Despite some development of certain aspects of learner autonomy, there was one aspect of learner autonomy that the students were unable to achieve. That is, they were unable to develop learner autonomy in the aspect of defining their learning progressions in the early PBBCSI phases because they could not submit their online tasks before the due date, but finally they submitted their projects before the due date. Such finding was consistent with Little’s (1991) suggestion that the students who show “a high degree of autonomy in one area may be non-autonomous in another” (p. 4).

### **Blended learning and learner autonomy**

The online environment for blended learning in the present study enabled the students to have more chances to practice their English oral communication ability when doing their independent project online. Initially, they received instructor support when the instructor gave them comments and suggestions while doing face-to-face activities including oral presentation in class. In addition, when working online, the students received support from their peers in the forms of comments and feedback on their online tasks, done on Facebook. The instructor withdrew their support later on, and the students had to learn to take control of their learning. They had to be responsible for the assigned tasks and work independently without direct instruction from their instructor. The students had to make their own choices of computer-mediated communication tools such as self-selected screen recording programs, social platforms,

and online resources. Therefore, the blended learning environment of this study helped the students learned to be able to work on their own without much reliance on others particularly their instructor. Thus, their learner autonomy was fostered. Such findings were congruent with Campbell's (2015) study that the students in the blended learning environment were better than the students in the traditional face-to-face environment in terms of more learning contributions, interactions, and autonomous learning practices or behaviors which meant that these students were willing to take responsibilities for their own learning and were confident in their own capabilities to work when they were in a blended learning environment.

Chotipaktanasook (2018) conducted a study and found that blended learning enabled the students to become independent learners because it encouraged the students to work without instructor support. Likewise, the students of the present study developed their learner autonomy during the learning process to be able to eventually conduct their independent project without instructor and peer support. Put another way, they were able to develop their learner autonomy after participating in the PBBCSI.

A similar finding was found in Sanprasert's (2010) study that the students in a blended learning environment in which learning directions were initially set by the teacher could develop their reactive learner autonomy by demonstrating responsibilities and confidence in language learning, organizing their resources as directed by the teacher to conduct their independent study, and showing their autonomous behaviors such as making contributions to online learning, setting their learning goals, planning for more practice outside class, and monitoring and evaluating their learning progress.

Furthermore, the findings of the present study offered support to Littlewood's (1999) concept of reactive learner autonomy. According to Littlewood, "once a direction has been initiated [normally by the teacher as teacher-directed learning], enables learners to organize their resources autonomously in order to reach their goal" (p. 75). In this study, in order to achieve the goal of the assigned project, the students had to carry out their own projects according to the learning directions that the instructor initially set for their learning process in which they underwent the PBBCSI phases to master the ways to conduct the independent project by means of doing the online tasks phase by phase. Initially, the resources were set for the students, but they could make their own choices to select their resources when they came to do online

tasks and the projects in the following phases. In so doing, their learner autonomy could be promoted.

### **Communication strategy instruction and learner autonomy**

In this study, communication strategy instruction was integrated into the PBBCSI as the seven learning and teaching steps in both face-to-face and online environments. The study findings indicated that the PBBCSI contributed to the students' development of learner autonomy because it was found from the quantitative findings of the Pre-LAQ and Post LAQ that the students were willing to take responsibilities for and were confident in their capabilities when they had to select appropriate communication strategies to overcome communication problems they encountered or maintain the conversations. The qualitative findings of the semi-structured interviews and the researcher's observation while scoring the students' tasks and projects also supported the conclusion that the PBBCSI promoted the students' selection. In particular, their learner autonomy could be observed when they selected three communication strategies taught in class including asking for clarification, asking for confirmation, and using fillers and hesitation devices in order to complete their tasks and projects successfully. However, the circumlocution strategy was rarely employed in their tasks and was not used in the students' projects because they reflected that it was more difficult for them to describe the target words due to their limited language knowledge, so they employed other words instead. The findings of the present study was in congruence with Faerch and Kasper's (1983) suggestion that communication strategy instruction can be thought of as a way to develop the students' capabilities to connect the gap between classroom instruction and real-life communicative situations, and the students' capabilities are one of the three main components of learner autonomy in the present study which indicated that communication strategy instruction was effective to develop students' learner autonomy in selecting appropriate communication strategies to deal with communication problems in conversation.

In addition, the findings of the present study were in line with Machón's (2000) study, stating that communication strategy instruction helped the students "develop their knowledge about strategies in order for them to select the most appropriate strategies for completing a given task" (p. 20).

### 5.2.3 PBBCSI and students' opinions toward the PBBCSI

The findings from the post-learner autonomy questionnaire scores and the semi-structured interviews revealed the students' positive opinions toward the PBBCSI in all four domains which included learning and teaching steps for doing the online tasks and the independent project; PBBCSI phases on English oral communication ability and learner autonomy for completing the independent project; benefits of instructor's and peers' comments and suggestions, and self-selected choices regarding completion of online tasks and the independent project; and preferences of the PBBCSI for the development of English oral communication ability and learner autonomy. The findings regarding the four domains can be interpreted as the benefits of the integration of project-based language learning, blended learning, and communication strategy instruction. Therefore, the findings of this present study regarding the students' opinions toward the PBBCSI are discussed according to the four domains as follows.

Regarding the opinions toward the benefits of project-based language learning on English oral communication ability, the students revealed that project-based language learning enabled them to acquire and practice how to do the independent project phase by phase. Furthermore, the project-based language learning encouraged them to develop their planning and project presentation skills as well as identifying communication scopes to achieve their communication purposes in different situations when conducting their independent project. The findings of the present study were in congruence with Oranpattanachai's (2018) study that the students showed positive perceptions toward video projects because the project-based language learning helped them develop their English language skills at a high level in aspects of speaking and listening skills, vocabulary, grammar, and English phrases used in the workplace.

Concerning the opinions toward the benefits of project-based language learning for development of learner autonomy, the students reflected that project-based language learning enabled them to acquire practical and clear knowledge of how to do the independent project phase by phase, making them feel more confident in their capabilities to be responsible for conducting their project without direct instruction, support, and control from their instructor. The findings of the present study agreed with the findings reported by Dooly and Masats' (2011) that project-based language learning could enhance the student-teachers' learner autonomy because they could share some

responsibilities of learning with their students and the students also had freedom to choose the contents and types of materials to produce their projects, as previously discussed. In terms of the benefits of blended learning on English oral communication ability, the students explained that the blended learning environment in the present study encouraged them to apply the taught communication strategies and vocabulary they acquired to complete the online tasks and the independent project. Furthermore, they could also apply what they had practiced in the face-to-face environment with the tasks and the project they did online. The findings of the present study were consistent with the findings of Chotipaktanasook's (2018) who discovered that the students felt that blended learning offered them more opportunities to practice and improve their language skills. Likewise, the students in the present study revealed in the semi-structured interviews that the PBBCSI helped them develop their English oral communication ability and their confidence in communicating with other people.

With respect to the benefits of blended learning on learner autonomy, the students reflected that the blended learning of the PBBCSI made them feel willing to carry out their project with confidence and without having to rely on direct instruction, support, and control of their instructor because the blended learning helped them develop their systematic planning, sequencing, and management. They further described that the blended learning helped raise their awareness of duties and responsibilities toward their own learning, promoted transfer for knowledge from face-to-face and online environments, were convenient, and saved their time. Such findings lent support to the findings reported by Chotipaktanasook (2018) that the blended learning environment promoted independent working, enabling students to work without instructor support.

When considering the opinions toward the benefits of communication strategy instruction on English oral communication ability, it could be seen that the students in this study had positive opinions toward the PBBCSI because of three important reasons. First, they agreed that communication strategy instruction enabled them to communicate more effectively, apply communication strategies they learned in class in real-life situations, and solve communication problems. Similar findings have been reported by Puripunyanich (2017) who found that the students had positive attitudes toward the learning and communication strategies instruction which aimed to develop



their English oral communication ability after they took the instruction. They reflected that the instructed strategies were useful for doing learning activities and test tasks and could be applied to other courses.

Finally, with regard to the benefits of communication strategy instruction on learner autonomy, the students in the present study agreed that after taking the PBBCSI, they were willing to take more responsibilities for the works assigned to them because the communication strategies they had learned helped them do the works more easily. In addition, they were able to apply the communication strategies to solve communication problems. Most importantly, they realized that they were able to carry on smooth and effortless flow of utterances in a conversation even without instructor and peer support. Likewise, Puripunyanich (2017) has found that communication strategy instruction was useful for the students as they were able to apply what they had learned to complete learning activities in other situations.

### **5.3 Implications of the study findings**

According to the study findings, three pedagogical implications in Thai classroom context can be suggested.

To begin with, the PBBCSI promoted the students' English oral communication ability and learner autonomy. One of the components that led to such findings is the students' liberty to complete the final project without direct instruction, instructor and peer support, and control of the instructor. The challenging problem or the driving question of the project is very important as the heart of the project (Larmer, 2015, 2019) when other instructors or practitioners want to apply this model. Therefore, they should be very careful when they come to design a project. In addition, the project they design should be really meaningful for their students so that the students would realize that the project is important for them so as to successfully develop their English oral communication ability and learner autonomy, as well as other skills necessary for their future careers, as Dooly and Masats (2011) have pointed out that when the students have been exposed to practice English oral communication ability with authentic materials that are meaningfully relevant to their major field of study or future career, they are more likely to take responsibilities and express their capabilities to carry out

their works, so their learner autonomy and English oral communication ability can be improved.

Second, when the PBBCSI is applied, instructors and practitioners should be aware of the support needed to facilitate students' learning process. According to Riley (1997, as cited in Alonazi, 2017), instructors should support students when they need suggestions for their learning so that they are able to apply their knowledge and capabilities they have been equipped with during class to work independently and achieving tasks that they are required to do, so as to support them to "move beyond their current level of understanding" (Westwood, 2004, p. 23). In the present study, at the first PBBCSI phase, the students did not give comments on their peers' online tasks because they were not familiar with this kind of activity that aimed to promote their learner autonomy, so they passively waited for their instructor to tell them to do what, when, where, and how. This evidence did not mean that they could not develop their learner autonomy, but they were more familiar with being explicitly instructed on what to do by their teacher just like most Thai students. Therefore, instructors and practitioners should not withdraw their support in the early stages of instruction as Little (1991) has argued against the misconceptions of learner autonomy that instructors should support students to become autonomous in the learning process. This is in congruence with Sheerin's (1997) assertion that "all learners need to be prepared and supported on the path to greater autonomy by [instructors]" (p. 63).

Finally, the study findings revealed that the students made different choices to initiate doing their online tasks and independent projects by means of selecting their own social platforms and resources, thus contributing their development on learner autonomy and English oral communication ability. In so doing, instructors and practitioners should not stop students' selection of their own choices to complete their works, since giving students choices and decision-making for their learning can promote learner autonomy effectively (Benson, 2016).

#### **5.4 Limitations of the study**

There were some limitations that should be taken into consideration when interpreting the findings of the study as follows.

First, the topics of the tasks and the independent project were designed in relation to the students' field of study in computer engineering and limited to Thai stakeholders such as their Thai friends at a university and Thai experts when they did the interview survey, including working with their Thai pairs for their online tasks. As a result, they were exposed to Thai speakers in a Thai context only. In addition, when doing the interviews, they used the Thai language to communicate with those people. As such, they did not have opportunities to be exposed to English-speaking foreigners and native speakers of English.

Second, since learner autonomy is not a steady, but a dynamic state, "its permanence cannot be guaranteed" (Little, 1991, p. 4). However, the present study was conducted in 15 weeks in one semester which might not be enough for students' learner autonomy to be developed on some aspects since the evidence showed that some aspects of learner autonomy such as taking the initiative in the learning process were not developed well as evidenced by a rising-falling-standstill-rising pattern before their ability to take initiative in learning could be established. As such, the findings of the study could be generalized only to a short-period-of-time context of learner autonomy development.

Finally, the findings of the present study revealed that a few of the students who were interviewed did not like the PBBCSI because of the workloads of other subjects and the works in the PBBCSI they had to take care of made them feel overwhelmed, so they felt that they did not have sufficient time to do online tasks and projects. As a result, their works might not be the best version or reflect their actual capability, thus affecting their development on English oral communication ability and learner autonomy.

### **5.5 Recommendations for further studies**

This study was subject to some limitations previously mentioned; therefore, the recommendations in such regard are made as follows.

To begin with, research should be conducted in which instructors design the tasks and projects that encourage students to communicate with English-speaking foreigners and native speakers of English with different topics of their interests to see

if the students' oral communication ability can be developed in the same way or not when they have to communicate with speakers who did not share their mother tongue.

Second, longitudinal research should be carried out to monitor if the PBBCSI has a long-term effect on development of students' learner autonomy as it is believed that learner autonomy is dynamic in nature and can change, increasing or decreasing, over time.

Finally, research should also be undertaken to further explore different means by which learner autonomy can be promoted. For instance, the student participants in the research may be encouraged to initially set their learning directions to achieve the objectives of the course, while the instructor acts as a counsellor who gives suggestions only when the students make a request, so as to see if the students' learner autonomy development can successfully take place without teachers' direct instruction in the initial stage in hope of findings more effective means to foster learner autonomy among Thai students who are likely to be passive learners and who may not be familiar with the concept of learner autonomy in the Thai contexts.

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**APPENDICES**

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## APPENDIX A: English Oral Communication Ability Test

### FOR STUDENT

#### Test Task 1

#### Describing computer products or technology, and giving solutions for a problem

#### STEP 1: Read the test task design for the role play.

#### Test Task Design:

<b>Objective:</b>	To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in describing computer products or technology, and giving solutions for a problem.
<b>Job functions related to the study unit</b>	<ul style="list-style-type: none"> <li>- Describing computer products and peripherals (Unit 2 Computer Products and Peripherals)</li> <li>- Giving instructions, suggestions, warning, and analyzing results to give solutions for computer products and peripherals (Unit 3 Computer and Networking Problems)</li> </ul>
<b>Known criteria:</b>	<p>Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance.</p> <p>[Your performance will be video-recorded.]</p>
<b>Purpose context:</b>	At a shop of computer and electronic devices in Bangkok, Thailand
<b>Student's role (Test taker's role):</b>	<p><b>The owner of the computer and electronic devices shop in Bangkok, Thailand</b></p> <ul style="list-style-type: none"> <li>-You (the student) ask and answer some questions about the product and its problem to sell one kind of device that a Singaporean customer is looking for.</li> <li>-READ the situation with its details in <b>the sheets of "Test Task 1 (For the student/test taker)."</b></li> </ul>
<b>Assessor's role:</b>	<p><b>The Singaporean customer</b></p> <ul style="list-style-type: none"> <li>-The assessor acts as the Singaporean customer who is looking for one kind of device for his/her notebook, but he/she does not know how to call it. He/She asks some questions about the product and its problem in the <b>"Statements and questions (For Interviewer 1)."</b></li> </ul>
<b>Preparation time:</b>	7 minutes
<b>Performance time:</b>	5 minutes
<b>Assessment</b>	The English oral communication ability test rubric

**FOR STUDENT****STEP 2: Read the sheets of test task 1.****Test Task 1 (For the student/test taker)**

You will have **7 minutes** to read and understand the following situation and information:

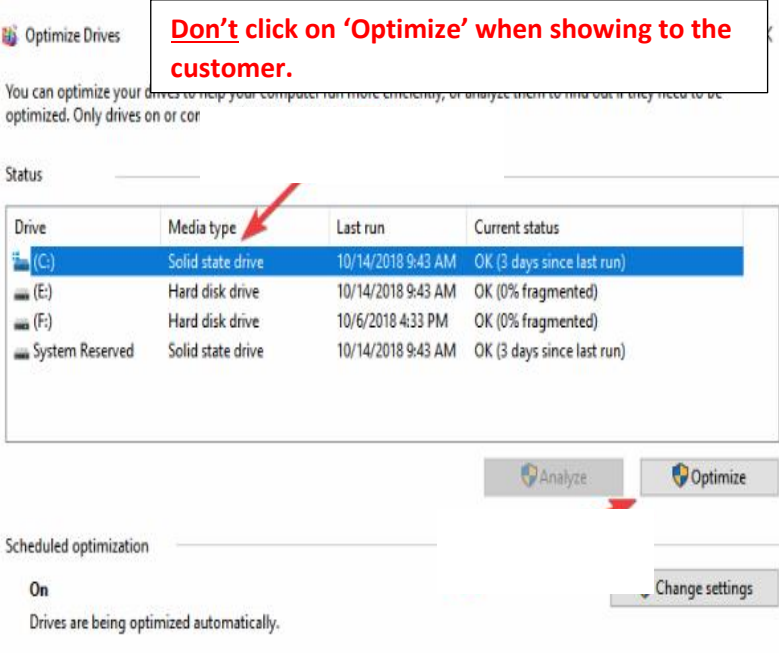
**Situation:** The role play between **the owner** of the computer and electronic devices shop in Bangkok, Thailand **and the Singaporean customer**

You are the owner of the shop. There is the Singaporean customer who is looking for one kind of device for his/her notebook, but he/she does not know how to call it. He/She has some questions about the product and its problem in the table below. You greet/welcome him/her first. You end the conversation with thank you expressions when you get the money from the customer.

**Sandisk Extreme 900 Portable SSD****Specifications:**

Capacity:	1.9 TB
Read speed	850 MB/s
Write speed	850 MB/s
Compatibility	Windows 8, Windows 10, and Mac OS 10.6+
Other information	SSD: faster, lighter, more expensive than HDD <b>(Give this information <u>after</u> the customer asks you about this.)</b>

**SEE NEXT PAGE**

Problem	Solutions																				
Slow SSD	<ol style="list-style-type: none"> <li>1. Click Start and in the search bar type <b>Defragment and Optimize Drives</b></li> <li>2. Click <b>Defragment and Optimize Drives</b></li> <li>3. Highlight your SSD and click on <b>Optimize</b></li> </ol>  <p><b>Don't click on 'Optimize' when showing to the customer.</b></p> <p>You can optimize your drives to help your computer run more efficiently, or analyze them to find out if they need to be optimized. Only drives on or cor</p> <p>Status</p> <table border="1"> <thead> <tr> <th>Drive</th> <th>Media type</th> <th>Last run</th> <th>Current status</th> </tr> </thead> <tbody> <tr> <td>(C:)</td> <td>Solid state drive</td> <td>10/14/2018 9:43 AM</td> <td>OK (3 days since last run)</td> </tr> <tr> <td>(E:)</td> <td>Hard disk drive</td> <td>10/14/2018 9:43 AM</td> <td>OK (0% fragmented)</td> </tr> <tr> <td>(F:)</td> <td>Hard disk drive</td> <td>10/6/2018 4:33 PM</td> <td>OK (0% fragmented)</td> </tr> <tr> <td>System Reserved</td> <td>Solid state drive</td> <td>10/14/2018 9:43 AM</td> <td>OK (3 days since last run)</td> </tr> </tbody> </table> <p>Analyze Optimize</p> <p>Scheduled optimization</p> <p>On Drives are being optimized automatically.</p> <p>Change settings</p>	Drive	Media type	Last run	Current status	(C:)	Solid state drive	10/14/2018 9:43 AM	OK (3 days since last run)	(E:)	Hard disk drive	10/14/2018 9:43 AM	OK (0% fragmented)	(F:)	Hard disk drive	10/6/2018 4:33 PM	OK (0% fragmented)	System Reserved	Solid state drive	10/14/2018 9:43 AM	OK (3 days since last run)
Drive	Media type	Last run	Current status																		
(C:)	Solid state drive	10/14/2018 9:43 AM	OK (3 days since last run)																		
(E:)	Hard disk drive	10/14/2018 9:43 AM	OK (0% fragmented)																		
(F:)	Hard disk drive	10/6/2018 4:33 PM	OK (0% fragmented)																		
System Reserved	Solid state drive	10/14/2018 9:43 AM	OK (3 days since last run)																		

<sup>1</sup>Adapted from: <https://www.smb.com/forums/ssd/extreme-900-ssd>

<sup>2</sup>Taken from: <https://windowsreport.com/fix-slow-ssd-windows-10/?EsetProtoscanCtx=735e1e1>

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**STEP 3: Perform test task 1.**

## FOR RATER

### STEP 3: Perform test task 1.

#### Test Task 1: Statements and questions (For Interviewer 1)

[The interviewer is the experienced instructor.] **Use English rubric for rating.**

### TEST PROCEDURE

#### Step 1: Give the student the test task design

-Ask the student if he/she is ready for step 2 “*Are you ready for the next step?*”


#### Step 2: Give the student the sheets of test task 1 (7 minutes)

#### Step 3: Perform test task 1 (5 minutes)

Student	Greeting/Welcoming you [the interviewer].	[Interaction criteria on the test rubric] <b>If the student does not greet you, you start saying the next statement.</b>
1. Interviewer	- I’m looking for something for my notebook.	To elicit communication strategies “Asking for clarification”
Student	Asking for clarification e.g. -Can you be more specific? -What do you use it for? -What do you want exactly?	<b>If the student does not ask for clarification, you start saying the next statement.</b>
2. Interviewer	- Er...I’m looking for a device that can store a lot of data from my notebook.	
Student	Recommending the Sandisk Extreme 900 Portable SSD.	<b>If the student does not recommend the SSD, you start saying ‘I’m looking for the SSD.’ and the next question.</b>
3. Interviewer	- I don’t know about it. What is SSD?... or what is it used for?	
Student	Describing SSD with its use.	(The student use his/her <i>basic background knowledge</i> of Computer Engineering to answer this question, and

		they also learned about SSD in class.) If the student does not describe the SSD, you start saying the next statement. In addition, the student may initiate ideas which are sprung out of this topic.
4. Interviewer	- Can you tell me about its specs?	
Student	Describing its specs	
5. Interviewer	But I don't like SSD. I like...er... the old one....HHHHH...something...I can't remember. I think it's better.	To elicit student's use of communication strategies "Asking for confirmation" [e.g. 'Is it HDD?'] or "Asking for clarification" [e.g. 'Why do you think like that? /Why?']
Student	Responses with the possible use of "Asking for confirmation" [e.g. 'Is it HDD?'] or "Asking for clarification" ['Why do you think that? /Why?']	
6. Interviewer	Responses and then ask - Why do most people <i>prefer to use this SSD rather than HDD?</i>  *[Paraphrase: <i>"Why do most people like to use this SSD more than common hard disk drive?"</i> ]	*If the student does not understand the question, repeat the question again. If still not understand, wait for a while (5 seconds), and then ask the paraphrasing question on the left.
Student	Giving the reason— For example, (If yes) Because SSD is faster, lighter, but more expensive than HDD. (If no) Because SSD is more expensive than HDD.	In addition, the student may initiate ideas which are sprung out of this topic.



7. Interviewer	<p>If SSD is slow, do you have any <i>recommendations</i> for this serious <i>flaw</i>?</p> <p><i>*[Paraphrase: “Do you have any suggestions for me to solve this problem?”]</i></p> 	<p><i>*If the student does not understand the question, repeat the question again. If still not understand, wait for a while (5 seconds), and then ask the paraphrasing question on the left.</i></p> <p><i>To elicit student’s use of “Asking for clarification” [e.g. ‘What does the word ‘flaw’/ ‘recommendations’ mean?’] or “Asking for confirmation” [e.g. ‘Does the word ‘flaw’ mean ‘weak point’? / Does the word ‘recommendations’ mean ‘suggestions’?]</i></p>
Student	Giving the ways to solve the problem according to the steps given in the prompts.	
8. Interviewer	Thank you very much for your information. Oh, it costs 1,500 baht. I’ll take it. Here’s 1,500 baht.	
Student	Responses and end the conversation.	Ending the conversation is not assessed.

Notes:

1) If each of the repeated question or the paraphrasing question is asked twice and the student cannot still answer the question, this affects the proficiency level in the criteria **“interaction.”**

[This suggests that the student cannot apply the communication strategies to solve the communication problems nor the expressions to interact in the conversation].

2) If the student does not give complete information nor does answer all the questions, this affects the proficiency level in the criteria “**coherence.**”

3) During the conversation, the student may use the taught and non-taught communication strategies to overcome communication problems and maintain the conversation to achieve the communication purpose. Only the taught communication strategies are coded and analyzed for their frequency and functions used by the test takers.

4) In the PBBCSI model, the students are instructed with the following communication strategies: 1) Asking for clarification, 2) Asking for confirmation, 3) Circumlocution, and 4) Use of fillers and other hesitation devices.

As for “Asking for clarification” and “Asking for confirmation,” the use of these two strategies depend on situations and their language functions stimulating the speakers to deploy them to interact with their interlocutors, help them overcome communication problems, and maintain the conversations to achieve the communication purposes.

Concerning “Circumlocution” and “Use of fillers and other hesitation devices,” the use of these two strategies depends on personal decisions to use them in conversations, so test takers’ use of these strategies cannot be controlled. If controlled, the conversation in this test will not be natural. Hence, this test task may or may not be able to elicit the use of circumlocution, and use of fillers and other hesitation devices strategies.

## FOR STUDENT

### Test Task 2

#### Interview

#### STEP 1: Read the test task design for the role play.

#### Test Task Design:

<b>Objective:</b>	To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in discussing and exchanging opinions towards computer technology and Computer Engineering field.
<b>Job function related to the study unit</b>	- Discussing and exchanging opinions towards computer technology and Computer Engineering field (Unit 1 Computer Technology for Life)
<b>Known criteria:</b>	Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance. [Your performance will be video-recorded.]
<b>Purpose context:</b>	In a job interview by an American employer at an American company in Thailand
<b>Student's role (Test taker's role):</b>	<b>The candidate for a computer technician</b> -You (the student) ask and answer the questions to interact with the American employer/interviewer of the American company who is looking for the right candidate for his/her company. -READ the situation with its details in <b>the sheet of "Test Task 2 (For the student/test taker)."</b>
<b>Assessor's role:</b>	The American employer/interviewer at the American company in Thailand -The assessor acts as the American employer/interviewer who asks and answers the questions to select the right candidate for his/her company in the <b>"Statements and questions (For Interviewer 2)."</b>
<b>Preparation time:</b>	2 minutes
<b>Performance time:</b>	10 minutes
<b>Assessment</b>	The English oral communication ability test rubric

**FOR STUDENT****STEP 2: Read the sheet of test task 2.****Test Task 2 (For the student/test taker)**

You will have **2 minutes** to read and understand the following situation and information:

**Situation: The role play between the candidate and the American employer/interviewer of the American company in Thailand**

You are applying for the computer technician at the company. You are going to have a **job interview with the American employer** who has read your resume briefly. The interview consists of 3 main sets of questions. After you hear each question, **you will have about 5 seconds to start answering the question**. You greet the employer. And when appropriate, you can suggest the new ideas and/or topics to interest the employer.

**STEP 3: Perform test task 2.**

## FOR RATER

### STEP 3: Perform test task 2.

#### TEST PROCEDURE

##### Step 1: Give the student the test task design

-Ask the student if he/she is ready for step 2 “*Are you ready for the next step?*”

##### Step 2: Give the student the sheet of test task 2 (2 minutes)

##### Step 3: Perform test task 2 (10 minutes)

#### Sets of Questions (For Interviewer 2)

[The interviewer is the experienced instructor.] **Use English rubric for rating.**

After the test taker hears each question, **he/she will have about 5 seconds** to start answering the question. If he/she consumes time more than specified, the assessor must stimulate him/her to answer the question.

#### Set 1

1. Why do computer technology and products make people have better lives?
2. Give **one** example or more and how your example(s) can help people have better lives.  
 \*\*\**That's great!*  
*(To compliment and show that you are listening to student's answer)*

**[Skip item 2 if the student answers with example(s) and the ways in item 1 mentioned above.**

[The student may initiate the new topics by talking about new products (apart from the one he/she has already answered) with the expressions such as “*Let me talk about ..... / I'd like to talk about ...../ I'd like to propose the new ....., etc., or without* saying the expressions but suggesting the additional innovations.] .]→ Interaction criteria: Initiating new topic/idea

**Set 2**

1. Besides the innovation in Set 1, what innovation would you invent if you had budget and knowledge?

If the student does not understand the question, repeat the question again.

If still not understand, wait for a while (5 seconds), and then ask the paraphrasing question:

[Paraphrase: *What innovation that is NOT the same as in Set 1 would you create if you had money and knowledge?*]

\*\*\**Wow! That's amazing!*

*(To compliment and show that you are listening to student's answer)*

2. Why do you want to create that innovation?

\*\*\**Wonderful!*

*(To compliment and show that you are listening to student's answer)*

[The student may initiate the new ideas by talking about other new innovations (apart from the one he/she has already answered) with the expressions such as "*Let me talk about ..... / I'd like to talk about ..... / I'd like to propose the new ....., I'd also like to make ..., etc., or without* saying the expressions but suggesting the additional innovations.] →

Interaction criteria: Initiating new idea

**Set 3**

1. What is your most favorite subject in Computer Engineering field?
2. Why?

\*\*\**I see.*

*(To show that you are listening to student's answer)*

[The student may talk about his/her subject and use some technical words, so he/she may use communication strategies "circumlocution" to talk with the interviewer. (See the summary of the PBBCSI model about the information on 'circumlocution')]

[The student may add the new subject (apart from the one he/she has already answered) with the expressions such as "*Let me talk about ..... / I'd like to talk about ..... / I also like ....., etc., or without* saying the expressions but suggesting the additional innovations.] → Interaction

criteria: Initiating new idea

[If the student answers with "subject A and subject B" all together, this answer is not included in the above criteria.]

3. How do you apply the knowledge and skills of that subject to your innovation?

*\*\*\*Sounds interesting!*

*(To compliment and show that you are listening to student's answer)*

*If the student does not understand the question, repeat the question again.*

*If still not understand, wait for a while (5 seconds), and then ask the paraphrasing question:*

*[Paraphrase: How do you use the knowledge and skills of that subject to create your innovation?]*

Notes:

1) If each of the repeated question or the paraphrasing question is asked twice and the student cannot still answer the question, this affects the proficiency level in the criteria **“interaction.”**

[This suggests that the student cannot apply the communication strategies to solve the communication problems nor the expressions to interact in the conversation].

2) If the student does not give complete information nor does answer all the questions, this affects the proficiency level in the criteria **“coherence.”**

3) During the conversation, the student may use the taught and non-taught communication strategies to overcome communication problems and maintain the conversation to achieve the communication purpose. Only the taught communication strategies are coded and analyzed for their frequency and functions used by the test takers.

4) In the PBBCSI model, the students are instructed with the following communication strategies: 1) Asking for clarification, 2) Asking for confirmation, 3) Circumlocution, and 4) Use of fillers and other hesitation devices.

As for “Asking for clarification” and “Asking for confirmation,” the use of these two strategies depend on situations and their language functions stimulating the speakers to deploy them to interact with their interlocutors, help them overcome communication problems, and maintain the conversations to achieve the communication purposes.

Concerning “Circumlocution” and “Use of fillers and other hesitation devices,” the use of these two strategies depend on personal decisions to use them in conversations, so test takers’ use of these strategies cannot be controlled. If controlled, the conversation in this test will not be natural. Hence, this test task may or may not be able to elicit the use of circumlocution, and use of fillers and other hesitation devices strategies.

## FOR STUDENT

### Test Task 3 Presentation

#### STEP 1: Read the test task design for the role play.

#### Test Task Design:

<b>Objective:</b>	To assess students' English oral communication ability (range, accuracy, fluency, interaction, coherence, and pronunciation) in delivering the project presentation on selected issues.
<b>Job function related to the study unit</b>	- Delivering the independent project presentation on selected issues (Unit 4 Project presentation)
<b>Known criteria:</b>	Students are informed of the procedure and assessment criteria, and the use of taught communication strategies in advance. [Your performance will be video-recorded.]
<b>Purpose context:</b>	Project presentation for a Chinese customer at the meeting room in Australia
<b>Student's role (Test taker's role):</b>	<b>The project presenter</b> -You (the student) give the project presentation for the Chinese customer at the meeting room in Australia. -READ the situation with its details in the <b>sheet of "Test Task 3 (For the student/test taker)."</b>
<b>Assessor's role:</b>	<b>The customer</b> -The assessor acts as the customer who is looking for a company that can produce a product suitable for customers' needs at present.
<b>Preparation time:</b>	6 minutes
<b>Performance time:</b>	10 minutes: (5 minutes for project presentation and another 5 minutes for answering customer's questions)
<b>Assessment</b>	The English oral communication ability test rubric



**FOR STUDENT****STEP 2: Read the sheet of test task 3.****Test Task 3 (For the student/test taker)**

You will have **6 minutes** to read and understand the following situation and information:

**Situation:**

You are going to give a 5-minute project presentation to **the Chinese customer at the meeting room in Australia** about your company project to promote your new antivirus software. You have to include the greeting, introducing yourself, main body, and concluding parts.

The key information and the findings of the project:

Objective	<ul style="list-style-type: none"> <li>To find the antivirus software that meets the customers needs.</li> </ul>
Product information	<ul style="list-style-type: none"> <li>Keep children safe from the information that can cause mental and emotional damage to them.</li> <li>Secure all online transactions.</li> </ul>
Budget	<ul style="list-style-type: none"> <li>2,000,000 baht</li> </ul>
Customers' needs	<ul style="list-style-type: none"> <li>A 3-month trial</li> <li>Cheap price</li> </ul>

## FOR RATER

### STEP 3: Perform test task 3.

#### TEST PROCEDURE

##### Step 1: Give the student the test task design

-Ask the student if he/she is ready for step 2 “*Are you ready for the next step?*”

##### Step 2: Give the student the sheet of test task 3 (6 minutes)

##### Step 3: Perform test task 3 (10 minutes)

#### Questions (For Interviewer 3)

[The interviewer is the experienced instructor.] **Use English rubric for rating.**

1. Can this product protect kids from *inappropriate* content?

\*\*\**That's great!*

If the student does not understand the question, repeat the question again. If still not understand, wait for a while (5 seconds), and then ask the paraphrasing question:

[Paraphrase: *Can this product protect kids/children from not suitable contents?*]

[Using ‘inappropriate’ to elicit student’s use of communication strategies “Asking for clarification” [e.g. ‘What does ‘inappropriate’ mean?’] or “Asking for confirmation” [e.g. ‘Does it mean ‘not suitable’?]

2. Give one example of inappropriate content?

[To check if the student understands ‘inappropriate content’?]

3. For the registered customers, can they get any *compensation* when their *transactions* have problems?

\*\*\**Wow, amazing!*

[Using ‘compensation’ and ‘transactions’ to elicit student’s use of communication strategies “Asking for clarification” [e.g. ‘What does ‘compensation’/ ‘transactions’ mean?’] or

“Asking for confirmation” [e.g. ‘Does it mean *‘money that is paid for some problems?’*, Does it mean *‘a payment method in which the transfer of money happens online?’*]

4. Give one example of compensation for this case.

[To check if the student understands ‘compensation’?]

5. Can you reduce the budget to 1,500,000 baht?

6. Great! Why? / Oh, why not?

Notes:

1) If each of the repeated question or the paraphrasing question is asked twice and the student cannot still answer the question, the proficiency level is lowered.

Please look at the criteria “**interaction.**”

[This suggests that the student cannot apply the communication strategies to solve the communication problems nor the expressions to interact in the conversation].

2) If the student does not give complete information nor does answer all the questions, please look at the criteria “**coherence.**”

3) During the conversation, the student may use the taught and non-taught communication strategies to overcome communication problems and maintain the conversation to achieve the communication purpose. Only the taught communication strategies are coded and analyzed for their frequency and functions used by the test takers.

4) In the PBBCSI model, the students are instructed with the following communication strategies: 1) Asking for clarification, 2) Asking for confirmation, 3) Circumlocution, and 4) Use of fillers and other hesitation devices.

As for “Asking for clarification” and “Asking for confirmation,” the use of these two strategies depend on situations and their language functions stimulating the speakers to deploy them to interact with their interlocutors, help them overcome communication problems, and maintain the conversations to achieve the communication purposes.

Concerning “Circumlocution” and “Use of fillers and other hesitation devices,” the use of these two strategies depends on personal decisions to use them in conversations, so test takers’ use of these strategies cannot be controlled. If controlled, the conversation in this test will not be natural. Hence, this test task may or may not be able to elicit the use of circumlocution, and use of fillers and other hesitation devices strategies.

APPENDIX B: English Oral Communication Ability Test Rubric



Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Notes
<b>Range</b> <input type="checkbox"/> Pretest <sup>1</sup> <input type="checkbox"/> Expected Posttest <sup>2</sup> -verbs -nouns -adjectives -adverbs	- Can use a <b>large number of varied word items*</b> to convey meaning and ideas for topics and situations <b>with complete comprehension.</b> - <b>No mistakes or few mistakes of word choice</b> are made, but <b>do not obscure the meaning of</b> utterances.	- Can use a <b>sufficient number of varied word items</b> to convey meaning and ideas for topics and situations <b>with good comprehension.</b> - <b>Some mistakes of word choice</b> are made, but <b>do not or hardly obscure the meaning of</b> utterances.	- Can use a <b>certain number of varied word items</b> to convey meaning and ideas for topics and situations <b>with fair comprehension.</b> - <b>Some mistakes of word choice</b> are made and <b>sometimes obscure the meaning of</b> utterances.	- Can use a <b>limited number of varied word items</b> to convey meaning and ideas for topics and situations <b>with limited comprehension.</b> - <b>A lot of mistakes of word choice</b> are made <b>which obscure or not obscure the meaning of</b> utterances.	- No responses or related to the stimulus.	
<b>Accuracy</b> <input type="checkbox"/> Pretest <input type="checkbox"/> Expected Posttest	- Can employ grammatical structures and usage in communication with	- Can employ grammatical structures and usage with <b>high accuracy.</b>	- Can employ grammatical structures and usage with <b>medium accuracy.</b> - <b>A lot of minor</b>	- Can employ grammatical structures and usage with <b>low accuracy.</b>	- No responses or related to the stimulus.	

<p><b>Fluency</b></p> <p><input type="checkbox"/> Pretest</p> <p><input type="checkbox"/> Expected Posttest</p>	<p><b>very high accuracy.</b></p> <ul style="list-style-type: none"> <li>- No mistakes or few minor mistakes<sup>3</sup> are found, but <b>do not obscure the meaning</b> of utterances.</li> </ul>	<ul style="list-style-type: none"> <li>- Some minor mistakes are found, but <b>do not obscure the meaning</b> of utterances.</li> </ul>	<p>mistakes are found, but they <b>do not obscure the meaning of utterances.</b></p> <ul style="list-style-type: none"> <li>- Some minor and major mistakes<sup>4</sup> are found. Those major mistakes <b>obscure the meaning</b> of utterances.</li> </ul>	<ul style="list-style-type: none"> <li>- A lot of mistakes are found and <b>obscure the meaning</b> of utterances.</li> </ul>		
	<ul style="list-style-type: none"> <li>- Can produce <b>long utterances</b> with smooth and effortless flow of language.</li> <li>- While doing each test task, the speaker <b>never or rarely looks at and/or reads</b> the information on the test task paper (<b>0-3 times, less than 5 seconds each</b>).</li> <li>- Some short pauses or hesitations<sup>5</sup> occur with an appropriate number (not too many) of fillers</li> </ul>	<ul style="list-style-type: none"> <li>- Can produce <b>quite long utterances</b> with smooth and effortless flow of language.</li> <li>- While doing each test task, the speakers <b>occasionally look at and/or reads</b> the information on the test task paper (<b>4-5 times, less than 5 seconds each</b>).</li> <li>- Some short pauses or hesitations occur with a certain number of fillers and hesitation</li> </ul>	<ul style="list-style-type: none"> <li>- Can produce <b>short utterances</b> with smooth and effortless flow of language.</li> <li>- While doing each test task, the speakers <b>often look at and/or reads</b> the information on the test task paper (<b>6-7 times, less than 5 seconds each</b>).</li> <li>- Some short and long pauses or hesitations<sup>6</sup> occur, and the messages are left unfinished, or occur with too many or without fillers and</li> </ul>	<ul style="list-style-type: none"> <li>- Can produce <b>isolated utterances with difficulty.</b></li> <li>- While doing each test task, the speaker <b>looks at and/or reads</b> the information on the test task paper <b>almost all the time or all the time (less than 5 seconds, more than 8 times).</b></li> <li>- A lot of pauses or hesitations occur and the messages are left unfinished, or occur with too many or without fillers and hesitation devices</li> </ul>	<ul style="list-style-type: none"> <li>- No responses or responses are not related to the stimulus.</li> </ul>	

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Notes
<p><b>Interaction</b></p> <p><input type="checkbox"/> Pretest</p> <p><input type="checkbox"/> Expected Posttest</p> <p><b>-Expressions related to communication strategies</b></p>	<p><b>and hesitation devices for every or most short pauses or hesitations</b> to continue further related information.</p> <p>- Can use <b>a large number of varied expressions</b> in interactions (<i>e.g. What do you mean?, Do you mean...?, Well, Really?, etc.</i>) with <b>appropriate turn-taking</b> that the speaker <b>usually initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p><b>devices for some short pauses or hesitations</b> to continue further related information.</p> <p>- Can use <b>a sufficient number of varied expressions</b> in interactions with <b>appropriate turn-taking</b> that the speaker <b>often initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p><b>hesitation devices</b> to continue further related information.</p> <p>- Can use <b>a certain number of varied expressions</b> in interactions with <b>relatively appropriate turn-taking</b> that the speaker <b>sometimes initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p>to continue further related information.</p> <p>- Can use <b>a limited number of varied expressions</b> in interactions with <b>inappropriate turn-taking</b> that the speaker <b>never or rarely initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p>- No responses or responses are not related to the stimulus.</p>	
<p><b>Coherence</b></p> <p><input type="checkbox"/> Pretest</p> <p><input type="checkbox"/> Expected Posttest</p>	<p>- The responses are <b>fully related</b> to the topic in the conversation and <b>have complete information</b> for the tasks and the questions of the</p>	<p>- The responses are <b>almost fully related</b> to the topic in the conversation and <b>have almost complete information</b> for the tasks and the questions of the</p>	<p>- The responses are <b>relatively related</b> to the topic in the conversation, but <b>lack some information</b> for the tasks and the questions of the</p>	<p>- The responses are <b>hardly related</b> to the topic in the conversation and <b>lack a lot of the information</b> for the tasks and the questions of the</p>	<p>- No responses or responses are not related to the stimulus.</p>	

<p><b>Pronunciation</b></p> <p><input type="checkbox"/> Pretest</p> <p><input type="checkbox"/> Expected Posttest</p>	<p>EOCA<sup>8</sup> test.</p> <p>- Can produce utterances with <b>an appropriate number (not too many) of varied cohesive devices<sup>7</sup></b> to organize thoughts and ideas logically.</p> <p>- Can produce <b>excellent pronunciation</b> of word and sentence stress, and intonation patterns <b>with no or very few pronunciation mistakes (sounds, stress, and intonation), but they do not affect comprehensibility</b>.</p>	<p>questions of the EOCA test.</p> <p>- Can produce utterances with <b>a sufficient number of varied cohesive devices</b> to organize thoughts and ideas logically.</p> <p>- Can produce <b>good pronunciation</b> of word and sentence stress, and intonation patterns <b>with a small number of pronunciation mistakes (sounds, stress, and intonation), and they little affect comprehensibility</b>.</p>	<p>EOCA test.</p> <p>- Can produce utterances with <b>a certain number of varied cohesive devices</b> to organize thoughts and ideas logically.</p> <p>- Can produce <b>fair pronunciation</b> of word and sentence stress, and intonation patterns <b>with a certain number of pronunciation mistakes (sounds, stress, and intonation), and they relatively affect comprehensibility</b>.</p>	<p>EOCA test.</p> <p>- Can produce utterances with <b>a limited number of varied cohesive devices</b> to organize thoughts and ideas logically.</p> <p>- Can produce <b>poor pronunciation</b> of word and sentence stress, and intonation patterns <b>with a lot of pronunciation mistakes (sounds, stress, and intonation), and they much affect comprehensibility</b>.</p>	
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(Adapted from CEFR, Council of Europe, 2017, pp. 155-156)

<sup>1</sup> **Pretest** refers to pretest score rated by the researcher.

<sup>2</sup> **Expected Posttest** refers to expected posttest score rated by the students themselves.

<sup>3</sup> **minor mistakes** refer to the mistakes that make the utterances still comprehensible and do not change or almost do not change the meaning of utterances such as subject-verb agreement, omission of the articles “a, an, the,” omission of the plural morpheme <-s or -es> of the countable plural nouns, omission of the

auxiliary verbs “do, be, have” in the question, statement, and negative forms, , and misordering the words that does not affect the meaning of utterances (e.g. It was constructed with “materials heat-resistant” instead of “heat-resistant materials.”).

<sup>4</sup> **major mistakes** refer to the mistakes that make the utterances nearly incomprehensible or incomprehensible and change the meaning of utterances such as

incorrect numbers of persons and things, misordering the words (e.g. “He high specifications the CPU needs of”).

<sup>5</sup> **short pauses or hesitations** refer to short periods of time (less than 3 seconds) that a speaker stops in his/her speech and then continues it again with related information,

which do not include short pauses or hesitations for emphasizing important points, changing new topics, and having other interlocutors look at some information or think about something.

<sup>6</sup> **long pauses or hesitations** refer to long periods of time (more than 3 seconds) that the speaker stops in his/ her speech and leaves it unfinished or continues it with related

information (but more than 3 seconds), which do not include long pauses or hesitations for having other interlocutors look at some information or think about something.

<sup>7</sup> **cohesive devices** in this study are various types of linking words including 1) Addition: “*and*” and “*also*,” 2) Result: “*so*,” and “*because*,” 3) Exemplification: “*for example*,” “*such as*,” and “*like*,” 4) Sequencing: “*first*,” “*second*,” “*next*,” “*then*,” and “*finally*,” 5) Contrast: “*but*”).

<sup>8</sup> **EOCA** refers to English oral communication ability



**APPENDIX C: English Oral Communication Ability Task and Project Rubric**

A. Task and Project Quality (Adapted from Buck Institute for Education, 2015)

B. English Oral Communication Ability (Adapted from CEFR, Council of Europe, 2017, pp. 155-156)

**A. Task and Project Quality**

<b>Criteria</b>	<b>Level 4</b>	<b>Level 3</b>	<b>Level 2</b>	<b>Level 1</b>	<b>Level 0</b>	<b>Comments</b>
<p><b>Content</b></p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p> <p>[for more information, look at the student log (for the outside class task and the project) in “I. Setting the goals and objectives”]</p>	<p>- Answers the driving question and/or deeper questions, and achieves task or project objectives with <b>in-depth or extra details and examples.</b></p> <p>- Includes <b>all correct and relevant details and examples that answer all of the questions and achieve the objectives previously mentioned.</b></p>	<p>- Answers the driving question and/or deeper questions, and achieves task or project objectives with <b>enough essential details and examples.</b></p> <p>- Includes <b>few incorrect and irrelevant details and examples that do not answer the questions nor achieve the objectives previously mentioned.</b></p>	<p>- Answers the driving question and/or deeper questions, and achieves task or project objectives with <b>hardly any essential details and examples.</b></p> <p>- Includes <b>some incorrect and irrelevant details and examples that do not answer the questions nor achieve the objectives previously mentioned.</b></p>	<p>- Answers the driving question and/or deeper questions, and achieves task or project objectives with <b>no essential details and examples.</b></p> <p>- Includes <b>many incorrect and irrelevant details and examples that do not answer the questions nor achieve the objectives previously mentioned.</b></p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	

<p><b>Organization</b></p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p>	<p>- The ideas, details, and examples in the conversations or discussions are <b>completely clear, well-organized, and easy to follow and understand.</b></p> <p>- The task or project <b>entirely involves</b> real-world tasks or situations <b>that does not include unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>large number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The ideas, details, and examples in the conversations or discussions are <b>clear, well-organized, and easy to follow and understand.</b></p> <p>- The task or project <b>almost entirely involves</b> real-world tasks or situations <b>that may include few unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>sufficient number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The ideas, details, and examples in the conversations or discussions are <b>relatively clear, well-organized, and easy to follow and understand.</b></p> <p>- The task or project <b>relatively involves</b> real-world tasks or situations <b>that may include some unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>certain number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The ideas, details, and examples in the conversations or discussions are <b>unclear, poorly-organized, and difficult to follow and understand.</b></p> <p>- The task or project <b>rarely involves</b> real-world tasks or situations <b>that may include a lot of unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Use <b>few or no varied methods/techniques and resources</b> to support the task or project.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	
<p><b>Authenticity</b></p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p>	<p>- The task or project <b>entirely involves</b> real-world tasks or situations <b>that does not include unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>large number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>almost entirely involves</b> real-world tasks or situations <b>that may include few unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>sufficient number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>relatively involves</b> real-world tasks or situations <b>that may include some unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>certain number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>rarely involves</b> real-world tasks or situations <b>that may include a lot of unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Use <b>few or no varied methods/techniques and resources</b> to support the task or project.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	
<p><b>Use of methods/techniques and resources<sup>2</sup></b></p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p> <p>[for more information, look at the student log in “III. Planning the procedure”]</p>	<p>- The task or project <b>entirely involves</b> real-world tasks or situations <b>that does not include unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>large number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>almost entirely involves</b> real-world tasks or situations <b>that may include few unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>sufficient number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>relatively involves</b> real-world tasks or situations <b>that may include some unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Uses a <b>certain number of varied methods/techniques and resources</b> to support the task or project.</p>	<p>- The task or project <b>rarely involves</b> real-world tasks or situations <b>that may include a lot of unreal information</b> about Computer Engineering professions, related fields, or everyday life.</p> <p>- Use <b>few or no varied methods/techniques and resources</b> to support the task or project.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Comments
<b>Reflection</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> EP S I [for more information, look at the student log in "Reflection"]	- Students engage in a <b>very thoughtful reflection on all of the questions with complete details and examples.</b>	- Students engage in a <b>thoughtful reflection on all of the questions with enough essential details and examples.</b>	- Students engage in a <b>superficial reflection on all or some of the questions with hardly any essential details and examples.</b>	- Students engage in a <b>very superficial reflection on all or some of the questions with no essential details and examples.</b>	Work is not conducted nor does it correspond to the driving question and the task or project objectives.	

**B. English Oral Communication Ability**

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Comments
<b>Range</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> EP S I -verbs -nouns -adjectives -adverbs	- Can use a <b>large amount of varied vocabulary</b> to convey meaning and ideas for topics and situations <b>with complete comprehension.</b> - <b>No mistakes or few mistakes of word choice</b> are made, but <b>do not obscure the meaning</b> of utterances.	- Can use a <b>sufficient amount of varied vocabulary</b> to convey meaning and ideas for topics and situations <b>with good comprehension.</b> - <b>Some mistakes of word choice</b> are made, but <b>do not obscure the meaning</b> of utterances.	- Can use a <b>certain amount of varied vocabulary</b> to convey meaning and ideas for topics and situations <b>with fair comprehension.</b> - <b>Some mistakes of word choice</b> are made and <b>sometimes obscure the meaning</b> of utterances.	- Can use a <b>limited amount of varied vocabulary</b> to convey meaning and ideas for topics and situations <b>with limited comprehension.</b> - <b>A lot of mistakes of word choice</b> are made <b>which obscure or not obscure the meaning</b> of utterances.	Work is not conducted nor does it correspond to the driving question and the task or project objectives.	

<p><b>Accuracy</b></p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p>	<p>- Can employ grammatical structures and usage in communication with <b>very high accuracy</b>.</p> <p>- No mistakes or <b>few minor mistakes</b><sup>3</sup> are found, but <b>do not obscure the meaning</b> of utterances.</p>	<p>- Can employ grammatical structures and usage with <b>high accuracy</b>.</p> <p>- <b>Some minor mistakes</b> are found, but <b>do not or hardly obscure the meaning</b> of utterances.</p>	<p>- Can employ grammatical structures and usage with <b>medium accuracy</b>.</p> <p>- <b>A lot of minor mistakes</b> are found, but they <b>do not obscure the meaning of utterances</b>.</p> <p>- <b>Some minor and major mistakes</b><sup>4</sup> are found and <b>obscure the meaning</b> of utterances.</p>	<p>- Can employ grammatical structures and usage with <b>low accuracy</b>.</p> <p>- <b>A lot of minor and major mistakes</b> are found and <b>obscure the meaning</b> of utterances.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	
<p><b>Fluency</b></p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p>	<p>- Can produce <b>long utterances</b> with <b>smooth and effortless flow of language</b>.</p> <p>- While doing the task and the project, the speakers <b>never or rarely look at and/or read</b> the notes of information they have explored (<b>0-4 times, less than 5</b>).</p>	<p>- Can produce <b>quite long utterances</b> with <b>smooth and effortless flow of language</b>.</p> <p>- While doing the task and the project, the speakers <b>occasionally look at and/or read</b> the notes of information they have explored (<b>5-6</b>).</p>	<p>- Can produce <b>short utterances</b> with <b>smooth and effortless flow of language</b>.</p> <p>- While doing the task and the project, the speakers <b>often look at and/or read</b> the notes of information they have explored (<b>7-8 times less than 5 seconds each</b>).</p>	<p>- Can produce <b>isolated utterances</b> with <b>difficulty</b>.</p> <p>- While doing the task and the project, the speakers <b>look at and/or read</b> the notes of information they have explored <b>almost all the time or all the time</b>.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Comments
<p><b>Interaction</b></p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p>	<p><b>seconds each).</b> - <b>Some short pauses or hesitations<sup>5</sup></b> occur with an appropriate number (not too many) of fillers and hesitation devices for every or most short pauses or hesitations to continue further related information.</p>	<p><b>times, less than 5 seconds each).</b> - <b>Some short pauses or hesitations<sup>6</sup></b> occur with a certain number of fillers and hesitation devices for some short pauses or hesitations to continue further related information.</p>	<p>- <b>Some long pauses or hesitations<sup>6</sup></b> occur and the messages are left unfinished, or occur with too many or without fillers and hesitation devices to continue further related information.</p>	<p><b>(more than 9 times, less than 5 seconds).</b> - <b>A lot of pauses or hesitations</b> occur and the messages are left unfinished, or occur with too many or without fillers and hesitation devices to continue further related information.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	
<p>- Can use a <b>large number of varied expressions</b> in interactions (e.g. <i>What do you mean?, Do you mean...?, Well, Really?, etc.</i>) with <b>appropriate turn-taking</b> that the speaker <b>usually initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p>- Can use a <b>sufficient number of varied expressions</b> in interactions with <b>appropriate turn-taking</b> that the speaker <b>often initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p>- Can use a <b>certain number of varied expressions</b> in interactions with <b>relatively appropriate turn-taking</b> that the speaker <b>sometimes initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>	<p>- Can use a <b>limited number of varied expressions</b> in interactions with <b>inappropriate turn-taking</b> that the speaker <b>never or rarely initiates</b> the topics and/or ideas, and <b>takes the turns</b> in a conversation.</p>			

<p><b>Coherence</b></p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p>	<p>- The responses are <b>fully related</b> to the topic in the conversation.</p> <p>- Can produce utterances with <b>an appropriate number (not too many) of varied cohesive devices<sup>7</sup></b> to organize thoughts and ideas logically.</p>	<p>- The responses are <b>almost fully related</b> in the conversation.</p> <p>- Can produce utterances with <b>a sufficient number of varied cohesive devices</b> to organize thoughts and ideas logically.</p>	<p>- The responses are <b>relatively related</b> to the topic in the conversation.</p> <p>- Can produce utterances with <b>a certain number of varied cohesive devices</b> to organize thoughts and ideas logically.</p>	<p>- The responses are <b>hardly related</b> to the topic in the conversation.</p> <p>- Can produce utterances with <b>a limited number of varied cohesive devices</b> to organize thoughts and ideas logically.</p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	
<p><b>Pronunciation</b></p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p>	<p>- Can produce <b>excellent pronunciation</b> of word and sentence stress, and intonation patterns <b>with no or very few pronunciation mistakes (sounds, stress, and intonation)</b>, but they <b>do not affect comprehensibility.</b></p>	<p>- Can produce <b>good pronunciation</b> of word and sentence stress, and intonation patterns <b>with a small number of pronunciation mistakes (sounds, stress, and intonation)</b>, and they <b>little affect comprehensibility.</b></p>	<p>- Can produce <b>fair pronunciation</b> of word and sentence stress, and intonation patterns <b>with a certain number of pronunciation mistakes (sounds, stress, and intonation)</b>, and they <b>relatively affect comprehensibility.</b></p>	<p>- Can produce <b>poor pronunciation</b> of word and sentence stress, and intonation patterns <b>with a lot of pronunciation mistakes (sounds, stress, and intonation)</b>, and they <b>much affect comprehensibility.</b></p>	<p>Work is not conducted nor does it correspond to the driving question and the task or project objectives.</p>	

<sup>1</sup> EP refers to “Expected Progression score,” S “Self-assessment score,” and I “Instructor-assessment score.”

<sup>2</sup> Any mistakes and actions (e.g. pauses or hesitations, interruptions, repetitions, etc.) that are caused by technical problems, although they may affect the use of methods/techniques and resources, and the six aspects of English oral communication ability previously mentioned, all of those flaws do not lead to the deduction against the levels of students’ English oral communication ability.

<sup>3</sup> **minor mistakes** refer to the mistakes that make the utterances still comprehensible and do not change or almost do not change the meaning of

utterances such as subject-verb agreement, omission of the articles “a, an, the,” omission of the plural morpheme <-s or -es> of the countable plural nouns, omission of the auxiliary verbs “do, be, have” in the question, statement, and negative forms, and misordering the words that does not affect the meaning of utterances (e.g. It was constructed with “materials heat-resistant” instead of “heat-resistant materials.”).

<sup>4</sup> **major mistakes** refer to the mistakes that make the utterances nearly incomprehensible or incomprehensible and change the meaning of utterances such as

incorrect numbers of persons and things and misordering the words (e.g. “He high specifications the CPU needs of”).

<sup>5</sup> **short pauses or hesitations** refer to short periods of time (less than 3 seconds) that a speaker stops or hesitates during his/her speech and then continues it again with related information, which do not include short pauses or hesitations for emphasizing important points, changing new topics, and having other

interlocutors look at some information or think about something.

<sup>6</sup> **long pauses or hesitations** refer to long periods of time (more than 3 seconds) that the speaker stops or hesitates during his/ her speech and leaves it unfinished or continues it with related information (but more than 3 seconds), which do not include long pauses or hesitations for having other

interlocutors look at some information or think about something.

<sup>7</sup> **cohesive devices** in this study are various types of linking words including 1) Addition: “and” and “also” 2) Result: “so” and “because” 3) Exemplification: “for example,” “such as,” and “like” 4) Sequencing: “first,” “second,” “next,” “then,” and “finally,” 5) Contrast: “but”).

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**Instructor’s comments and suggestions:**

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เกณฑ์การประเมินงานออกข้อเรียนและโครงการโดยอิสระ

ก. คุณภาพของงานออกข้อเรียนและโครงการโดยอิสระ



ข. ความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร

ก. คุณภาพของงานออกข้อเรียนและโครงการโดยอิสระ

เกณฑ์	ระดับ 4	ระดับ 3	ระดับ 2	ระดับ 1	ระดับ 0	คำวิจารณ์
<p>เนื้อหา</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S 1</p> <p>[สำหรับข้อมูลเพิ่มเติม ดูที่ บันทึกการทำงานของผู้เรียน (สำหรับงานออกข้อเรียนและโครงการโดยอิสระ) ใน “1. การกำหนดเป้าหมายและวัตถุประสงค์”]</p>	<p>- ตอบคำถามผลึกตันให้ (driving question) และ/หรือคำถามเชิงลึก (deeper questions) และบรรลุวัตถุประสงค์ของงานออกข้อเรียนหรือโครงการ <b>โดยมีข้อมูลและตัวอย่างที่ละเอียดหรือเพิ่มเติม</b></p> <p>- มีข้อมูลและตัวอย่างที่ถูกต้อง และเกี่ยวข้องกับงานทั้งหมด</p>	<p>- ตอบคำถามผลึกตันให้ (driving question) และ/หรือคำถามเชิงลึก (deeper questions) และบรรลุวัตถุประสงค์ของงานออกข้อเรียนหรือโครงการ <b>โดยมีข้อมูล</b></p> <p>และตัวอย่างที่จำเป็นเพียงพอ</p> <p>- มีข้อมูลและตัวอย่างที่ไม่ถูกต้องและไม่เกี่ยวข้องเพียงเล็กน้อย <b>ซึ่งไม่ตอบคำถามและ</b></p>	<p>- ตอบคำถามผลึกตันให้ (driving question) และ/หรือคำถามเชิงลึก (deeper questions) และบรรลุวัตถุประสงค์ของงานออกข้อเรียนหรือโครงการ <b>โดยไม่มีข้อมูลและตัวอย่างที่จำเป็น</b></p> <p>- มีข้อมูลและตัวอย่างที่ไม่ถูกต้องและไม่เกี่ยวข้อง <b>จำนวนมากซึ่งไม่</b></p>	<p>- ไม่ได้ทำงานไม่ตอบคำถาม ผลึกตันให้ ออกเรียน (driving question) และวัตถุประสงค์ของงานออกข้อเรียนหรือวัตถุประสงค์ของงานออกข้อเรียนหรือโครงการ</p>	คำวิจารณ์	



<p>การจัดการองค์ประกอบโดยรวม</p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p>	<p><b>ซึ่งตอบคำถามทั้งหมดและทำให้บรรลุวัตถุประสงค์ดังกล่าวข้างต้น</b></p> <p>- ความคิด ข้อมูลและตัวอย่างในบทสนทนา หรือการสนทนา แลกเปลี่ยนความเห็น</p> <p>กันชัดเจนดีมาก</p> <p>เรียบเรียงได้ดีมาก</p> <p>ติดตามและทำความเข้าใจได้ง่ายมาก</p>	<p><b>ไม่ทำให้บรรลุวัตถุประสงค์ดังกล่าวข้างต้น</b></p> <p>- ความคิด ข้อมูลและตัวอย่างในบทสนทนา หรือการสนทนา แลกเปลี่ยนความเห็นกัน</p> <p>ชัดเจน เรียบเรียงได้ดี</p> <p>ติดตามและทำความเข้าใจได้ง่าย</p>	<p><b>ตอบคำถามและไม่ทำให้บรรลุวัตถุประสงค์ดังกล่าวข้างต้น</b></p> <p>- ความคิด ข้อมูลและตัวอย่างในบทสนทนา หรือการสนทนา แลกเปลี่ยนความเห็น</p> <p>กันค่อนข้างชัดเจน</p> <p>เรียบเรียงได้ค่อนข้างดี</p> <p>ติดตามและทำความเข้าใจได้</p> <p>ค่อนข้างง่าย</p>	<p><b>ตอบคำถามและไม่ทำให้บรรลุวัตถุประสงค์ดังกล่าวข้างต้น</b></p> <p>- ความคิด ข้อมูลและตัวอย่างในบทสนทนา หรือการสนทนา แลกเปลี่ยนความเห็น</p> <p>กันไม่ชัดเจน</p> <p>เรียบเรียงได้ไม่ดี</p> <p>ติดตามและทำความเข้าใจได้ยาก</p>	<p>- ไม่ได้ทำงานหรืองานไม่ตอบคำถาม</p> <p>ผลิตภัณฑ์ให้อยากเรียนรู้ (driving question) และวัตถุประสงค์ของงาน นอกเหนือเรียนหรือโครงการฯ</p>	
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<p>ทำงาน”</p> <p>การคิดวิเคราะห์ เพื่อปรับปรุงแก้ไข งาน</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p>EP S I</p> <p>[สำหรับข้อมูลเพิ่มเติม ดูที่ บันทึกการทำงานของ ผู้เรียน ใน “การคิดวิเคราะห์เพื่อ ปรับปรุงแก้ไขงาน”]</p>	<p>- ผู้เรียนมีการคิด วิเคราะห์เพื่อ ปรับปรุงแก้ไขงานที่ ละเอียดรอบคอบ มากต่อคำถามทุก คำถาม โดยมี รายละเอียดและ ตัวอย่างที่จำเป็น ตัวอย่างครบถ้วน</p>	<p>- ผู้เรียนมีการคิด วิเคราะห์เพื่อปรับปรุง แก้ไขงานละเอียด รอบคอบต่อคำถามทุก คำถาม โดยมี รายละเอียดและ ตัวอย่างที่จำเป็น เพียงพอ</p>	<p>- ผู้เรียนมีการคิด วิเคราะห์เพื่อ ปรับปรุงแก้ไขงาน เพียงผิวเผินต่อ คำถามทุกคำถาม หรือบางคำถาม โดย แทบจะไม่มี รายละเอียดและ ตัวอย่างที่จำเป็น</p>	<p>- ผู้เรียนมีการคิด วิเคราะห์เพื่อ ปรับปรุงแก้ไขงาน เพียงผิวเผินมากต่อ คำถามทุกคำถาม หรือบางคำถาม โดย ไม่มีรายละเอียดและ ตัวอย่างที่จำเป็น</p>	<p>และ วัตถุประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ</p> <p>- ไม่ได้ ทำงานหรือ งานไม่ตอบ คำถาม ผลิตภัณฑ์ให้ อยากเรียนรู้ (driving question) และ วัตถุประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ</p>	
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## ข. ความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร

เกณฑ์	ระดับ 4	ระดับ 3	ระดับ 2	ระดับ 1	ระดับ 0	คำวิจารณ์
ขอบข่ายของคำศัพท์ <input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I	- สามารถใช้คำศัพท์ที่หลากหลาย จำนวนมากเพื่อสื่อความหมายและความคิดสำหรับหัวข้อและสถานการณ์ต่างๆ ให้เกิดความเข้าใจได้ครบถ้วน - การเลือกใช้คำไม่มีข้อผิดพลาดหรือมีข้อผิดพลาดจำนวนน้อย แต่ไม่มีบิตเบี่ยง ความหมายของถ้อยคำดังกล่าว	- สามารถใช้คำศัพท์ที่หลากหลายเพื่อสื่อความหมายและความคิดสำหรับหัวข้อและสถานการณ์ต่างๆ ให้เกิดความเข้าใจได้พอสมควร - การเลือกใช้คำมีข้อผิดพลาดจำนวนหนึ่ง และบางครั้งบิตเบี่ยงความหมายของถ้อยคำดังกล่าว	- สามารถใช้คำศัพท์ที่หลากหลายเพื่อสื่อความหมายและความคิดสำหรับหัวข้อและสถานการณ์ต่างๆ ให้เกิดความเข้าใจได้พอสมควร - การเลือกใช้คำมีข้อผิดพลาดจำนวนมาก ซึ่งบิตเบี่ยงความหมายหรือไม่มีบิตเบี่ยงความหมายของถ้อยคำดังกล่าว	- สามารถใช้คำศัพท์ที่หลากหลายเพื่อสื่อความหมายและความคิดสำหรับหัวข้อและสถานการณ์ต่างๆ ให้เกิดความเข้าใจได้พอสมควร - การเลือกใช้คำมีข้อผิดพลาดจำนวนมาก ซึ่งบิตเบี่ยงความหมายหรือไม่มีบิตเบี่ยงความหมายของถ้อยคำดังกล่าว	- ไม่ได้ทำงานหรืองานไม่ตอบคำถาม ผลักดันให้อยากเรียนรู้ (driving question) และวัตถุประสงค์ของงานนอกชั้นเรียนหรือโครงการฯ	
ความถูกต้องของไวยากรณ์ <input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I	- สามารถใช้โครงสร้างและการใช้ไวยากรณ์ในการสื่อสารด้วยความถูกต้องสูง - ไม่มีข้อผิดพลาด	- สามารถใช้โครงสร้างและการใช้ไวยากรณ์ในการสื่อสารด้วยความถูกต้องพอสมควร - มีข้อผิดพลาดที่	- สามารถใช้โครงสร้างและการใช้ไวยากรณ์ในการสื่อสารด้วยความถูกต้องพอสมควร - มีข้อผิดพลาดที่	- สามารถใช้โครงสร้างและการใช้ไวยากรณ์ในการสื่อสารด้วยความถูกต้องพอสมควร - มีข้อผิดพลาดที่	- ไม่ได้ทำงานหรืองานไม่ตอบคำถาม ผลักดันให้อยากเรียนรู้	



	<p>- มีการหยุดหรือการ ลังเลชั่วขณะ<sup>5</sup> เกิดขึ้นจำนวนหนึ่ง โดยมีการใช้คำ เพิ่มเติมหรือคำ แสดงความลังเลใน จำนวนที่เหมาะสม (ไม่มากเกินไป) สำหรับการหยุดหรือ การลังเลชั่วขณะทุก ครั้งหรือเกือบจะทุก ครั้ง เพื่อพูดข้อมูลที่ เกี่ยวข้องต่อไป</p>	<p>แสดงความลังเลจำนวน หนึ่ง สำหรับการหยุด หรือการลังเลชั่วขณะใน บางครั้ง เพื่อพูดข้อมูลที่ เกี่ยวข้องต่อไป</p>	<p>ความถูกต้องหรือการ ไม่บอกความจริงโดยมี น้ำหนักเกิดขึ้นโดยมี การใช้คำเพิ่มเติม หรือคำแสดงความ ลังเลจำนวนมาก เกินไปหรือไม่มีการ ใช้คำดังกล่าวเพื่อพูด ข้อมูลที่เกี่ยวข้องต่อไป</p>	<p>จำเพาะมาก และข้อ ความถูกต้องหรือการ ไม่บอกความจริงโดยมี น้ำหนักเกิดขึ้นโดยมี การใช้คำเพิ่มเติม หรือคำแสดงความ ลังเลจำนวนมาก เกินไปหรือไม่มีการ ใช้คำดังกล่าวเพื่อพูด ข้อมูลที่เกี่ยวข้องต่อไป</p>		
<p>เกณฑ์</p> <p>การมีปฏิสัมพันธ์</p> <p><input type="checkbox"/> EP</p> <p><input type="checkbox"/> S</p> <p><input type="checkbox"/> I</p>	<p>ระดับ 4</p> <p>- สามารถใช้จำนวน ภาษาที่หลากหลาย จำนวนมากในการมี ปฏิสัมพันธ์ (เช่น What do you mean? Do you mean....?, Well, Really? และ อื่นๆ) โดยมีการ</p>	<p>ระดับ 3</p> <p>- สามารถใช้จำนวน ภาษาที่หลากหลาย จำนวนที่เพียงพอในการ มีปฏิสัมพันธ์โดยมีการ เปลี่ยนกันพูดที่ เหมาะสมซึ่งผู้พูดมักจะ เป็นฝ่ายเริ่มหัวข้อการ สนทนาและ/หรือความคิด</p>	<p>ระดับ 2</p> <p>- สามารถใช้จำนวน ภาษาที่หลากหลาย จำนวนหนึ่งในการมี ปฏิสัมพันธ์โดยมีการ เปลี่ยนกันพูดที่ ค่อนข้างเหมาะสมซึ่ง ในบางครั้งผู้พูดจะ เป็นฝ่ายเริ่มหัวข้อการ</p>	<p>ระดับ 1</p> <p>- สามารถใช้จำนวน ภาษาที่หลากหลาย จำนวนจำกัดในการมี ปฏิสัมพันธ์โดยมีการ เปลี่ยนกันพูดที่ไม่ เหมาะสมซึ่งผู้พูดไม่ เคยหรือแทบจะไม่ เป็นฝ่ายเริ่มหัวข้อการ</p>	<p>ระดับ 0</p> <p>- ไม่ได้ ทำงานหรือ งานไม่ตอบ คำถาม ผลิตภัณฑ์ให้ อย่างเรียนรู้ (driving question)</p>	<p>คำวิจารณ์</p>

<p>ความสัมพันธ์ เชื่อมโยงของเนื้อหา</p> <p><input type="checkbox"/> EP <input type="checkbox"/> S <input type="checkbox"/> I</p>	<p>เปลี่ยนแปลงที่ เหมาะสมซึ่งผู้พูดจะ เป็นฝ่ายเริ่มหัวข้อ การสนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สร้างสรรค์ และ เปลี่ยน มาเป็นฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>และ วัตถุประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ</p>	
	<p>เปลี่ยนแปลงที่ เหมาะสมซึ่งผู้พูดจะ เป็นฝ่ายเริ่มหัวข้อ การสนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สร้างสรรค์ และ เปลี่ยน มาเป็นฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>และ วัตถุประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ</p>	
	<p>เปลี่ยนแปลงที่ เหมาะสมซึ่งผู้พูดจะ เป็นฝ่ายเริ่มหัวข้อ การสนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สร้างสรรค์ และ เปลี่ยน มาเป็นฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>สนทนาและ/หรือ ความคิดสร้างสรรค์ และเปลี่ยนแปลงเป็น ฝ่ายพูด</p>	<p>และ วัตถุประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ</p>	

เกณฑ์	ระดับ 4	ระดับ 3	ระดับ 2	ระดับ 1	ระดับ 0	คำวิจารณ์
การออกเสียง  <input type="checkbox"/> EP S I	- สามารถออกเสียง การลงเสียงหนักเบาที่ คำและประโยค รวมถึงรูปแบบ ท่วงทำนองเสียงสูงต่ำ <b>ได้เยี่ยม</b> โดยไม่มี ข้อผิดพลาดเกี่ยวกับ การออกเสียงหรือมี ข้อผิดพลาดเกี่ยวกับ การออกเสียง	- สามารถออกเสียงการ ลงเสียงหนักเบาที่คำและ ประโยค รวมถึงรูปแบบ ท่วงทำนองเสียงสูงต่ำ <b>ได้</b> โดยมีข้อผิดพลาด เกี่ยวกับ การออกเสียง จำนวนน้อย (เสียง การ ลงเสียงหนักเบา ท่วงทำนองเสียง) และ <b>ส่งผลกระทบน้อย</b> <b>เข้าใจเพียงเล็กน้อย</b>	- สามารถออกเสียง การลงเสียงหนักเบาที่ คำและประโยค รวมถึง รูปแบบท่วงทำนอง เสียงสูงต่ำ <b>ได้พอใช้</b> โดยมีข้อผิดพลาด เกี่ยวกับ การออก เสียงจำนวนมาก (เสียง การลงเสียงหนักเบา ท่วงทำนอง เสียง) และ <b>ส่งผล กระทบบ่อย</b> <b>เข้าใจพอสมควร</b>	- สามารถออกเสียง การลงเสียงหนักเบาที่ คำและประโยค รวมถึง รูปแบบท่วงทำนอง เสียงสูงต่ำ <b>ได้ไม่ดี</b> โดย มีข้อผิดพลาด เกี่ยวกับ การออก เสียงจำนวนมาก (เสียง การลงเสียงหนักเบา ท่วงทำนอง เสียง) และ <b>ส่งผล กระทบบ่อย</b> <b>เข้าใจมาก</b>	- <b>ไม่ได้</b> ทำงานหรือ งานไม่ตอบ คำถาม ผลักดันให้ อายากริษฐ์ (driving question) และ วิตุฎประสงค์ ของงาน นอกชั้น เรียนหรือ โครงการฯ	

<sup>1</sup> EP หมายถึง “จะแสดงความก้าวหน้าที่คาดหวังไว้”, S หมายถึง “จะแสดงความการประเมินของตนเอง”, and I หมายถึง “จะแนะนำการประเมินของผู้สอน”

<sup>2</sup> ข้อผิดพลาดและการกระทำใดๆ (เช่น การหยุดหรือการส่งระหว่างการพูด การขัดจังหวะ การพูดซ้ำ และอื่น ๆ) ซึ่งมีสาเหตุมาจากปัญหาทางด้านเทคนิค ถึงแม้ว่า ข้อผิดพลาดและการกระทำดังกล่าว อาจจะกระทำได้ (เช่น การหยุดหรือการส่งระหว่างการพูด การพูดภาษาอังกฤษเพื่อการสื่อสารทั้งทางด้านดังกล่าว แต่ข้อบกพร่อง ทั้งหมดดังกล่าวนี้จะไม่มีการลด

อาจจะกระทำได้ (เช่น การหยุดหรือการส่งระหว่างการพูด การพูดภาษาอังกฤษเพื่อการสื่อสารทั้งทางด้านดังกล่าว แต่ข้อบกพร่อง ทั้งหมดดังกล่าวนี้จะไม่มีการลด



ระดับความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร

3 **ข้อผิดพลาดที่เล็กน้อย (minor mistakes)** หมายถึง ข้อผิดพลาดที่ทำให้ถ้อยคำยังคงฟังเข้าใจได้อยู่และไม่เปลี่ยนความหมายหรือแทบจะไม่เปลี่ยนความหมายของถ้อยคำดังกล่าว เช่น ความสับสน

กันระหว่างประธานและกริยา (subject-verb agreement) การละเว้นหน้าคำนำหน้านาม "a, an, the" การละเว้นหน่วยคำพหูพจน์ <-s or -es> ของคำนามนับได้ พหูพจน์ การละเว้นกริยาช่วย

"do, be, have" ในรูปประโยคคำถาม บอกล่าและปฏิเสธ เป็นต้น

4 **ข้อผิดพลาดที่สำคัญ (major mistakes)** หมายถึง ข้อผิดพลาดที่ทำให้ถ้อยคำเกือบจะฟังไม่เข้าใจ และเปลี่ยนความหมายของถ้อยคำดังกล่าว เช่น การใช้ที่ไม่ถูกต้องเกี่ยวกับกาลเวลา

(tenses) จำนวนของคนหรือสิ่งต่างๆ ชนิดของคำ (parts of speech) (เช่น "He specifies the CPU he needs" แทนการใช้ "specifies").

5 **การหยุดหรือการลังเลชั่วขณะ (short pauses or hesitations)** หมายถึง การหยุดชั่วขณะ (น้อยกว่า 3 วินาที) ซึ่งผู้พูดหยุดพูดหรือลังเลระหว่างการพูด แล้วดำเนินการพูดต่อไปอีกครั้งด้วยข้อมูลที่

เกี่ยวข้อง ซึ่งไม่รวมถึงการหยุดหรือการลังเลชั่วขณะเพื่อเน้นประเด็นที่สำคัญ เปลี่ยนหัวข้อใหม่ และให้ผู้ฟังดูข้อมูลบางอย่างหรือคิดเกี่ยวกับบางสิ่งบางอย่าง

6 **การหยุดหรือการลังเลที่นาน (long pauses or hesitations)** หมายถึง การหยุดที่นาน (มากกว่า 3 วินาที) ซึ่งผู้พูดหยุดพูดหรือลังเลระหว่างการพูด แล้วปล่อยการพูดทิ้งไว้ไม่จบความ

หรือดำเนินการพูดด้วยข้อมูลที่เกี่ยวข้อง (แต่มากกว่า 3 วินาที) ซึ่งไม่รวมถึงการหยุดหรือการลังเลที่นานเพื่อให้ผู้ฟังดูข้อมูลบางอย่างหรือคิดเกี่ยวกับบางสิ่งบางอย่าง

7 **คำเชื่อมโยงเนื้อหา (cohesive devices)** ในงานวิจัยนี้คือคำเชื่อมโยงหลายประเภทด้วยกัน ได้แก่ 1) คำเพิ่มเติมข้อมูล: "and" และ "also" 2) คำแสดงผลลัพธ์: "so" และ "because"

3) คำยกตัวอย่าง: "for example" "such as" และ "like" 4) คำแสดงลำดับ: "first" "second" "next" "then" และ "finally" 5) คำแสดงข้อมูลที่แตกต่าง: "but"

คำวิจารณ์และข้อเสนอแนะของผู้สอน:

.....  
 .....  
 .....

**APPENDIX D: Student Log (for the task and the project)****Members:**

1. .... Student ID No. ....
2. .... Student ID No. ....

**Complete the information in English.****I. Setting the goal(s) and objectives**

1. Goal(s) of learning in the PBBCSI model

.....

2. Driving question (for unit 1):

.....

3. Deeper questions (for the tasks of units 2-3 and the project):

.....

.....

.....

4. Objectives (set by the instructor):

1. ....

2. ....

Your objectives:

1. ....

2. ....

**II. Setting the expected progression scores on the task and project rubric:**

English version



or Thai version



**III. Planning the procedure:**

1. How do you do the task or the project?

Working steps	Respondent (Who?)	Resources (Write T if available from the textbook, F if from Facebook, N if they are new, and name who suggests them.)	Time (duration of doing each step)	Place (meeting places and selected social platforms)	Pace (duration of doing the entire work)
1. .... ..... .....					
2. .... ..... .....					
3. .... ..... .....					
4. .... ..... .....					
5. .... ..... .....					
6. .... ..... .....					
7. .... ..... .....					

**New** ideas, methods or techniques, expressions, and names who suggest them:

.....

.....

.....

.....

**IV. Monitoring the task and the project completion procedures**

1. Will the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the objectives of the task or the project effectively? If not, how will you develop them?

.....

.....

.....

**V. Performing the task or the project**

**VI. Evaluating the task or the project:**

**1) Self-assessment**

1.1 Self-assess your task or project in terms of task and project quality, and English oral communication ability in the task and project rubric: English or Thai versions.



**2) Reflection**

2.1 How well did you do your task or project in terms of **quality**?

.....  
 .....  
 .....

2.2 Did the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the task or project objectives effectively?

2.2.1 If yes, how did they help achieve the objectives?

2.2.2 If not, how will you solve the problem?

.....  
 .....  
 .....

2.3 Did the communication strategies help achieve the task or project objectives effectively?

2.3.1 If yes, how did they help achieve the objectives?

2.3.2 If not, how will you solve the problem?

.....  
 .....  
 .....

2.4 What are weak points or problems in your task or project in aspects of **quality**? (Use the descriptors in *section A: Task and Project Quality* in the task and project rubric as your guideline.)

.....  
 .....  
 .....

2.5 How well did you do your task or project in terms of **English oral communication ability**?

.....  
 .....  
 .....

2.6 What are weak points or problems in your task or project in aspects of English oral communication ability? (Use the descriptors in *section B: English Oral Communication Ability* in the task and project rubric as your guideline.)

.....  
 .....  
 .....

2.7 How will you make your task or project better in terms of **quality and English oral communication ability**?

.....  
 .....  
 .....

For researcher

Criteria for marking occurrences on the observation on learner autonomy components:

1. Resp. refers to “Responsibilities”. If students show the behavior related to each incident described previously in each aspect of learner autonomy on the student log, suggesting that they attempt to do the outside class tasks and the independent projects, and do whatever ways to carry them out even if they are complete or not), they are willing to take their responsibilities of the observed incident in each aspect of learner autonomy to perform the outside class tasks and the independent project.
2. Cap. refers to “Capabilities”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the outside class tasks and the project, they are confident in their abilities of the observed incident in each aspect of learner autonomy to manage, perform, and complete the tasks and the project.
3. IL refers to “Independent Learning”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the outside class tasks and the project without or with little instructor and peer support, the students can answer the questions/complete the student log independently of instructor and peer control without or with little instructor and peer support of those responsibilities and capabilities of the observed incident in each aspect of learner autonomy for their independent learning.

## APPENDIX E: Learner Autonomy Questionnaire

### The Effects of a Project-based Blended Learning with Communication Strategy Instruction on English Oral Communication Ability and Learner Autonomy of Undergraduate Engineering Students

#### Instructions:

This questionnaire was constructed to study the effects of a project-based blended learning with communication strategy instruction (hereafter, PBBCSI) on English oral communication ability and learner autonomy of undergraduate Engineering students on English oral communication ability and learner autonomy of undergraduate engineering students. In addition, the questionnaire is also aimed to investigate students' opinions toward the PBBCSI model.

Please rate each item according to the fact applied to you. The overall information confidentiality shall be assured, and the information of each individual shall not be revealed. Besides, your answers shall not have any effect on your English grades.

#### Definition of terms


1. **The PBBCSI model** stands for the project-based blended learning with communication strategy instruction (PBBCSI) which refers to the instructional model which combines the essential elements of the blended learning, communication strategy instruction, and the project-based language learning for doing the independent project. The model is aimed to develop students' English oral communication ability and learner autonomy through the six phases which include 1) *initiation*, 2) *inquiry*, 3) *analysis*, 4) *solution*, 5) *assessment and reflection*, and 6) *revision and publication*. Each of the first four phases includes 7 learning and teaching steps:
  - A. Face-to-face learning and teaching steps:
    - 1) *preparation*, 2) *presentation*, 3) *rehearsal*, 4) *performance*, 5) *feedback*, and
    - B. Outside class learning and teaching steps: 6) *expansion* and 7) *evaluation*.
2. **The face-to-face activities** refer to the activities that are performed in class and particularly in the learning and teaching steps of 3) *rehearsal*, 4) *performance*, and 5) *feedback*.
3. **The online tasks** refer to the tasks that are performed in group or pair in the learning and teaching steps of 6) *expansion* and 7) *evaluation*.
4. **The independent project** refers to the project that the individual student takes his/her own responsibilities and express their capabilities for completing it without direct instruction, instructor and peer support, and control of the instructor.
5. **The works** refer to all of the face-to-face activities, the outside class tasks, and the independent project that the students have done in the PBBCSI model.
6. **Learner autonomy** refers to the extent to which the students are able to take their responsibilities (students' willingness to take responsibilities) and capabilities (students' confidence in abilities) in six aspects of learner autonomy in 1) determining the goals and the objectives, 2) defining the learning progressions, 3) taking the initiative, 4) making decisions on selecting methods or techniques, communication strategies, and resources, 5) monitoring the task and the project completion procedures, 6) evaluating the online tasks and the project, in order to eventually carry out the

independent project in the six phases of the PBBCSI model as previously mentioned, without direct instruction, instructor and peer support, and control of the instructor.



## Part I: The measurement of learner autonomy levels

### 1.1 Personal responsibilities

Please state how much you rate your willingness to take responsibilities in the PBBCSI model by making a circle  around the number which means the followings:

5 = Extremely

4 = Very

3 = Moderately

2 = Slightly

1 = Very slightly

A. Determining the goals and the objectives						
1.	I am willing to set my goals of learning in this model.	5	4	3	2	1
2.	I am happy to determine the objectives of the online tasks.	5	4	3	2	1
3.	I feel good to set the objectives of the independent project.	5	4	3	2	1
B. Defining the learning progressions						
4.	I am willing to set the expected progression scores of the English oral communication ability test.	5	4	3	2	1
5.	I am happy to define the expected progression scores of the tasks.	5	4	3	2	1
6.	I feel good to set the expected progression scores of the project.	5	4	3	2	1
C. Taking the initiative						
7.	After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, etc., I am willing to self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the face-to-face activities</u> .	5	4	3	2	1
8.	After the instructor or peers start taking actions for learning and teaching, I am willing to self-initiate to take <u>new actions</u> that I newly create (e.g. encouraging my peers to work and making new choices, ideas, or ways, etc.) for completing <u>the face-to-face activities</u> .	5	4	3	2	1
9.	After the instructor or peers start taking actions for learning and teaching, I am happy to self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the online tasks</u> .	5	4	3	2	1
10.	After the instructor or peers start taking actions for learning and teaching, I am happy to self-initiate to take <u>new actions</u> for completing <u>the online tasks</u> .	5	4	3	2	1
11.	Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am willing to self-initiate to take <u>new actions</u> that I newly create (e.g. browsing the Internet to find information to support your purposes, etc.) for completing <u>the face-to-face activities</u> .	5	4	3	2	1
12.	I am happy to self-initiate to take <u>common actions</u> according to the work prompts for completing my <u>project</u> .	5	4	3	2	1
13.	I am willing to self-initiate to take <u>new actions</u> for completing my <u>project</u> .	5	4	3	2	1



D. Making decisions on selecting methods or techniques, communication strategies, and resources					
14. I am willing to make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. work cooperation: collaboration or cooperation, etc.) to achieve <u>the face-to-face activities</u> .	5	4	3	2	1
15. I am willing to make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the face-to-face activities</u> .	5	4	3	2	1
16. I am pleased to make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc.) to achieve <u>the tasks</u> .	5	4	3	2	1
17. I am pleased to make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the tasks</u> .	5	4	3	2	1
18. I am happy to make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc.) to achieve <u>the project</u> .	5	4	3	2	1
19. I am happy to make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the project</u> .	5	4	3	2	1
20. I am willing to choose the appropriate <u>communication strategies or language expressions</u> related to communication strategies to overcome communication problems or maintain the conversations.	5	4	3	2	1
E. Monitoring the task and the project completion procedures					
21. I am happy to check my steps of doing <u>the tasks</u> in the following aspects in the student log (for the task and the project):					
21.1 Time (duration of doing each step)	5	4	3	2	1
21.2 Place	5	4	3	2	1
21.3 Pace (duration of doing the entire work)	5	4	3	2	1
21.4 Respondents	5	4	3	2	1
21.5 Resources	5	4	3	2	1
22. I am willing to check my steps of doing <u>the project</u> in the following aspects in the student log (for the task and the project):					
22.1 Time (duration of doing each step)	5	4	3	2	1
22.2 Place	5	4	3	2	1
22.3 Pace (duration of doing the entire work)	5	4	3	2	1
22.4 Respondents	5	4	3	2	1
22.5 Resources	5	4	3	2	1
F. Evaluating what has been acquired and performed in the tasks and the project					
23. I am pleased to <u>evaluate</u> the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
24. I am happy to <u>evaluate</u> the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
25. I feel good to <u>make reflection</u> on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
26. I am willing to <u>make reflection</u> on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	5	4	3	2	1

## 1.2 Personal capabilities

Please state how much you rate your capabilities to take responsibilities in the PBBCSI model by making a circle  around the number which means the followings:

5 = Extremely

4 = Very

3 = Moderately

2 = Slightly

1 = Very slightly

<b>A. Determining the goals and the objectives</b>				
27. I am confident I can set my goals of learning in this model.	5	4	3	2 1
28. I am confident I can determine the objectives of the online tasks.	5	4	3	2 1
29. I am sure I can set the objectives of the independent project.	5	4	3	2 1
<b>B. Defining the learning progressions</b>				
30. I am confident I can set the expected progression scores of the English oral communication ability test.	5	4	3	2 1
31. I am sure I can define the expected progression scores of the tasks.	5	4	3	2 1
32. I am confident I can set the expected progression scores of the project.	5	4	3	2 1
<b>C. Taking the initiative</b>				
33. After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, etc., I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing <u>the face-to-face activities</u> .	5	4	3	2 1
34. After the instructor or peers start taking actions for learning and teaching, I am sure I can self-initiate to take <u>new actions</u> that I newly create (e.g. encouraging my peers to work and making new choices, ideas, or ways, etc.) for completing <u>the face-to-face activities</u> .	5	4	3	2 1
35. After the instructor or peers start taking actions for learning and teaching, I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing the <u>online tasks</u> .	5	4	3	2 1
36. After the instructor or peers start taking actions for learning and teaching, I am confident I can self-initiate to take <u>new actions</u> for completing the <u>online tasks</u> .	5	4	3	2 1
37. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am confident I can self-initiate to take <u>new actions</u> that I newly create (e.g. browsing the Internet to find information to support your purposes, etc.) for completing the <u>face-to-face activities</u> .	5	4	3	2 1
38. I am confident I can self-initiate to take <u>common actions</u> according to the work prompts for completing my <u>project</u> .	5	4	3	2 1
39. I am sure I can self-initiate to take <u>new actions</u> for completing my <u>project</u> .	5	4	3	2 1
<b>D. Making decisions on selecting methods or techniques, communication strategies, and resources</b>				
40. I am confident I can make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. work cooperation: collaboration or cooperation, etc.) to achieve <u>the face-to-face activities</u> .	5	4	3	2 1
41. I am confident I can make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the face-to-face activities</u> .	5	4	3	2 1

42. I am sure I can make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc.) to achieve <u>the tasks</u> .	5	4	3	2	1
43. I am confident I can make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the tasks</u> .	5	4	3	2	1
44. I am sure I can make decisions on selecting the appropriate <u>methods or techniques</u> (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc.) to achieve <u>the project</u> .	5	4	3	2	1
45. I am confident I can make decisions on selecting the appropriate <u>resources</u> (e.g. websites, textbooks, brochures, etc.) to achieve <u>the project</u> .	5	4	3	2	1
46. I am confident I can choose the appropriate <u>communication strategies or language expressions</u> related to communication strategies to overcome communication problems or maintain the conversations.	5	4	3	2	1
<b>E. Monitoring the task and the project completion procedures</b>					
47. I am confident I can check my steps of doing <u>the tasks</u> in the following aspects in the student log (for the task and the project):					
47.1 Time (duration of doing each step)	5	4	3	2	1
47.2 Place	5	4	3	2	1
47.3 Pace (duration of doing the entire work)	5	4	3	2	1
47.4 Respondents	5	4	3	2	1
47.5 Resources	5	4	3	2	1
48. I am sure I can check my steps of doing <u>the project</u> in the following aspects in the student log (for the task and the project):					
48.1 Time (duration of doing each step)	5	4	3	2	1
48.2 Place	5	4	3	2	1
48.3 Pace (duration of doing the entire work)	5	4	3	2	1
48.4 Respondents	5	4	3	2	1
48.5 Resources	5	4	3	2	1
<b>F. Evaluating what has been acquired and performed in the tasks and the project</b>					
49. I am confident I can <u>evaluate</u> the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
50. I am sure I can <u>evaluate</u> the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
51. I am confident I can <u>make reflection</u> on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	5	4	3	2	1
52. I am confident I can <u>make reflection</u> on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	5	4	3	2	1

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### 1.3 Independent Learning

Please state how much you agree with each statement about your independent learning in the PBBCSI model by making a circle  around the number which means the followings:

- 5 = Extremely  
 4 = Very  
 3 = Moderately  
 2 = Slightly  
 1 = Very slightly

53. * I like the instructor and/or peers to support me all the time so that I can be confident in my learning.	5	4	3	2	1
54. I like the instructor and/or peers to decide the goals of learning in the PBBCSI model and the objectives of doing the independent project.	5	4	3	2	1
55. I want the instructor and/or peers to set the expected progression scores of the following works:					
55.1 Online tasks	5	4	3	2	1
55.2 Independent project	5	4	3	2	1
55.3 English oral communication ability test	5	4	3	2	1
56. I want the instructor and/or peers to offer new choices, ideas, and ways for learning all the time.	5	4	3	2	1
57. I prefer my instructor and/or peers to select the methods or techniques and sources for learning all the time.	5	4	3	2	1
58. I want the instructor and/or peers to check my working steps in the following aspects in the student log (for the task and the project).					
58.1 Time (duration of doing each step)	5	4	3	2	1
58.2 Place	5	4	3	2	1
58.3 Pace (duration of doing the entire work)	5	4	3	2	1
58.4 Respondents	5	4	3	2	1
58.5 Resources	5	4	3	2	1
59. I believe that evaluation on the works needs to be done by the instructor and/or peers only.	5	4	3	2	1
60. *I like the instructor and/or peers to <u>identify</u> weak points and errors of English oral communication ability in the following works:					
60.1 Face-to-face activities	5	4	3	2	1
60.2 Online tasks	5	4	3	2	1
60.3 Independent project	5	4	3	2	1
61. *I prefer the instructor and/or peers to <u>correct</u> weak points and errors of English oral communication ability in the following works:					
61.1 Face-to-face activities	5	4	3	2	1
61.2 Online tasks	5	4	3	2	1
61.3 Independent project	5	4	3	2	1
62. I believe that I can achieve in completing the independent project independently of instructor and peer control of responsibilities and capabilities.	5	4	3	2	1

(Items 53-61 were reverse coded items)

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## Part II: Opinions towards the PBBCSI model

Please state how much you agree with each statement about your opinions towards the PBBCSI model by making a circle  around the number which means the followings:

5 = Extremely

4 = Very

3 = Moderately

2 = Slightly

1 = Very slightly

63. The following learning and teaching steps help develop my <u>English oral communication ability</u> for doing the <u>online tasks</u> .					
63.1 Face-to-face environment	5	4	3	2	1
63.2 Online environment	5	4	3	2	1
64. The following learning and teaching steps help develop my <u>English oral communication ability</u> for carrying out <u>the independent project</u> .					
64.1 Face-to-face environment	5	4	3	2	1
64.2 Online environment	5	4	3	2	1
65. The following learning and teaching steps help develop my <u>responsibilities</u> (willingness to take responsibilities) for doing <u>the online tasks</u> .					
65.1 Face-to-face environment	5	4	3	2	1
65.2 Online environment	5	4	3	2	1
66. The following learning and teaching steps help develop my <u>responsibilities</u> for carrying out <u>the independent project</u> .					
66.1 Face-to-face environment	5	4	3	2	1
66.2 Online environment	5	4	3	2	1
67. The following learning and teaching steps help develop my <u>capabilities</u> (confidence in your abilities) for doing <u>the online tasks</u> .					
67.1 Face-to-face environment	5	4	3	2	1
67.2 Online environment	5	4	3	2	1
68. The following learning and teaching steps help develop my <u>capabilities</u> for doing <u>the independent project</u> .					
68.1 Face-to-face environment	5	4	3	2	1
68.2 Online environment	5	4	3	2	1
69. The following phases of the PBBCSI model help develop my <u>English oral communication ability</u> for completing the independent project.					
69.1 Initiation	5	4	3	2	1
69.2 Inquiry	5	4	3	2	1
69.3 Analysis	5	4	3	2	1
69.4 Solution	5	4	3	2	1
69.5 Assessment and reflection	5	4	3	2	1
69.6 Revision and publication	5	4	3	2	1
70. The following phases of the PBBCSI model help develop my <u>responsibilities</u> for completing the independent project.					
70.1 Initiation	5	4	3	2	1
70.2 Inquiry	5	4	3	2	1
70.3 Analysis	5	4	3	2	1
70.4 Solution	5	4	3	2	1
70.5 Assessment and reflection	5	4	3	2	1

70.6 Revision and publication	5	4	3	2	1
71. The following phases of the PBBCSI model help develop my <u>capabilities</u> in completing the independent project.					
71.1 Initiation	5	4	3	2	1
71.2 Inquiry	5	4	3	2	1
71.3 Analysis	5	4	3	2	1
71.4 Solution	5	4	3	2	1
71.5 Assessment and reflection	5	4	3	2	1
71.6 Revision and publication	5	4	3	2	1
72. **In case, I attended the instructor-student project consultation, I benefit from instructor's comments and suggestions. (Note: if you <u>did not</u> attend the instructor-student project consultation, please skip this item.)	5	4	3	2	1
73. **I benefit from <u>peers'</u> comments and suggestions about my <u>online tasks</u> on Facebook.	5	4	3	2	1
74. **I benefit from <u>peers'</u> comments and suggestions about my <u>independent project</u> on Facebook.	5	4	3	2	1
75. **I benefit from <u>instructor's</u> comments and suggestions about my <u>online tasks</u> on the task and project rubric.	5	4	3	2	1
76. **I benefit from <u>instructor's</u> comments and suggestions about my <u>independent project</u> on the task and project rubric.	5	4	3	2	1
77. **I benefit from <u>instructor's and peers'</u> comments and suggestions about my <u>independent project</u> in the instructor-student project consultation.	5	4	3	2	1
78. I benefit from making and selecting choices for learning and doing works.	5	4	3	2	1
79. The wrap-up at the end of each unit helps me better understand the concept of each phase for performing the independent project.	5	4	3	2	1
80. **In overall, I think the PBBCSI model improves my <u>English oral communication ability</u> to perform the following works:					
80.1 Face-to-face activities	5	4	3	2	1
80.2 Online tasks	5	4	3	2	1
80.3 Independent project	5	4	3	2	1
81. In overall, I think the PBBCSI model has increased my <u>responsibilities</u> (i.e. my willingness to take responsibilities) to perform the following works:					
81.1 Face-to-face activities	5	4	3	2	1
81.2 Online tasks	5	4	3	2	1
81.3 Independent project	5	4	3	2	1
82. In overall, I think the PBBCSI model has enhanced my <u>capabilities</u> (i.e. my confidence in abilities) in the six aspects of learner autonomy to perform the following works:					
82.1 Face-to-face activities	5	4	3	2	1
82.2 Online tasks	5	4	3	2	1
82.3 Independent project	5	4	3	2	1
83. I think the PBBCSI model can give me benefits for my future careers.	5	4	3	2	1

**Thank you very much for your co-operation.**

\*Adapted from Alrabai (2017), Channuan (2012), and Swatevacharkul (2006).

\*\*Adapted from Channuan (2012).

## APPENDIX E: Learner Autonomy Questionnaire (Thai version)

แบบสอบถามความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน  
ผลของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานโดยใช้การสอนกลวิธีการสื่อสารต่อความสามารถในการ  
พูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนของนักศึกษา  
วิศวกรรมศาสตร์ระดับปริญญาตรี

### คำชี้แจง

แบบสอบถามฉบับนี้จัดทำเพื่อศึกษาผลของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐาน โดยใช้การสอนกลวิธีการสื่อสาร (ต่อไปนี้ใช้คำว่า รูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI)) ต่อความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนของนักศึกษาวิศวกรรมศาสตร์ระดับปริญญาตรี นอกจากนี้ แบบสอบถามนี้ยังมีวัตถุประสงค์ที่จะสำรวจความคิดเห็นของผู้เรียนต่อรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ อีกด้วย

โปรดให้คะแนนข้อคำถามแต่ละข้อตามความเป็นจริงเกี่ยวกับคุณ ขอรับรองว่ามีการเก็บข้อมูลทั้งหมดไว้เป็นความลับ และข้อมูลของท่านจะไม่ถูกเปิดเผย นอกจากนี้ คำตอบของท่านจะไม่ส่งผลกระทบต่อระดับผลการเรียนในวิชาภาษาอังกฤษทั้งสิ้น

### คำนิยาม

- รูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) ย่อมาจาก รูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานโดยใช้การสอนกลวิธีการสื่อสาร ที่ผสมผสานองค์ประกอบที่สำคัญระหว่างการเรียนรู้แบบผสมผสาน (Blended learning: BL) การสอนกลวิธีการสื่อสาร (Communication strategy instruction: CSI) และการเรียนรู้แบบโครงการเป็นฐาน (Project-based language learning: PBLL) เข้าไว้ด้วยกันสำหรับการทำโครงการโดยอิสระ รูปแบบการเรียนรู้ดังกล่าวมีวัตถุประสงค์เพื่อพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารและความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน โดยผ่านระยะการเรียนรู้การทำโครงการโดยอิสระทั้ง 6 ระยะ ซึ่งประกอบด้วย 1) การริเริ่ม (initiation) 2) การตั้งคำถาม (inquiry) 3) การวิเคราะห์ผล (analysis) 4) การแก้ไขปัญหา (solution) 5) การประเมินผลและการคิดใคร่ครวญเพื่อปรับปรุงแก้ไขงาน (assessment and reflection) 6) การปรับปรุงแก้ไขและการนำผลงานออกเผยแพร่ (revision and publication) ระยะการเรียนรู้การทำโครงการโดยอิสระแต่ละระยะในสี่ระยะแรกประกอบด้วยขั้นตอนการเรียนการสอน 7 ขั้นตอนคือ
  - ขั้นตอนการเรียนการสอนในชั้นเรียนประกอบด้วย ขั้นที่ 1) การเตรียมตัว (preparation) 2) การนำเสนอ (presentation) 3) การฝึกซ้อม (rehearsal) 4) การปฏิบัติจริง (performance) 5) การวิจารณ์ผลงาน (feedback)
  - ขั้นตอนการเรียนการสอนนอกชั้นเรียนประกอบด้วย ขั้นที่ 6) การขยายประสบการณ์เรียนรู้สู่สถานการณ์ใหม่ (expansion) และ 7) การประเมินผล (evaluation)
- กิจกรรมในชั้นเรียน (Face-to-face activities) หมายถึง กิจกรรมต่างๆ ที่ปฏิบัติในชั้นเรียน โดยเฉพาะอย่างยิ่งในขั้นตอนการเรียนการสอนขั้นตอนที่ 3) การฝึกซ้อม (rehearsal) 4) การปฏิบัติจริง (performance) และ 5) การวิจารณ์ผลงาน
- งานออนไลน์ (Online tasks) หมายถึง งานต่างๆ ที่ปฏิบัตินอกชั้นเรียนในขั้นตอนที่ 6) การขยายประสบการณ์เรียนรู้สู่สถานการณ์ใหม่ (expansion) และ 7) การประเมินผล (evaluation)
- โครงการโดยอิสระ (Independent project) หมายถึง โครงการที่ผู้เรียนแต่ละคนรับผิดชอบและใช้ความสามารถต่างๆ เพื่อทำโครงการให้สำเร็จโดยเป็นอิสระจากการควบคุมของผู้สอนและเพื่อนเกี่ยวกับความรับผิดชอบและความสามารถต่างๆ ตามความสนใจและคำถามผลักดันให้อยากเรียนรู้ (driving question) ของผู้เรียนตลอดภาคการศึกษาในชั้นเรียน

5. งานต่าง ๆ (Works) หมายถึง งานทั้งหมดที่เป็นกิจกรรมในชั้นเรียน งานนอกชั้นเรียน และโครงการโดยอิสระที่ผู้เรียนได้ทำในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model)
6. ความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน (Learner autonomy) หมายถึง ขอบเขตที่ผู้เรียนสามารถแสดงความรับผิดชอบต่างๆ (ความเต็มใจของผู้เรียนที่จะรับผิดชอบงาน) และความสามารถต่างๆ (ความมั่นใจของผู้เรียนในความสามารถที่จะรับผิดชอบงาน) ในด้านความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนทั้ง 6 ด้าน ได้แก่ 1) การกำหนดเป้าหมายและวัตถุประสงค์ 2) การกำหนดความก้าวหน้าของการเรียนรู้ 3) การทำสิ่งริเริ่ม 4) การตัดสินใจเลือกวิธีการหรือเทคนิค กลวิธีการสื่อสารและแหล่งทรัพยากร 5) การตรวจสอบขั้นตอนของการทำกิจกรรม งานต่างๆ และโครงการโดยอิสระ 6) การประเมินสิ่งที่ได้เรียนรู้และปฏิบัติในการทำงานนอกชั้นเรียนและโครงการโดยอิสระ ในท้ายที่สุดเพื่อที่จะทำงานโครงการโดยอิสระในระยะการเรียนรู้การทำโครงการโดยอิสระทั้ง 6 ระยะของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) ดังที่กล่าวไว้แล้วข้างต้น ซึ่งจะเป็นอิสระจากการควบคุมของผู้สอนและเพื่อนเกี่ยวกับความรับผิดชอบและความสามารถต่างๆ เพื่อการเรียนรู้โดยอิสระ




จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY



ตอนที่ 1 การวัดระดับของความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน

1.1 ความรับผิดชอบโดยส่วนตัวของผู้เรียน

โปรดระบุความเต็มใจของท่านที่จะรับผิดชอบต่อแสดงความสามารถในการเรียนรู้ในรูปแบบการเรียนรู้แบบผสมผสานโครงงานเป็นฐานฯ (PBBCSI model) โดยวงกลมล้อมรอบ  ตัวเลขดังต่อไปนี้

5 = มากที่สุด

4 = มาก

3 = ปานกลาง

2 = เล็กน้อย

1 = น้อยมาก

ก. การกำหนดเป้าหมายและวัตถุประสงค์						
1.	ฉันเต็มใจที่จะกำหนดเป้าหมายของการเรียนรู้ในรูปแบบการเรียนรู้แบบผสมผสานโครงงานเป็นฐานฯ (PBBCSI model) นี้	5	4	3	2	1
2.	ฉันยินดีที่จะกำหนดวัตถุประสงค์ของงานนอกชั้นเรียน	5	4	3	2	1
3.	ฉันรู้สึกดีที่จะกำหนดวัตถุประสงค์ของโครงงานโดยอิสระ	5	4	3	2	1
ข. การกำหนดความก้าวหน้าของการเรียนรู้						
4.	ฉันเต็มใจที่จะกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของการทดสอบความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร	5	4	3	2	1
5.	ฉันยินดีที่จะกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของงานนอกชั้นเรียน	5	4	3	2	1
6.	ฉันรู้สึกดีที่จะกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของโครงงานโดยอิสระ	5	4	3	2	1
ค. การทำสิ่งริเริ่ม						
7.	หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว เช่น การให้คำอธิบาย ตัวอย่าง และอื่นๆ ฉันจึงเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
8.	หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันจึงยินดีที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ๆ ที่ฉันคิดขึ้นมาใหม่ (เช่น การกระตุ้นให้เพื่อนๆ ทำงาน การสร้างตัวเลือก ความคิดสร้างสรรค์ หรือวิธีการใหม่ๆ เป็นต้น) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
9.	หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันจึงเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
10.	หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันจึงยินดีที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ๆ เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
11.	ถึงแม้ว่าผู้สอนหรือเพื่อนๆ ไม่เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนก็ตาม แต่ฉันก็ยังคงเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ๆ ที่ฉันคิดขึ้นมาใหม่ (เช่น การค้นหาข้อมูลบนอินเทอร์เน็ตเพื่อตอบวัตถุประสงค์ของคุณ และอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
12.	ฉันยินดีที่จะเริ่มต้นด้วยตัวเองที่จะทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อให้การทำโครงงานโดยอิสระสำเร็จลุล่วง	5	4	3	2	1
13.	ฉันยินดีที่จะเริ่มต้นด้วยตัวเองที่จะทำสิ่งใหม่ต่างๆ เพื่อให้การทำโครงงานโดยอิสระสำเร็จลุล่วง	5	4	3	2	1

ง. การตัดสินใจเลือกวิธีการหรือเทคนิค กลวิธีการสื่อสารและแหล่งทรัพยากร						
14.	ฉันเต็มใจที่จะตัดสินใจเลือกวิธีการหรือเทคนิคที่เหมาะสม (เช่น การร่วมมือกันทำงาน ซึ่งได้แก่ ประเภททำงานร่วมกันหรือแบ่งงานกันทำงาน และอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
15.	ฉันเต็มใจที่จะตัดสินใจเลือกแหล่งทรัพยากรต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
16.	ฉันพึงพอใจที่จะตัดสินใจเลือกวิธีการหรือเทคนิคที่เหมาะสม (เช่น การใช้พื้นที่ทางสังคม ซึ่งได้แก่ Google Hangouts, Skype, Facebook Messenger และอื่นๆ) เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
17.	ฉันพึงพอใจที่จะตัดสินใจเลือกแหล่งทรัพยากรต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
18.	ฉันยินดีที่จะตัดสินใจเลือกวิธีการหรือเทคนิคที่เหมาะสม (เช่น การใช้พื้นที่ทางสังคม ซึ่งได้แก่ Google Hangouts, Skype, Facebook Messenger และอื่นๆ) เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วง	5	4	3	2	1
19.	ฉันพึงพอใจที่จะตัดสินใจเลือกแหล่งทรัพยากรต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วง	5	4	3	2	1
20.	ฉันยินดีที่จะเลือกกลวิธีการสื่อสารที่เหมาะสมหรือส่วนการใช้ภาษาที่เกี่ยวข้องกับกลวิธีการสื่อสารเพื่อแก้ไขปัญหาเกี่ยวกับการสื่อสาร และประสงค์จะให้การสนทนาให้คงอยู่	5	4	3	2	1
จ. การตรวจสอบขั้นตอนของการทำงานนอกชั้นเรียน และโครงการโดยอิสระ						
21.	ฉันยินดีที่จะตรวจสอบขั้นตอนการทำงานนอกชั้นเรียนในด้านต่างๆ ในบันทึกการทำงานของนักเรียน (สำหรับงานนอกชั้นเรียนและโครงการโดยอิสระ) ดังนี้					
21.1	ด้านเวลา (ช่วงเวลาของการทำงานแต่ละขั้นตอน)	5	4	3	2	1
21.2	สถานที่	5	4	3	2	1
21.3	ความเร็ว (ช่วงเวลาของการทำงานทั้งหมด)	5	4	3	2	1
21.4	ผู้รับผิดชอบ	5	4	3	2	1
21.5	แหล่งทรัพยากร	5	4	3	2	1
22.	ฉันเต็มใจที่จะตรวจสอบขั้นตอนการทำโครงการโดยอิสระในด้านต่างๆ ในบันทึกการทำงานของนักเรียน (สำหรับงานนอกชั้นเรียนและโครงการโดยอิสระ) ดังนี้					
22.1	ด้านเวลา (ช่วงเวลาของการทำงานแต่ละขั้นตอน)	5	4	3	2	1
22.2	สถานที่	5	4	3	2	1
22.3	ความเร็ว (ช่วงเวลาของการทำงานทั้งหมด)	5	4	3	2	1
22.4	ผู้รับผิดชอบ	5	4	3	2	1
22.5	แหล่งทรัพยากร	5	4	3	2	1
ฉ. การประเมินสิ่งที่ได้เรียนรู้และปฏิบัติในการทำงานนอกชั้นเรียน และโครงการโดยอิสระ						
23.	ฉันพึงพอใจที่จะประเมินคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของงานนอกชั้นเรียนในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1
24.	ฉันยินดีที่จะประเมินคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของโครงการโดยอิสระในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1

25. ฉันรู้สึกดีที่จะคิดใคร่ครวญเพื่อปรับปรุงแก้ไขคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของงานนอกชั้นเรียนในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1
26. ฉันเต็มใจที่จะคิดใคร่ครวญเพื่อปรับปรุงแก้ไขคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของโครงการโดยอิสระในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1

## 1.2 ความสามารถโดยส่วนตัวของผู้เรียน

โปรดระบุความมั่นใจในความสามารถของท่านที่จะรับผิดชอบเพื่อแสดงความสามารถในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) โดยวงกลมล้อมรอบ

○ ตัวเลขดังต่อไปนี้

5 = มากที่สุด

4 = มาก

3 = ปานกลาง

2 = เล็กน้อย

1 = น้อยมาก

### ก. การกำหนดเป้าหมายและวัตถุประสงค์

27. ฉันมั่นใจว่าฉันสามารถกำหนดเป้าหมายของการเรียนรู้ในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) นี้ได้	5	4	3	2	1
28. ฉันมั่นใจว่าฉันสามารถกำหนดวัตถุประสงค์ของงานนอกชั้นเรียนได้	5	4	3	2	1
29. ฉันแน่ใจว่าฉันสามารถกำหนดวัตถุประสงค์ของโครงการโดยอิสระได้	5	4	3	2	1

### ข. การกำหนดความก้าวหน้าของการเรียนรู้

30. ฉันมั่นใจว่าฉันสามารถกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของการทดสอบความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารได้	5	4	3	2	1
31. ฉันแน่ใจว่าฉันสามารถกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของงานนอกชั้นเรียนได้	5	4	3	2	1
32. ฉันมั่นใจว่าฉันสามารถกำหนดคะแนนความก้าวหน้าที่คาดหวังไว้ของโครงการโดยอิสระได้	5	4	3	2	1

### ค. การทำสิ่งริเริ่ม

33. หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอน เช่น การให้คำอธิบาย ตัวอย่าง และอื่นๆ แล้ว ฉันมั่นใจว่าฉันสามารถที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
34. หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันแน่ใจว่าฉันสามารถที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ๆ ที่ฉันคิดขึ้นมาใหม่ (เช่น การกระตุ้นให้เพื่อนๆ ทำงาน การสร้างตัวเลือก ความคิดสร้างสรรค์หรือวิธีการใหม่ๆ เป็นต้น) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1

35. หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันมั่นใจว่าฉันสามารถที่จะเริ่มต้นด้วยตัวเองเพื่อทำ <u>สิ่งทั่วไป</u> ต่างๆ ตามโจทย์ของงาน เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
36. หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนแล้ว ฉันมั่นใจว่าฉันสามารถที่จะเริ่มต้นด้วยตัวเองเพื่อทำ <u>สิ่งใหม่</u> ๆ ตามโจทย์ของงาน เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
37. ถึงแม้ว่าผู้สอนหรือเพื่อนๆ <u>ไม่</u> เริ่มทำสิ่งต่างๆ เพื่อการเรียนการสอนก็ตาม แต่ฉันก็มั่นใจว่าฉันสามารถเริ่มต้นด้วยตัวเองเพื่อทำ <u>สิ่งใหม่</u> ๆ ที่ฉันคิดขึ้นมาใหม่ (เช่น การค้นหาข้อมูลบนอินเทอร์เน็ตเพื่อตอบวัตถุประสงค์ของคุณและอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วง	5	4	3	2	1
38. ฉันมั่นใจว่าฉันสามารถเริ่มต้นด้วยตัวเองที่จะทำ <u>สิ่งทั่วไป</u> ต่างๆ ตามโจทย์ของงาน เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วงได้	5	4	3	2	1
39. ฉันมั่นใจว่าฉันสามารถเริ่มต้นด้วยตัวเองที่จะทำ <u>สิ่งใหม่</u> ต่างๆ เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วงได้	5	4	3	2	1
<b>ง. การตัดสินใจเลือกวิธีการหรือเทคนิค กลวิธีการสื่อสารและแหล่งทรัพยากร</b>					
40. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>วิธีการหรือเทคนิค</u> ที่เหมาะสม (เช่น การร่วมมือกันทำงาน ซึ่งได้แก่ แบบทำงานร่วมกันหรือแบบแบ่งงานกันทำงาน และอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วงได้	5	4	3	2	1
41. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>แหล่งทรัพยากร</u> ต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำกิจกรรมในชั้นเรียนสำเร็จลุล่วงได้	5	4	3	2	1
42. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>วิธีการหรือเทคนิค</u> ที่เหมาะสม (เช่น การใช้พื้นที่ทางสังคม ซึ่งได้แก่ Google Hangouts, Skype, Facebook Messenger และอื่นๆ) เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วงได้	5	4	3	2	1
43. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>แหล่งทรัพยากร</u> ต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำงานนอกชั้นเรียนสำเร็จลุล่วงได้	5	4	3	2	1
44. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>วิธีการหรือเทคนิค</u> ที่เหมาะสม (เช่น การใช้พื้นที่ทางสังคม ซึ่งได้แก่ Google Hangouts, Skype, Facebook Messenger และอื่นๆ) เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วงได้	5	4	3	2	1
45. ฉันมั่นใจว่าฉันสามารถตัดสินใจเลือก <u>แหล่งทรัพยากร</u> ต่างๆ ที่เหมาะสม (เช่น เว็บไซต์ หนังสือเรียน แผ่นพับ และอื่นๆ) เพื่อให้การทำโครงการโดยอิสระสำเร็จลุล่วงได้	5	4	3	2	1
46. ฉันมั่นใจว่าฉันสามารถเลือก <u>กลวิธีการสื่อสาร</u> ที่เหมาะสมหรือส่วนการใช้ <u>ภาษา</u> ที่เกี่ยวข้องกับกลวิธีการสื่อสารเพื่อแก้ไขปัญหาเกี่ยวกับการสื่อสาร และระดมความคิดเห็นให้คงอยู่	5	4	3	2	1
<b>จ. การตรวจสอบขั้นตอนของการทำงานนอกชั้นเรียน และโครงการโดยอิสระ</b>					
47. ฉันมั่นใจว่าฉันสามารถตรวจสอบขั้นตอนการทำงานนอกชั้นเรียนในด้านต่าง ๆ ในบันทึกการทำงานของผู้เรียน (สำหรับงานนอกชั้นเรียนและโครงการโดยอิสระ) ได้ดังนี้					
47.1 ด้านเวลา (ช่วงเวลาของการทำงานแต่ละขั้นตอน)	5	4	3	2	1
47.2 สถานที่	5	4	3	2	1
47.3 ความเร็ว (ช่วงเวลาของการทำงานทั้งหมด)	5	4	3	2	1

47.4 ผู้รับผิดชอบ	5	4	3	2	1
47.5 แหล่งทรัพยากร	5	4	3	2	1
48. ฉันคิดว่าฉันสามารถตรวจสอบขั้นตอนการทำโครงการโดยอิสระในด้านต่าง ๆ ในบันทึกการทำงานของนักเรียน (สำหรับงานนอกชั้นเรียนและโครงการโดยอิสระ) ได้ดังนี้					
48.1 ด้านเวลา (ช่วงเวลาของการทำงานแต่ละขั้นตอน)	5	4	3	2	1
48.2 สถานที่	5	4	3	2	1
48.3 ความเร็ว (ช่วงเวลาของการทำงานทั้งหมด)	5	4	3	2	1
48.4 ผู้รับผิดชอบ	5	4	3	2	1
48.5 แหล่งทรัพยากร	5	4	3	2	1
<b>จ. การประเมินสิ่งที่ได้เรียนรู้และปฏิบัติในการทำงานนอกชั้นเรียน และโครงการโดยอิสระ</b>					
49. ฉันมั่นใจว่าฉันสามารถประเมินคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของงานนอกชั้นเรียนในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric) ได้	5	4	3	2	1
50. ฉันมั่นใจว่าฉันสามารถประเมินคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของโครงการโดยอิสระในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric) ได้	5	4	3	2	1
51. ฉันมั่นใจว่าฉันสามารถคิดใคร่ครวญเพื่อปรับปรุงแก้ไขคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของงานนอกชั้นเรียนในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric) ได้	5	4	3	2	1
52. ฉันมั่นใจว่าฉันสามารถคิดใคร่ครวญเพื่อปรับปรุงแก้ไขคุณภาพและความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของโครงการโดยอิสระในด้านต่างๆ ตามที่ระบุไว้ในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric) ได้	5	4	3	2	1
<b>1.3 การเรียนรู้โดยอิสระ</b>					
โปรดระบุว่าท่านเห็นด้วยกับข้อความที่เกี่ยวกับการเรียนรู้โดยอิสระในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) มากน้อยเพียงใดโดยการวงกลมล้อมรอบ <input type="radio"/> ตัวเลขดังต่อไปนี้					
5 = มากที่สุด					
4 = มาก					
3 = ปานกลาง					
2 = เล็กน้อย					
1 = น้อยมาก					
53. *ฉันชอบให้ผู้สอนและ/หรือเพื่อนๆ ช่วยเหลือฉันตลอดเวลาเพื่อฉันจะได้มั่นใจในการเรียนรู้ของฉัน	5	4	3	2	1
54. ฉันต้องการให้ผู้สอนและ/หรือเพื่อนๆ ตัดสินใจเกี่ยวกับเป้าหมายการเรียนรู้ในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) และวัตถุประสงค์ของการทำงานต่างๆ ตลอดเวลา	5	4	3	2	1
55. ฉันต้องการให้ผู้สอนและ/หรือเพื่อนๆ กำหนดคะแนนการเรียนรู้ที่คาดหวังไว้ของงานต่อไปนี้					

55.1	งานนอกชั้นเรียน	5	4	3	2	1
55.2	โครงการโดยอิสระ	5	4	3	2	1
56.	55.3 การทดสอบความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร ฉันต้องการให้ผู้สอนและ/หรือเพื่อนๆ เสนอตัวเลือก ความคิดสร้างสรรค์และ วิธีการใหม่ๆ สำหรับการเรียนรู้และให้งานต่างๆ สำเร็จลุล่วงตลอดเวลา	5	4	3	2	1
57.	ฉันขอให้ผู้สอนและ/หรือเพื่อนๆ เลือกวิธีการหรือเทคนิค กลวิธีการสื่อสารและ ทรัพยากรต่างๆ สำหรับการเรียนรู้ตลอดเวลามากกว่า	5	4	3	2	1
58.	ฉันต้องการให้ผู้สอนและ/หรือเพื่อนๆ ตรวจสอบขั้นตอนการทำงานของฉันใน ด้านต่างๆ ในบันทึกการทำงานของผู้เรียน (สำหรับงานนอกชั้นเรียนและ โครงการโดยอิสระ) ดังนี้					
58.1	ด้านเวลา (ช่วงเวลาของการทำงานแต่ละขั้นตอน)	5	4	3	2	1
58.2	สถานที่	5	4	3	2	1
58.3	ความเร็ว (ช่วงเวลาของการทำงานทั้งหมด)	5	4	3	2	1
58.4	ผู้รับผิดชอบ	5	4	3	2	1
58.5	แหล่งทรัพยากร	5	4	3	2	1
59.	ฉันเชื่อว่าการประเมินงานต่างๆ จำเป็นต้องให้ผู้สอนและ/หรือเพื่อนๆ ทำเท่านั้น	5	4	3	2	1
60.	*ฉันขอให้ผู้สอนและ/หรือเพื่อนๆ ชี้จุดบกพร่องและข้อผิดพลาดเกี่ยวกับงาน ต่างๆ และความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของฉันในงาน ดังต่อไปนี้					
60.1	กิจกรรมในชั้นเรียน	5	4	3	2	1
60.2	งานนอกชั้นเรียน	5	4	3	2	1
60.3	โครงการโดยอิสระ	5	4	3	2	1
61.	*ฉันขอให้ผู้สอนและ/หรือเพื่อนๆ แก้ไขจุดบกพร่องและข้อผิดพลาดเกี่ยวกับ งานต่างๆ และความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของฉันใน งานดังต่อไปนี้					
61.1	กิจกรรมในชั้นเรียน	5	4	3	2	1
61.2	งานนอกชั้นเรียน	5	4	3	2	1
61.3	โครงการโดยอิสระ	5	4	3	2	1
62.	ฉันเชื่อว่าฉันสามารถทำโครงการโดยอิสระให้สำเร็จได้โดยอิสระจากการควบคุม ของผู้สอนและเพื่อนเกี่ยวกับความรับผิดชอบและความสามารถต่างๆ ได้	5	4	3	2	1
<p>ส่วนที่ 2: ความคิดเห็นต่อรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ โปรดระบุว่าท่านเห็นด้วยกับข้อความที่เกี่ยวกับความคิดเห็นต่อรูปแบบการเรียนรู้แบบผสมผสานโครงการ เป็นฐานฯ (PBBCSI model) มากน้อยเพียงใดโดยการวงกลมล้อมรอบ <input type="radio"/> ตัวเลขดังต่อไปนี้</p> <p>5 = มากที่สุด 4 = มาก 3 = ปานกลาง 2 = เล็กน้อย 1 = น้อยมาก</p>						
63.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความสามารถในการพูด ภาษาอังกฤษเพื่อการสื่อสารเพื่อทำงานนอกชั้นเรียน					
63.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
63.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1

64.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารเพื่อทำโครงการโดยอิสระ					
64.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
64.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1
65.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความรับผิดชอบ (ความเต็มใจที่จะรับผิดชอบ) เพื่อทำงานนอกชั้นเรียน					
65.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
65.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1
66.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความรับผิดชอบต่อทำโครงการโดยอิสระ					
66.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
66.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1
67.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความสามารถ (ความมั่นใจในความสามารถ) เพื่อทำงานนอกชั้นเรียน					
67.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
67.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1
68.	ขั้นตอนการเรียนการสอนต่อไปนี้ช่วยพัฒนาความสามารถเพื่อทำโครงการโดยอิสระ					
68.1	ขั้นตอนการเรียนการสอนในชั้นเรียน	5	4	3	2	1
68.2	ขั้นตอนการเรียนการสอนนอกชั้นเรียน	5	4	3	2	1
69.	ระยะการเรียนรู้การทำโครงการโดยอิสระของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) ต่อไปนี้ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของฉันทัดเพื่อทำโครงการโดยอิสระให้สำเร็จลุล่วง					
69.1	ระยะการริเริ่ม	5	4	3	2	1
69.2	ระยะการตั้งคำถาม	5	4	3	2	1
69.3	ระยะการวิเคราะห์ผล	5	4	3	2	1
69.4	ระยะการแก้ไขปัญหา	5	4	3	2	1
69.5	ระยะการประเมินผลและการคิดใคร่ครวญเพื่อปรับปรุงแก้ไขงาน	5	4	3	2	1
69.6	ระยะการปรับปรุงแก้ไขและการนำผลงานออกเผยแพร่	5	4	3	2	1
70.	ระยะการเรียนรู้การทำโครงการโดยอิสระของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) ต่อไปนี้ช่วยพัฒนาความรับผิดชอบของฉันทัดเพื่อทำโครงการโดยอิสระให้สำเร็จลุล่วง					
70.1	ระยะการริเริ่ม	5	4	3	2	1
70.2	ระยะการตั้งคำถาม	5	4	3	2	1
70.3	ระยะการวิเคราะห์ผล	5	4	3	2	1
70.4	ระยะการแก้ไขปัญหา	5	4	3	2	1
70.5	ระยะการประเมินผลและการคิดใคร่ครวญเพื่อปรับปรุงแก้ไขงาน	5	4	3	2	1
70.6	ระยะการปรับปรุงแก้ไขและการนำผลงานออกเผยแพร่	5	4	3	2	1
71.	ระยะการเรียนรู้การทำโครงการโดยอิสระของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) ต่อไปนี้ช่วยพัฒนาความสามารถของฉันทัดเพื่อทำโครงการโดยอิสระให้สำเร็จลุล่วง					
71.1	ระยะการริเริ่ม	5	4	3	2	1
71.2	ระยะการตั้งคำถาม	5	4	3	2	1

71.3	ระยะเวลาวิเคราะห์ผล	5	4	3	2	1
71.4	ระยะเวลาแก้ไขปัญหา	5	4	3	2	1
71.5	ระยะเวลาประเมินผลและการคิดใคร่ครวญเพื่อปรับปรุงแก้ไขงาน	5	4	3	2	1
71.6	ระยะเวลาปรับปรุงแก้ไขและการนำผลงานออกเผยแพร่	5	4	3	2	1
72.	**ในกรณีที่ฉันเข้าปรึกษาโครงการโดยอิสระระหว่างผู้สอนและผู้เรียน ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอน (หมายเหตุ: ถ้าฉันไม่ได้เข้าปรึกษาโครงการโดยอิสระระหว่างผู้สอนและผู้เรียน โปรดข้ามข้อนี้ไป)	5	4	3	2	1
73.	**ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของเพื่อนๆ เกี่ยวกับงานนอกชั้นเรียนของฉันบน Facebook	5	4	3	2	1
74.	**ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของเพื่อนๆ เกี่ยวกับโครงการโดยอิสระของฉันบน Facebook	5	4	3	2	1
75.	**ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอนเกี่ยวกับงานนอกชั้นเรียนในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1
76.	**ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอนเกี่ยวกับโครงการโดยอิสระในเกณฑ์การประเมินงานนอกชั้นเรียนและโครงการโดยอิสระ (task and project rubric)	5	4	3	2	1
77.	**ฉันได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอนและเพื่อนๆ เกี่ยวกับโครงการโดยอิสระของฉันในช่วงการให้คำปรึกษาโครงการโดยอิสระของผู้สอนต่อนักศึกษา (instructor-student project consultation)	5	4	3	2	1
78.	ฉันได้รับประโยชน์จากการสร้างและเลือกตัวเลือก (เช่น วิธีการหรือเทคนิค แหล่งทรัพยากร และอื่นๆ) เพื่อการเรียนรู้และทำงานต่างๆ	5	4	3	2	1
79.	ส่วนสรุปท้ายบทเรียนแต่ละบทช่วยให้ฉันเข้าใจความคิดหลักของระยะเวลาเรียนรู้การทำโครงการโดยอิสระแต่ละระยะ สำหรับการทำให้โครงการโดยอิสระ	5	4	3	2	1
80.	**โดยรวมแล้ว ฉันคิดว่ารูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) พัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของฉัน เพื่อการทำงานต่อไปนี้					
80.1	กิจกรรมในชั้นเรียน	5	4	3	2	1
80.2	งานนอกชั้นเรียน	5	4	3	2	1
80.3	โครงการโดยอิสระ	5	4	3	2	1
81.	โดยรวมแล้ว ฉันคิดว่ารูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) พัฒนาความรับผิดชอบ (ซึ่งก็คือ ความเต็มใจที่จะรับผิดชอบ) ของฉันเพื่อการทำงานต่อไปนี้					
81.1	กิจกรรมในชั้นเรียน	5	4	3	2	1
81.2	งานนอกชั้นเรียน	5	4	3	2	1
81.3	โครงการโดยอิสระ	5	4	3	2	1
82.	โดยรวมแล้ว ฉันคิดว่ารูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) พัฒนาความสามารถ (ซึ่งก็คือ ความมั่นใจในความสามารถ) ของฉันเพื่อการทำงานต่อไปนี้					
82.1	กิจกรรมในชั้นเรียน	5	4	3	2	1
82.2	งานนอกชั้นเรียน	5	4	3	2	1
82.3	โครงการโดยอิสระ	5	4	3	2	1



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83. ฉันคิดว่ารูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ (PBBCSI model) มีประโยชน์ต่ออาชีพในอนาคตของฉัน	5	4	3	2	1
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ขอขอบคุณท่านมากสำหรับความร่วมมือ



**APPENDIX F: Observation Checklists**

**Observation Checklists**

**Face-to-face Observation Checklist**

-Observe the behavior that the students show while studying and doing the face-to-face activities.

Unit .....Phase ..... Student Name .....

*Mark 1 for one occurrence of the observed behavior whenever it occurs in each incident.*

Aspects of Learner Autonomy (LA)	Incidents	Occurrences on LA components <sup>1</sup>			Comments/ Additional Information
		Resp.	Cap.	IL	
1. Determining the goals and the objectives	(The students don't determine the goals and the objectives of the face-to-face activities.)				
2. Defining the learning progressions	(The students don't define the learning progressions of the face-to-face activities.)				
3. Taking the initiative	3.1 <b>With (After)</b> instructor-or-peer initiation, the students self-initiate or self-start to take <b>common actions</b> that are necessary for completing the activities according to the work prompts of instructions (e.g. forming the group or pair, making short notes, etc.).  3.2 <b>With (After)</b> instructor-or-peer initiation, the students self-initiate or self-start to take <b>new actions</b> that they newly create for learning (e.g. encouraging friends to participate in studying or doing the activities, trying to become an administrator or facilitator of the class, offering new ideas/choices, etc.).				

	3.3 <b>With (After)</b> instructor-or-peer initiation, the students ask the instructor or peers <b>the questions</b> to initiate or stimulate other students and/or the instructor to clarify or correct some problems, mistakes, and unclear points, or reflect more on some aspects ( <b>excluding</b> asking for clarifying the definitions of words).				
	3.4 <b>Without</b> instructor-or-peer initiation, the students self-initiate or self-start to take <b>new actions</b> <sup>2</sup> for learning and doing the activities (e.g. browsing the Internet to find information to serve their purposes, reading the lessons and doing the exercises before class or before the instructor initiates to do so, etc.).				
	3.5 Other possible incidents:				
4. Making decisions on selecting methods or techniques, communication strategies, and resources	4.1 Students use the methods or techniques, communication strategies, and resources for their learning and activities.				
5. Monitoring the procedure of doing the outside class tasks and the independent project (face-to-face activities)	4.2 Other possible incidents:  (Due to time constraint, the students don't monitor the procedure of doing the face-to-face activities.)				
6. Evaluating what has been acquired and performed in the tasks and the project	-				

<sup>1</sup> Criteria for marking occurrences on the observation on learner autonomy components:

1. Resp. refers to "Responsibilities". If students show the behavior related to each incident described previously in each aspect of learner autonomy (on the left of the checklist), suggesting that they attempt to do the activities, and do whatever ways to carry them out even if they are complete or not), they are willing to take their responsibilities of the observed incident in each aspect of learner autonomy to perform the activities.

2. Cap. refers to “Capabilities”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the activities, they are confident in their abilities of the observed incident in each aspect of learner autonomy to manage, perform, and complete the activities.
  3. IL refers to “Independent Learning”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the activities without or with little instructor and peer support, the students can perform the activities independently of instructor and peer control without or with little instructor and peer support of those responsibilities and capabilities of the observed incident in each aspect of learner autonomy for their independent learning.
- <sup>2</sup> Students’ taking common actions in the aspect of “**without instructor-or-peer initiation**” is not examined because what the students do without instructor’s or peers’ initiation or actions is considered as new actions.



**Online Observation Checklist**

-Observe the behavior that the students show while giving comments on the online tasks and the independent project on Facebook.

Unit ..... Phase ..... Student Name .....  
*Mark one occurrence of the observed behavior whenever it occurs in each incident.*

Aspects of Learner Autonomy (LA)	Incidents	Occurrences on LA components <sup>1</sup>		Comments/ Additional Information
		Resp.	Cap. IL	
1. Determining the goals and the objectives	(The students determine the goals and the objectives of the online tasks and the independent project on the student log.)			
2. Defining the learning progressions	2.1 Students give the “Expected Progression” (EP) scores before doing the tasks and the project on the “Task and Project Rubric <sup>2</sup> .” 2.2 Students submit the tasks and project according to the due date. <sup>3</sup> 2.3 Other possible incidents:			
3. Taking the initiative	3.1 <b>With (After)</b> instructor-or-peer initiation, the students self-initiate or self-start to take <b>common actions</b> that are necessary for completing the activities according to the work prompts of instructions (e.g. forming the group or pair, giving comments, etc.). 3.2 <b>With (After)</b> instructor-or-peer initiation, the students self-initiate or self-start to take <b>new actions</b> that they newly create for learning (e.g. encouraging friends to give comments, trying to become an administrator or facilitator of the English Conversation group on Facebook, offering new ideas/choices, etc.).			



	6.2 Students give comments whether they can achieve the objectives of the tasks and the project (set by the instructor and the students) and the goals of learning (set by the instructor and the students).				
	6.3 Students give comments on how to make their tasks and the project better.				
	6.4 Other possible incidents:				

<sup>1</sup> Criteria for marking occurrences on the observation on learner autonomy components:

1. Resp. refers to “Responsibilities”. If students show the behavior related to each incident described previously in each aspect of learner autonomy (on the left of the checklist), suggesting that they attempt to do the activities, and do whatever ways to carry them out even if they are complete or not), they are willing to take their responsibilities of the observed incident in each aspect of learner autonomy to perform the tasks and the independent project.
2. Cap. refers to “Capabilities”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the tasks and the project, they are confident in their abilities of the observed incident in each aspect of learner autonomy to manage, perform, and complete the tasks and the project.
3. IL refers to “Independent Learning”. If students show the behavior related to each incident described previously in each aspect of learner autonomy and complete the tasks and the project without or with little instructor and peer support, the students can perform the activities independently of instructor and peer control without or with little instructor and peer support of those responsibilities and capabilities of the observed incident in each aspect of learner autonomy for their independent learning.
- <sup>2</sup> Although the students give the Expected Progression and Self-assessment scores on the task and project rubric which seems not to be online, giving those scores is part of the working process to do the online tasks and the independent project.
- <sup>3</sup> Students can submit their tasks and project on time according to the due date. (This shows that they can determine when they should do and complete their work).

<sup>4</sup> Students’ taking common actions in the aspect of “**without instructor-or-peer initiation**” is not examined because what the students do without instructor’s or peers’ initiation or actions is considered as new actions.

**Additional notes:** The evidence of learner autonomy is observed in the two pairs of focused students. Only the focus students are video recorded in a face-to-face environment.

## APPENDIX G: Semi-structured Interviews

### Learner Autonomy Interview Questions (Semi-Structured Interview)

1. \*As for communication strategies taught during class (circumlocution, asking for clarification, asking for confirmation, and use of fillers and other hesitation devices), what communication strategies do you *often and rarely* use when performing the works (i.e. face-to-face activities, online tasks, and the independent project)?

[To clarify items 60, 63, and 71]

Why do you *often/rarely* use them?

2. Do you think the communication strategies that you have learned and practiced during and after class help develop your English oral communication ability? help develop your English oral communication ability?

A. If yes, how?

B. If not, why?

[To verify/clarify items 60, 63, and 71]

3. Do you think the communication strategies that you have learned and practiced inside and online help develop your responsibilities and capabilities in completing the works (i.e. face-to-face activities, online tasks, and the independent project)? Reshaped because the question is complex.

A. If yes, how?

(Clarifying questions:

-What you have learned and practiced or anything else makes you willing to do the works?

-What makes you feel confident to do the works?)

B. If not, why?

(Clarifying questions:

-What makes you not willing to do the works?

-What makes you feel unsure to do the works?)

[To verify/clarify items 16, 39, 61, 62, 64, 65, 72, and 73.]

#### Re-interview

Do you think the communication strategies that you have learned and practiced inside and online help develop your independent learning (individual students' control on carrying out the online tasks and independent project, independently of instructor and peer control) in completing the works and project (i.e. face-to-face activities, online tasks, and the independent project)?

A. If yes, how do CSs help you do so?

B. If not, why don't CSs help you do so?

4. Do you think the six aspects of learner autonomy which comprise 1) *determining the goals and the objectives*, 2) *defining the learning progressions*, 3) *taking the initiative*, 4) *making decisions on selecting methods or techniques, communication strategies, and resources*, 5) *monitoring the task and the project completion*



*procedures, the tasks, and the project, 6) evaluating what has been acquired and performed in the tasks and the project help develop your English oral communication ability?*

A. If yes, how?

B. If not, why?

[To verify/clarify items 60, 63, and 71]

5. Do you think that the ways and the steps to perform the independent project that you have learned and practiced—i.e. each step of doing the project (e.g. *thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc.*) help develop your English oral communication ability?

A. If yes, how?

B. If not, why?

[To verify/clarify items 63 and 71]

6. Do you think that the ways and the steps to perform the independent project that you have learned and practiced—i.e. each step of doing the project (e.g. *thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc.*) help develop your responsibilities and capabilities in completing the works and project?

A. If yes, how?

(Clarifying questions: -What makes you willing to do the works?

-What makes you feel confident to do the works?)

B. If not, why?

(Clarifying questions: -What makes you not willing to do the works?

-What makes you feel unsure to do the works?)

[To verify/clarify items 64 and 65]

Re-interview: **CHULALONGKORN UNIVERSITY**

Do you think that the ways and the steps (in each phase) to perform the independent project that you have learned and practiced—i.e. each step of doing the project (e.g. thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc.) help develop your independent learning in completing the works and project. (**You don't need support/suggestion from the instructor/peers to complete the works and project?**)

A. If yes, how/why?

(Clarifying questions:

**Why does the model/What helps** you be able to do the works independently of instructor/peers?

B. If not, why?

(Clarifying questions: -**Why doesn't the model/What doesn't** help you be able to do the works?

[To verify/clarify items 64 and 65]

Re-interview

Do you think that **the learning and teaching steps face-to-face and online** (for doing the work of each step of doing the project) help develop your **independent learning** in completing the works and project (**You don't need support/suggestion from the instructor/peers to complete the works and project?**)

A. If yes, how/why?

(Clarifying questions:

**Why does the model/What helps** you be able to do the works independently of instructor/peers?

B. If not, why?

(Clarifying questions: -**Why doesn't the model/What doesn't** help you be able to do **the works and project?**

[To verify/clarify items 64 and 65]

7. After your instructor or friends start taking actions for teaching and learning (e.g. giving explanations, examples, guidelines, choices, or ideas):
- 7.1 Are you **willing** to self-initiate to take **common actions** according to the work prompts (e.g. forming the group or pair, making short notes, etc.) for doing the works?  
Why or why not? [To verify/clarify items 8, 9, 31, and 32]
- 7.2 Are you **willing** to self-initiate to take **new actions** (e.g. encouraging your friends to work, making **new** choices, ideas, and ways, being a leader or a volunteer in a group or pair work, etc.) for doing the works?  
Why or why not? [To verify/clarify items 8, 9, 31, and 32]
- 7.3 Are you **confident** to self-initiate to take **common actions** according to the work prompts for doing the works?  
Why or why not? [To verify/clarify items 8, 9, 31, and 32]
- 7.4 Are you **confident** to self-initiate to take **new actions** for doing the works?  
Why or why not? [To verify/clarify items 8, 9, 31, and 32]
8. Although the instructor or friends **do not** take actions for teaching and learning,
- 8.1 Are you **willing** to self-initiate to take **common actions** according to the work prompts for doing the works?  
Why or why not? [To verify/clarify items 10, 11, 33, and 34]
- 8.2 Are you **willing** to self-initiate to take **new actions** for doing the works?  
Why or why not? [To verify/clarify items 10, 11, 33, and 34]

8.3 Are you ***confident*** to self-initiate to take ***common actions*** according to the work prompts for doing group or pair works?

Why or why not? [To verify/clarify items 10, 11, 33, and 34]

8.4 Are you ***confident*** to self-initiate to take ***new actions*** for doing group or pair works?

Why or why not? [To verify/clarify items 10, 11, 33, and 34]

9. Do you think that the learning and teaching steps (inside and online) in the PBBCSI model help develop your English oral communication ability?
  - A. If yes, what steps or what phases help you? Why? or How?
  - B. If not, what steps or what phases don't help you? Why or How?
10. Do you think that the learning and teaching steps (inside and online) in the PBBCSI model help develop your responsibilities (willingness to take responsibilities) to perform the works?
  - A. If yes, what steps or what phases help you? Why? or How?
  - B. If not, what steps or what phases don't help you? Why or How?
11. Do you think that the learning and teaching steps (inside and online) in the PBBCSI model help develop your capabilities (confidence in abilities to take responsibilities) to perform the works?
  - A. If yes, what steps or what phases help you? Why? or How?
  - B. If not, what steps or what phases don't help you? Why or How?
12. About giving comments and suggestions on the works:
  - 12.1 Do you get benefits from peers' comments and suggestions on your works on Facebook?
 

Why?/Why not?
  - 12.2 Do you get benefits from instructor's comments and suggestions on your works on the task and project rubric?
 

Why?/Why not?

Which way of receiving comments and suggestions do you prefer? Or equally like? Why?
  - 12.3 Do you get benefits from instructor's and peers' comments and suggestions on your works in the phase "6) revision and publication"?
 

Why?/Why not?

Whose comments and suggestions do you prefer? Why?
13. Do you get benefits from making and selecting choices for learning and doing works? Why?/ Why not?
14. \*What do you *like* ***and*** *dislike* in the PBBCSI model? Why? What should be improved?

(If the informant does not talk about the benefits of the PBBCSI model for his/her future careers, item 14 is asked.)  
[To verify/clarify items 1-74]

15. Does the PBBCSI model give you benefits for your future careers?  
Why or why not? [To verify/clarify items 74]

\*Adapted from Channuan (2012).



## APPENDIX G: Semi-structured Interviews (Thai version)

### คำถามสำหรับการสัมภาษณ์ ความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียน (การสัมภาษณ์แบบกึ่งโครงสร้าง)

1. \*สำหรับกลวิธีการสื่อสารซึ่งสอนในระหว่างการเรียนการสอน (เช่น กลวิธีการพูดอ้อมเพื่ออธิบายคำที่ต้องการ (circumlocution) กลวิธีการถามเพื่อต้องการความชัดเจน (asking for clarification) กลวิธีการถามเพื่อยืนยัน (asking for confirmation) และกลวิธีการใช้คำเติมและแสดงความลังเลเพื่อขอเวลาคิด (use of fillers and hesitation devices) กลวิธีการสื่อสารดังกล่าวกลวิธีใดที่คุณใช้บ่อยๆ และแทบจะไม่ได้ใช้เลย ในการทำงานต่างๆ (เช่น กิจกรรมในชั้นเรียน งานนอกชั้นเรียน โครงการงานโดยอิสระ)

[To clarify item 59]

-ทำไมถึงใช้บ่อย/ แทบจะไม่ได้ใช้เลย

2. คุณคิดว่ากลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไป ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของคุณ ใช้หรือไม่
- ก. หากใช่ ช่วยอย่างไร
- ข. หากไม่ใช่ เป็นเพราะเหตุใด

[To verify/clarify items 60, 63, and 71]

3. คุณคิดว่ากลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไปในขั้นตอนการสอน ในและหลังการเรียนการสอนนั้น ช่วยพัฒนาความรับผิดชอบและความสามารถในการทำงานต่างๆ (ซึ่งก็คือกิจกรรมในชั้นเรียน งานนอกชั้นเรียน และโครงการงานโดยอิสระ) ให้สำเร็จลุล่วง ใช้หรือไม่

ก. หากใช่ ช่วยอย่างไร

(คำถามเพื่อความชัดเจน:

-กลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไปทำให้คุณเต็มใจที่จะทำงานต่างๆ ใช้หรือไม่อย่างไร

-กลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไปทำให้คุณรู้สึกมั่นใจที่จะทำงานต่างๆ ใช้หรือไม่อย่างไร

B. หากไม่ใช่ เพราะเหตุใด

(คำถามเพื่อความชัดเจน:

-กลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไปทำให้คุณไม่เต็มใจที่จะทำงานต่างๆ ใช้หรือไม่อย่างไร

-กลวิธีการสื่อสารที่ได้เรียนและฝึกฝนไปทำให้คุณรู้สึกไม่มั่นใจที่จะทำงานต่างๆ ใช้อย่างไรหรือไม่ อย่างไร

[To verify/clarify items 16, 39, 61, 62, 64, 65, 72, and 73]

4. คุณคิดว่าความสามารถในการควบคุมการเรียนรู้ด้วยตนเองของผู้เรียนทั้ง 6 ด้าน อันได้แก่
- 1) การกำหนดเป้าหมายและวัตถุประสงค์
  - 2) การกำหนดความก้าวหน้าของการเรียนรู้
  - 3) การทำสิ่งริเริ่ม
  - 4) การตัดสินใจเลือกวิธีหรือเทคนิค กลวิธีการสื่อสารและแหล่งทรัพยากร
  - 5) การตรวจสอบขั้นตอนของการทำกิจกรรม งานต่างๆ และโครงการโดยอิสระ
  - 6) การประเมินสิ่งที่ได้เรียนรู้และปฏิบัติในการทำงานหลังการเรียนการสอนและโครงการโดยอิสระนั้น
- ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของคุณ ใช้อย่างไรหรือไม่

ก. หากใช่ ช่วยอย่างไร

ข. หากไม่ใช่ เป็นเพราะเหตุใด

[To verify/clarify items 60, 63, and 71]

5. คุณคิดว่าวิธีการและขั้นตอนต่างๆ สำหรับทำโครงการโดยอิสระที่คุณได้เรียนรู้และฝึกฝนไปแล้ว (เช่น การคิดเกี่ยวกับคำถามผลักดันให้อยากเรียนรู้ (driving question) การตั้งคำถามเชิงลึกเพื่อให้ได้ข้อมูลเพิ่มเติม (deeper questions) สำหรับคำถามผลักดันให้อยากเรียนรู้ การเก็บข้อมูล การวิเคราะห์ผล และอื่นๆ) เพื่อทำงานหลังการเรียนการสอนและโครงการโดยอิสระ ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสารของคุณ ใช้อย่างไรหรือไม่

ก. หากใช่ ช่วยอย่างไร

ข. หากไม่ใช่ เป็นเพราะเหตุใด

[To verify/clarify item 63 and 71]

6. คุณคิดว่าวิธีการและขั้นตอนต่างๆ สำหรับทำโครงการโดยอิสระที่คุณได้เรียนรู้และฝึกฝนไปแล้ว (เช่น การคิดเกี่ยวกับคำถามผลักดันให้อยากเรียนรู้ (driving question) การตั้งคำถามเชิงลึกเพื่อให้ได้ข้อมูลเพิ่มเติม (deeper questions) สำหรับคำถามผลักดันให้อยากเรียนรู้ การเก็บข้อมูล การวิเคราะห์ผล และอื่นๆ) เพื่อทำงานหลังการเรียนการสอนและโครงการโดยอิสระ ช่วยพัฒนาความรับผิดชอบและความสามารถในการทำงานต่างๆ ให้สำเร็จลุล่วง ใช้อย่างไรหรือไม่

ก. หากใช่ ช่วยอย่างไร

(คำถามเพื่อความชัดเจน:

- สิ่งใดที่คุณได้เรียนรู้และฝึกฝนไปแล้ว หรือสิ่งอื่นๆ ทำให้คุณเต็มใจที่จะทำงานต่างๆ
- สิ่งใดที่ทำให้คุณรู้สึกมั่นใจที่จะทำงานต่างๆ)

ข. หากไม่ใช่ เพราะเหตุใด

(คำถามเพื่อความชัดเจน:

- สิ่งใดที่คุณได้เรียนรู้และฝึกฝนไปแล้ว หรือสิ่งอื่นๆ ทำให้คุณไม่เต็มใจที่จะทำงานต่างๆ
- สิ่งใดที่ทำให้คุณรู้สึกไม่มั่นใจที่จะทำงานต่างๆ)

[To verify/clarify items 64 and 65]

7. หลังจากที่ผู้สอนหรือเพื่อนๆ เริ่มการกระทำต่างๆ สำหรับการเรียนการสอน เช่น การให้คำอธิบาย ตัวอย่าง แนวทางปฏิบัติ ตัวเลือก หรือความคิดต่างๆ แล้ว

7.1 คุณเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน (เช่น การจับกลุ่มหรือจับคู่ การจดบันทึก และอื่นๆ) เพื่อทำงานต่างๆ (กิจกรรมก่อนและระหว่างการเรียนการสอน งานหลังการเรียนการสอน และโครงการโดยอิสระ) ใช่หรือไม่  
-ทำไมถึงเต็มใจ หรือทำไมถึงไม่เต็มใจ

7.2 คุณเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ต่างๆ (เช่น การกระตุ้นให้เพื่อนๆ ทำงานการสร้างตัวเลือก ความคิดสร้างสรรค์ วิธีการใหม่ๆ การเป็นผู้นำหรืออาสาสมัครในงานกลุ่มหรืองานคู่ และการกระทำอื่นๆ) เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไมถึงเต็มใจ หรือทำไมถึงไม่เต็มใจ

[To verify/clarify items 8, 9, 31, and 32]

7.3 คุณมั่นใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อทำงานต่างๆ ใช่หรือไม่

-ทำไมถึงมั่นใจ หรือทำไมถึงไม่มั่นใจ

7.4 คุณมั่นใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ต่างๆ (เช่น การกระตุ้นให้เพื่อนๆ ทำงานการสร้างตัวเลือก ความคิดสร้างสรรค์ วิธีการใหม่ๆ การเป็นผู้นำหรืออาสาสมัครในงานกลุ่มหรืองานคู่ และการกระทำอื่นๆ) เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไมถึงมั่นใจ หรือทำไมถึงไม่มั่นใจ

[To verify/clarify items 8, 9, 31, and 32]

8. ถึงแม้ว่าผู้สอนหรือเพื่อนๆ ไม่กระทำการสิ่งต่างๆ สำหรับการเรียนการสอน
- 8.1 คุณก็ยังเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไม่ถึงเต็มใจ / ทำไม่ถึงไม่เต็มใจ
- 8.2 คุณก็ยังเต็มใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ต่างๆ เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไม่ถึงเต็มใจ / ทำไม่ถึงไม่เต็มใจ
- 8.3 คุณก็ยังมั่นใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งทั่วไปต่างๆ ตามโจทย์ของงาน เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไม่ถึงมั่นใจ / ทำไม่ถึงไม่มั่นใจ
- 8.4 คุณก็ยังมั่นใจที่จะเริ่มต้นด้วยตัวเองเพื่อทำสิ่งใหม่ต่างๆ เพื่อทำงานต่างๆ ใช่หรือไม่  
-ทำไม่ถึงมั่นใจ / ทำไม่ถึงไม่มั่นใจ
- [To verify/clarify items 10, 11, 33, and 34]
9. คุณคิดว่าขั้นตอนการเรียนการสอนต่างๆ (ในและนอกชั้นเรียน) ในรูปแบบการเรียนรู้แบบผสมผสานโครงงานเป็นฐานฯ (PBBCSI model) ช่วยพัฒนาความสามารถในการพูดภาษาอังกฤษเพื่อการสื่อสาร ใช่หรือไม่  
ก. หากใช่ ขั้นตอนการเรียนการสอนใดที่ช่วยพัฒนา ทำไม่หรืออย่างไร  
ข. หากไม่ใช่ ขั้นตอนการเรียนการสอนใดที่ไม่ช่วยพัฒนา ทำไม่หรืออย่างไร
10. คุณคิดว่าขั้นตอนการเรียนการสอนต่างๆ (ในและนอกชั้นเรียน) ในรูปแบบการเรียนรู้แบบผสมผสานโครงงานเป็นฐานฯ (PBBCSI model) ช่วยพัฒนาความรับผิดชอบ (ความเต็มใจที่จะรับผิดชอบงาน) ใช่หรือไม่  
ก. หากใช่ ขั้นตอนการเรียนการสอนใดที่ช่วยพัฒนา ทำไม่หรืออย่างไร  
ข. หากไม่ใช่ ขั้นตอนการเรียนการสอนใดที่ไม่ช่วยพัฒนา ทำไม่หรืออย่างไร
11. คุณคิดว่าขั้นตอนการเรียนการสอนต่างๆ (ในและนอกชั้นเรียน) ในรูปแบบการเรียนรู้แบบผสมผสานโครงงานเป็นฐานฯ (PBBCSI model) ช่วยพัฒนาความสามารถ (ความมั่นใจในความสามารถที่จะรับผิดชอบงาน) ใช่หรือไม่  
ก. หากใช่ ขั้นตอนการเรียนการสอนใดที่ช่วยพัฒนา ทำไม่หรืออย่างไร  
ข. หากไม่ใช่ ขั้นตอนการเรียนการสอนใดที่ไม่ช่วยพัฒนา ทำไม่หรืออย่างไร



12. ในเรื่องการให้คำวิจารณ์และคำแนะนำต่องานต่างๆ นั้น
- 12.1 คุณได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของเพื่อนๆ เกี่ยวกับงานที่อยู่บน Facebook ใช่หรือไม่  
-ทำไมได้รับประโยชน์ / ทำไมถึงไม่ได้รับประโยชน์
- 12.2 คุณได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอนเกี่ยวกับงานที่อยู่ในเกณฑ์การประเมินงานหลังการเรียนการสอนและโครงการโดยอิสระ (Task and project rubric)  
-ทำไมได้รับประโยชน์ / ทำไมถึงไม่ได้รับประโยชน์
- 12.3 ได้รับประโยชน์จากคำวิจารณ์และคำแนะนำของผู้สอนและเพื่อนๆ เกี่ยวกับโครงการโดยอิสระของคุณในระหว่างการเรียนรู้การทำโครงการโดยอิสระระยะที่ “6) การปรับปรุงแก้ไขและการนำผลงานออกเผยแพร่” (revision and publication)
13. คุณได้รับประโยชน์จากการสร้างและเลือกตัวเลือกเพื่อการเรียนรู้และทำงานต่างๆ ใช่หรือไม่ เพราะเหตุใด
14. \*สิ่งใดที่คุณชอบและไม่ชอบในรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานโดยใช้การสอนกลวิธีการสื่อสาร เพราะเหตุใดถึงชอบ หรือ เพราะเหตุใดถึงไม่ชอบ  
สิ่งใดควรปรับปรุง  
(หากผู้เรียนไม่พุดถึงประโยชน์ของรูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ ต่องานอาชีพในอนาคตของเขา จึงถามต่อข้อ 12)  
[To verify/clarify items 1-83]
15. รูปแบบการเรียนรู้แบบผสมผสานโครงการเป็นฐานฯ มีประโยชน์ต่องานอาชีพในอนาคตของคุณ ใช่หรือไม่  
เพราะอะไรถึงมีประโยชน์ หรือ เพราะอะไรถึงไม่มีประโยชน์  
[To verify/clarify item 83]

\*Adapted from Channuan (2012).

### APPENDIX H: Student Log Completion on Task 1

**Complete the information in English.**

**I. Setting the goal(s) and objectives**

1. Goal(s) of learning in the PBBCSI model  
 Give main idea on this subject. Apply the knowledge acquired on the job and can be applied to everyday.  
 I can practice speaking English skill


2. Driving question (for unit 1):  
 How does programming skills develop the search for engineering jobs?


3. Deeper questions (for the tasks of units 2-3 and the project):  
 .....  
 .....

4. Objectives (set by the instructor):  
 1. ....  
 2. ....

**Your objectives:**  
 1. ...practise using grammar and speaking English.....  
 2. ...have confidence in communicating in English.....

**II. Setting the expected progression scores on the task and project rubric:**

  
 English version

  
 or Thai version

What websites?

**III. Planning the procedure:**

1. How do you do the task or the project?

Working steps	Respondent (Who?)	Resources (Write T if available from the textbook, F if from Facebook, N if they are new, and name who suggests them.)	Time (duration of doing each step)	Place (meeting places and selected social platforms)	Pace (duration of doing the entire work)
1. Choose a topic.....	warakorn	N (Google, Youtube)	15 mins	Line	1.30 hour  ✓
2. Define scope a topic.....	warakorn	N (Google, Youtube)	15 mins	Line	
3. Discuss about the content.....	Wibeeha		40 mins	Line	
4. Record about the content.....	Wanvipa		10 mins	Bandicam	
5. Post video on the facebook.....	Wanvipa		10 mins	Home	
6. ....					
7. ....					

**New ideas, methods or techniques, expressions, and names who suggest them:**  
 .....  
 .....  
 .....

**IV. Monitoring the procedure**

Pair 1

1. Will the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the objectives of the task or the project effectively? If not, how will you develop them?

.....  
 .....

**V. Performing the task or the project****VI. Evaluating the task or the project:****1) Self-assessment**

1.1 Self-assess your task or project in terms of task and project quality, and English oral communication ability in the task and project rubric: English or Thai versions.



English version



Thai version

**2) Reflection**

2.1 How well did you do your task or project in terms of **quality**?

..... Moderately .....

2.2 Did the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the task or project objectives effectively?

2.2.1 If yes, how did they help achieve the objectives?

2.2.2 If not, how will you solve the problem?

..... Yes, planning helps us to work in an orderly manner and results in successful work as scheduled. ....

2.3 Did the communication strategies help achieve the task or project objectives effectively?

2.3.1 If yes, how did they help achieve the objectives?

2.3.2 If not, how will you solve the problem?

..... Yes, communication helps us to talk and explain clearly and easily. ....

2.4 What are weak points or problems in your task or project in aspects of **quality**? (Use the descriptors in *section A: Task and Project Quality* in the task and project rubric as your guideline.)

..... our weak points is about techniques and use of methods. The video resources doesn't clear ....

2.5 How well did you do your task or project in terms of **English oral communication ability**?

..... Not good because our pronunciation is single tone and have a lot mistake the detail. ....


2.6 What are weak points or problems in your task or project in aspects of English oral communication ability? (Use the descriptors in *section B: English Oral Communication Ability* in the task and project rubric as your guideline.)

..... Our weak points is about pronunciation. ....

2.7 How will you make your task or project better in terms of **quality and English oral communication ability**?

..... Watch series the British subtitles on a regular basis and practice speaking English every day. ....

## APPENDIX I: Student Log Completion on the Independent Project

2. .... Student ID No. .... 

**Complete the information in English.**

**I. Setting the goal(s) and objectives**

1. Goal(s) of learning in the PBBCSI model  
 ...Apply the knowledge acquired on the job and can be applied to everyday.....

2. Driving question (for unit 1):  
 ...What kinds of AI can help improve the education of students in university?.....

3. Deeper questions (for the tasks of units 2-3 and the project):  
 ...What is the use of AI in your university to help with education?.....  
 ...How can you trust AI at your university?.....



4. Objectives (set by the instructor):

1. Task responsibilities and capabilities in six aspects of learner autonomy for doing the independent project.
2. Present the solutions (answer) and related information for the problem and driving question via the project presentation.

Your objectives:

1. Apply what is learned in every unit to complete tasks, example questions about "Asking for confirmation"
2. Able to bring interviews and questionnaires that respondents have analyzed and summarized very well.

**II. Setting the expected progression scores on the task and project rubric:**

 English version or Thai version 

**III. Planning the procedure:**

1. How do you do the task or the project?

Working steps	Respondent (Who?)	Resources (Write T if available from the textbook, F if from Facebook, N if they are new, and name who suggests them)	Time (duration of doing each step)	Place (meeting places and selected social platforms)	Place (duration of doing the entire work)
1. Think about problem of interest.....	Warakorn	Web, text, or th ✓	30 mins	Home	270 mins
2. Think of driving question and deeper question.....	Warakorn	Web, text, or th ✓	15 mins	Home	
3. Create a questionnaire.....	Warakorn	Google Forms ✓	20 mins	Home	
4. Have the target group answer the questionnaires... and interview them.....	Warakorn	Interview from questionnaires	60 mins	KMUTNB, Line	
5. Analyze and summarize the data of questionnaires.....	Warakorn	Google Forms	30 mins	Home	
6. Design data presentation on powerpoint.....	Warakorn	Google slide ✓	15 mins	Home	
7. Record and edit video then make self-assessment.....	Warakorn	Bandicam - movie ✓	30 mins	Discord, Thovle	

**New ideas, methods or techniques, expressions, and names who suggest them:**  
 ....I received advice from teachers to make my project more effective. I use Discord to chat with customer and Bandicam to record video.....

#### IV. Monitoring the procedure

1. Will the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the objectives of the task or the project effectively? If not, how will you develop them?

..... Yes, work planning makes work easier, makes it manage work time well and so know what to do next. Having a pre-work plan makes me work more efficient.

#### V. Performing the task or the project

#### VI. Evaluating the task or the project:

##### 1) Self-assessment

1.1 Self-assess your task or project in terms of task and project quality, and English oral communication ability in the task and project rubric: English or Thai versions.

English version



or Thai version



##### 2) Reflection

2.1 How well did you do your task or project in terms of **quality**?

..... The quality of this project I think I don't bad. I feel I can do better task 2, but when presenting to customer, grammar and pronunciation are little wrong.

2.2 Did the planned working steps in aspects of time, place, pace, respondents (who?), and resources help achieve the task or project objectives effectively?

2.2.1 If yes, how did they help achieve the objectives?

2.2.2 If not, how will you solve the problem?

..... Yes, it helps me work systematically and manage time for each plan, resulting in my work achieving the objectives set out and making the work more efficient.

2.3 Did the communication strategies help achieve the task or project objectives effectively?

2.3.1 If yes, how did they help achieve the objectives?

2.3.2 If not, how will you solve the problem?

..... Yes, I have applied the knowledge learned from every unit to my project such as using "asking for confirmation" questions, using "asking for clarification" questions and apply the taught communication strategy.

2.4 What are weak points or problems in your task or project in aspects of **quality**? (Use the descriptors in section **A: Task and Project Quality** in the task and project rubric as your guideline.)

..... My weak point is use of techniques and resources. In the video presentation, the powerpoint slides were hard to see.

2.5 How well did you do your task or project in terms of **English oral communication ability**?

..... I think I speak more clearly and understand more, but there are still some words that are mispronounced, may cause misunderstandings.

2.6 What are weak points or problems in your task or project in aspects of English oral communication ability? (Use the descriptors in section **B: English Oral Communication Ability** in the task and project rubric as your guideline.)

..... My weak point is Accuracy. I may have some words that I mispronounce and use the wrong grammar.

2.7 How will you make your task or project better in terms of **quality and English oral communication ability**?

..... I will search for more information and study the tools that will help in video compression and video editing. In order to develop the work as efficiently as possible.

## APPENDIX J: Experts' Validation of Data Collection Instruments

Table 54: Experts' Validation of the English Oral Communication Ability Test

Items	IOC	Results
1. The objectives of the test tasks match with the objective of the PBBCSI model in terms of English oral communication ability.	0.67	Accepted
2. The objectives of the test tasks are relevant to the job functions.	1	Accepted
3. The objectives of the test tasks are relevant to the unit objectives [in terms of English oral communication ability].	0.67	Accepted
4. The objectives of the test tasks are achievable.	1	Accepted
5. The test tasks can elicit students' uses of taught communication strategies.	0.67	Accepted
6. The sequence of the test tasks is appropriate.	1	Accepted
7. The contents of the test tasks are appropriate to students' proficiency level (intermediate) and the Computer Engineering field.	1	Accepted
8. The instructions of the test tasks are clear and appropriate.	0.67	Accepted
9. The preparation time allotment of each test task is appropriate.	0.33	Revised
10. The performance time allotment of each test task is appropriate.	0.33	Revised
11. The assessment of the test tasks is appropriate.	0.67	Accepted
12. The objectives of the test tasks match with the objective of the PBBCSI model in terms of English oral communication ability.	0.67	Accepted
13. The objectives of the test tasks are relevant to the job functions.	1	Accepted
14. The objectives of the test tasks are relevant to the unit objectives [in terms of English oral communication ability].	0.67	Accepted
15. The objectives of the test tasks are achievable.	1	Accepted
16. The test tasks can elicit students' uses of taught communication strategies.	0.67	Accepted
17. The sequence of the test tasks is appropriate.	1	Accepted
18. The contents of the test tasks are appropriate to students' proficiency level (intermediate) and the Computer Engineering field.	1	Accepted
19. The instructions of the test tasks are clear and appropriate.	0.67	Accepted
20. The preparation time allotment of each test task is appropriate.	0.33	Revised
21. The performance time allotment of each test task is appropriate.	0.33	Revised
22. The assessment of the test tasks is appropriate.	0.67	Accepted
<b>OVERALL</b>	<b>.73</b>	<b>Accepted</b>

Table 55: Experts' Validation of the Pre-LAQ and Post-LAQ

Objectives	Items/ Aspects of learner autonomy	IOC	Results
	A. Determining the goals and the objectives		
Items 1-4: To verify if the students are willing to take responsibilities for expressing capabilities of determining the goals and the objectives in learning and doing the activities, the tasks, and the project specified in each item.	1. I am willing to set my goals of learning in this model.	1	Accepted
	2. I am pleased to determine the objectives of the during class activities.	1	Accepted
	3. I am happy to determine the objectives of the after class tasks.	1	Accepted
	4. I feel good to set the objectives of the independent project.	1	Accepted
	B. Defining the learning progressions		
Items 5-7: To verify if the students are willing to take responsibilities for expressing capabilities of defining the learning progressions by setting the expected progression scores specified in each item. (Note: Setting the expected progression scores of the during class activities is not performed in class)	5. I am willing to set the expected progression scores of the English oral communication ability test.	1	Accepted
	6. I am happy to define the expected progression scores of the tasks.	1	Accepted
	7. I feel good to set the expected progression scores of the project.	1	Accepted
	C. Taking the initiative		
Items 8-9: To verify if the students are willing to take responsibilities for expressing capabilities of taking the initiative <u>after</u> or with initiating the actions by the instructor or peers. Taking the initiative in this way is categorized as self-initiation <u>after</u> instructor-or-peer initiation. *In this study, the students self-initiate or self-start to take	8. After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, guidelines, choices, or ideas, I am willing to <u>self-initiate* to take common actions</u> that are necessary for completing the works according to the work prompts (e.g. forming the group or pair, making short notes, etc.) and new actions	0.33	Revised

<p>common and new actions, make new choices, ideas, or ways in expressing responsibilities and capabilities for their own learning which can possibly occur after (with) or without instructor-or-peer initiation.</p>	<p>that I newly create after the instructor and peers guide or initiate to do so (e.g. encouraging my peers to work, making new choices, ideas, or ways, being a leader or a volunteer in a group or pair work, asking the questions to stimulate other students or the instructor to clarify or correct some mistakes, problems, and unclear points, etc.) for completing the <u>during class activities</u>.</p>		
	<p>9. After the instructor or peers start taking actions for learning and teaching, I am happy to <u>self-initiate to take common actions</u> that are necessary for completing the works according to the work prompts and new actions that I newly create after the instructor and peers guide or initiate to do so for completing the <u>after class tasks</u>.</p>	0.33	Revised
<p>Items 10-11: To verify if the students are willing to take responsibilities for expressing capabilities of taking the initiative <u>without</u> initiating the actions by the instructor or peers. Taking the initiative in this way is categorized as self-initiation <u>without</u> instructor-or-peer initiation. (*Students' taking common actions in the aspect of taking the initiative are not examined because what the students do without instructor's or peers' initiation or actions is considered new actions.)</p>	<p>10. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am willing to <u>self-initiate to take new actions</u>* that I newly create and the instructor and peers do not guide or initiate to do so (e.g. browsing the Internet to find information to support your purposes, etc.) for completing the <u>during class activities</u>.</p>	0.67	Accepted



	11. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am happy to <u>self-initiate to take</u> new actions that I newly create and the instructor and peers do not guide or initiate to do so (e.g. browsing the Internet to find information to support your purposes, consulting with experts in Computer Engineering and related fields, etc.) for completing the <u>after class tasks</u> .	0.67	Accepted
12. To verify if the students are willing to take responsibilities for expressing capabilities of taking the initiative in doing the project with and/or without initiating the actions by the instructor or peers.	12. I am happy to self-initiate to take common and new actions, propose, and implement <u>new</u> choices, ideas, and ways for completing my <u>project</u> .	1	Accepted
Items 13-15: To verify if the students are willing to take responsibilities for expressing capabilities of deciding to select appropriate methods or techniques, communication strategies, and resources.	13. I am willing to make decisions on selecting the appropriate methods or techniques (e.g. work cooperation: collaboration or cooperation, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the</u> <u>during class activities</u> .	0.33	Revised
	14. I am pleased to make decisions on selecting the appropriate methods or techniques (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc., work cooperation: collaboration or cooperation, data collection: questionnaires, interviews, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the</u> <u>tasks</u> .	0.33	Revised
	15. I am happy to make decisions on selecting the appropriate	0.33	Revised

	<p>methods or techniques (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc., work cooperation: collaboration or cooperation, data collection: questionnaires, interviews, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the project</u>.</p>		
<p>16. To verify if the students are willing to take responsibilities for expressing capabilities of choosing the appropriate communication strategies to overcome communication problems or breakdowns, especially relevant to range, accuracy, fluency, interaction, coherence, and pronunciation, and maintain the conversations to achieve their communication purposes.</p>	<p>16. I am willing to choose the appropriate communication strategies or language expressions related to communication strategies to overcome communication problems or breakdowns, especially relevant to range, accuracy, fluency, interaction, coherence, and pronunciation, and maintain the conversations in order to achieve the communication purposes.</p>	0.67	Accepted
<p>Items 17-19: To verify if the students are willing to take responsibilities for expressing capabilities of monitoring the procedure of doing the activities, the tasks, and the project.</p>	<p>17. I feel good to check my steps of doing <u>the activities</u> in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources in the learning and teaching steps of “Rehearsal” and “Performance” on the student log (for the during class activity).</p>	0.33	Revised
	<p>18. I am happy to check my steps of doing <u>the tasks</u> in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources on the student log (for the task and the project).</p>	0.33	Revised
	<p>19. I am willing to check my steps of doing <u>the project</u> in aspects</p>	0.33	Revised

	of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources on the student log (for the task and the project).		
Items 20-21: To verify if the students are willing to take responsibilities for expressing capabilities of evaluating the tasks and the project in terms of quality and English oral communication ability.	20. I am pleased to evaluate the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	1	Accepted
	21. I am happy to evaluate the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	1	Accepted
Items 22-23: To verify if the students are willing to take responsibilities for expressing capabilities of making reflection on their tasks and the project in terms of quality and English oral communication ability.	22. I feel good to make reflection on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	1	Accepted
	23. I am willing to make reflection on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	1	Accepted
	A. Determining the goals and the objectives		
Items 24-27: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of determining the goals and the objectives in learning and doing the activities, the tasks, and the project specified in each item.	24. I am confident I can set my goals of learning in this model.	1	Accepted
	25. I am sure I can determine the objectives of the <u>during class activities</u> .	1	Accepted
	26. I think I can determine the objectives of the <u>after class tasks</u> .	1	Accepted
	27. I am sure I can set the objectives of the <u>independent project</u> .	1	Accepted
	B. Defining the learning progressions		

<p>Items 28-30: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of defining the learning progressions by setting the expected progression scores specified in each item. (Note: Setting the expected progression scores of the during class activities is not performed in class)</p>	28. I am confident I can set the expected progression scores of the English oral communication ability test.	1	Accepted
	29. I am sure I can define the expected progression scores of the tasks.	1	Accepted
	30. I think I can set the expected progression scores of the project.	1	Accepted
	C. Taking the initiative		
<p>Items 31-32: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of taking the initiative <u>after</u> or with initiating the actions by the instructor or peers. Taking the initiative in this way is categorized as self-initiation <u>after</u> instructor-or-peer initiation.</p>	31. After the instructor or peers start taking actions for learning and teaching such as giving explanations, examples, guidelines, choices, or ideas, I am sure I can <u>self-initiate to take common actions</u> that are necessary for completing the works according to the work prompts (e.g. forming the group or pair, making short notes, etc.) and new actions that I newly create after the instructor and peers guide or initiate to do so (e.g. encouraging my peers to work, making new choices, ideas, or ways, being a leader or a volunteer in a group or pair work, asking the questions to stimulate other students or the instructor to clarify or correct some mistakes, problems, and unclear points, etc.) for completing the <u>during class activities</u> .	0.33	Revised

	32. After the instructor or peers start taking actions for learning and teaching, I think I can <u>self-initiate to take common actions</u> that are necessary for completing the works according to the work prompts and new actions that I newly create after the instructor and peers guide or initiate to do so for completing the <u>after class tasks</u> .	0.33	Revised
Items 33-34: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of taking the initiative <u>without</u> initiating the actions by the instructor or peers. Taking the initiative in this way is categorized as self-initiation <u>without</u> instructor-or-peer initiation.	33. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am confident I can <u>self-initiate to take</u> new actions that I newly create and the instructor and peers do not guide or initiate to do so (e.g. browsing the Internet to find information to support your purposes, etc.) for completing the <u>during class activities</u> .	0.33	Revised
	34. Although the instructor or peers <u>do not</u> take actions for learning and teaching, I am confident I can <u>self-initiate to take</u> new actions that I newly create and the instructor and peers do not guide or initiate to do so (e.g. browsing the Internet to find information to support your purposes, consulting with experts in Computer Engineering and related fields, etc.) for completing the <u>after class tasks</u> .	0.33	Revised
35. To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of taking the initiative in doing the project with and/or without initiating the	35. I am confident I can self-initiate to take common and new actions, propose, and implement <u>new</u> choices, ideas, and ways for completing my <u>project</u> .	0.67	Accepted

actions by the instructor or peers.			
Items 36-38: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of deciding to select appropriate methods or techniques, communication strategies, and resources.	36. I am confident I can make decisions on selecting the appropriate methods or techniques (e.g. work cooperation: collaboration or cooperation, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the during class activities</u> .	0.33	Revised
	37. I am sure I can make decisions on selecting the appropriate methods or techniques (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc., work cooperation: collaboration or cooperation, data collection: questionnaires, interviews, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the tasks</u> .	0.33	Revised
	38. I think I can make decisions on selecting the appropriate methods or techniques (e.g. the use of social platforms: Google Hangouts, Skype, Facebook Messenger, etc., work cooperation: collaboration or cooperation, data collection: questionnaires, interviews, etc.), and resources (e.g. websites, textbooks, brochures, etc.) to achieve <u>the project</u> .	0.33	Revised
39. To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of choosing the appropriate communication strategies to overcome communication problems or	39. I am confident I can choose the appropriate communication strategies or language expressions related to communication strategies to overcome communication problems or breakdowns,	0.67	

breakdowns, especially relevant to range, accuracy, fluency, interaction, coherence, and pronunciation, and maintain the conversations to achieve their communication purposes.	especially relevant to range, accuracy, fluency, interaction, coherence, and pronunciation, and maintain the conversations in order to achieve the communication purposes.		
Items 40-42: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of monitoring the procedure of doing the activities, the tasks, and the project.	40. I am sure I can check my steps of doing <u>the activities</u> in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources in the learning and teaching steps of “Rehearsal” and “Performance” on the student log (for the during class activity).	0.33	Revised
	41. I am sure I can check my steps of doing <u>the tasks</u> in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources on the student log (for the task and the project).	0.33	Revised
	42. I think I can check my steps of doing <u>the project</u> in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources on the student log (for the task and the project).	0.33	Revised
Items 43-44: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of evaluating the tasks and the project in terms of quality and English oral communication ability.	43. I am confident I can evaluate the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	0.67	Accepted
	44. I am sure I can evaluate the quality and English oral communication ability of my	0.67	Accepted

	<u>project</u> in different aspects specified in the task and project rubric.		
Items 45-46: To verify if the students are confident in their abilities to take responsibilities for expressing capabilities of making reflection on their tasks and the project in terms of quality and English oral communication ability.	45. I think I can make reflection on the quality and English oral communication ability of my <u>tasks</u> in different aspects specified in the task and project rubric.	0.67	Accepted
	46. I am confident I can make reflection on the quality and English oral communication ability of my <u>project</u> in different aspects specified in the task and project rubric.	0.67	Accepted
47. To verify if the students are independent of instructor and peer control of learning.	47. * I like the instructor and/or peers to support me all the time so that I can be confident in my learning.	1	Accepted
48. To verify if the students are independent of instructor and peer control of determining the goals of learning in the PBBCSI model and the objectives of doing the works.	48. I like the instructor and/or peers to decide the goals of learning in the PBBCSI model and the objectives of doing the works at all times.	1	Accepted
49. To verify if the students are independent of instructor and peer control of setting their learning progressions.	49. I want the instructor and/or peers to set the expected progression scores of my tasks, project, and the English oral communication ability test.	1	Accepted
50. To verify if the students are independent of instructor and peer control of taking the initiative.	50. I want the instructor and/or peers to offer new choices, ideas, and ways for learning and completing the works all the time.	0.67	Accepted
51. To verify if the students are independent of instructor and peer control of selecting methods or techniques, language use (communication strategies and appropriate use of range, accuracy, fluency, interaction,	51. I prefer my instructor and/or peers to select the methods or techniques, language use, and sources for learning all the time.	0.67	Accepted



coherence, and pronunciation), and sources for learning.			
52. To verify if the students are independent of instructor and peer control of monitoring the procedure of doing the works in aspects of time, place, pace, respondents, and resources.	52. I want the instructor and/or peers to check my working steps in aspects of time (duration of doing each step), place, pace (duration of doing the entire work), respondents, and resources during and after classes.	0.67	Accepted
Items 53-55: To verify if the students are independent of instructor and peer control of evaluating what they have acquired and performed for their learning.	53. I believe that evaluation on the works needs to be done by the instructor and/or peers only.	1	Accepted
	54. *I like the instructor and/or peers to identify weak points and errors of my works and English oral communication ability.	0.67	Accepted
	55. *I prefer the instructor and/or peers to correct weak points and errors of my works and English oral communication ability.	0.67	Accepted
57. To verify if the students prefer to discuss the questions in the learning and teaching step “before class preparation” to help them activate their background knowledge and interest before class.	56. Discussing the questions in the discussion box on Facebook <u>before class</u> activates my background knowledge and interest in the topic that I am going to study in each unit.	0.67	Accepted
58. To verify if the students prefer the learning and teaching steps before and during classes to make them <u>willing</u> to take responsibilities for completing the after class tasks.	57. The learning and teaching steps <u>before and during classes</u> make me <u>willing</u> to take responsibilities for expressing capabilities in completing the after class tasks.	0.67	Accepted
59. To verify if the students prefer the learning and teaching steps before and during classes to make them <u>confident</u> to take responsibilities for completing the after class tasks.	58. The learning and teaching steps <u>before and during classes</u> make me <u>confident in my abilities</u> to take responsibilities for expressing capabilities in completing the after class tasks.	0.67	Accepted
60. To verify if the students prefer the learning and teaching	59. The eight learning and teaching steps <u>before, during,</u>	0.67	Accepted

<p>steps before, during, and after classes implemented in the first four phases of the PBBCSI model to help develop their <u>English oral communication ability</u> for doing the after class tasks and the independent project.</p>	<p><u>and after classes</u> which are implemented in the first four phases of the PBBCSI model “1) <i>initiation</i>, 2) <i>inquiry</i>, 3) <i>analysis</i>, 4) <i>solution</i>” help develop my <u>English oral communication ability</u> for doing the after class tasks and continuing carrying out the independent project in the independent learning weeks (weeks 12-15).</p>		
<p>61. To verify if the students prefer the learning and teaching steps before, during, and after classes implemented in the first four phases of the PBBCSI model to help develop their <u>responsibilities</u> for doing the after class tasks and the independent project.</p>	<p>60. The eight learning and teaching steps <u>before, during, and after classes</u> which are implemented in the first four phases of the PBBCSI model help develop my <u>responsibilities</u> for doing the after class tasks and continuing carrying out the independent project in the independent learning weeks (weeks 12-15).</p>	0.67	Accepted
<p>62. To verify if the students prefer the learning and teaching steps before, during, and after classes implemented in the first four phases of the PBBCSI model help develop their <u>capabilities</u> for doing the after class tasks and the independent project.</p>	<p>61. The eight learning and teaching steps <u>before, during, and after classes</u> which are implemented in the first four phases of the PBBCSI model help develop my <u>capabilities</u> for doing the after class tasks and continuing carrying out the independent project in the independent learning weeks (weeks 12-15).</p>	0.67	Accepted
<p>63. To verify if the students prefer the six phases of the PBBCSI model to help develop their <u>English oral communication ability</u> for completing all the works.</p>	<p>62. The six phases of the PBBCSI model “1) <i>initiation</i>, 2) <i>inquiry</i>, 3) <i>analysis</i>, 4) <i>solution</i>, 5) <i>assessment and reflection</i>, and 6) <i>revision and publication</i>” help develop my English oral communication ability.</p>	0.67	Accepted
<p>64. To verify if the students prefer the six phases of the PBBCSI model to help develop</p>	<p>63. The six phases of the PBBCSI model help develop my</p>	0.67	Accepted

their <u>responsibilities</u> for completing all of the works.	responsibilities for completing all of the works.		
65. To verify if the students prefer the six phases of the PBBCSI model to help develop their <u>capabilities</u> in completing all of the works.	64. The six phases of the PBBCSI model help develop my capabilities in completing all of the works.	0.67	Accepted
66. To verify if the students get the benefits from instructor's comments and suggestions when they attend the instructor-student project consultation.	65. <b>**</b> In case, I attended the instructor-student project consultation, I benefit from instructor's comments and suggestions. <i>(Note: if you <u>did not</u> attend the instructor-student project consultation, please skip this item.)</i>	1	Accepted
67. To verify if the students get the benefits from peers' comments and suggestions about their after class tasks and the independent project on Facebook.	66. <b>**</b> I benefit from peers' comments and suggestions about my after class tasks and the independent project on Facebook.	0.67	Accepted
68. To verify if the students get the benefits from instructor's comments and suggestions about their after class tasks and independent project on the task and project rubric.	67. <b>**</b> I benefit from instructor's comments and suggestions about my after class tasks and independent project on the task and project rubric.	0.67	Accepted
69. To verify if the students get the benefits from instructor's and peers' comments and suggestions about their independent project in the phase "5) assessment and reflection."	68. <b>**</b> I benefit from instructor's and peers' comments and suggestions about my independent project in the phase "5) <i>assessment and reflection.</i> "	1	Accepted
70. To verify if the students prefer the wrap-up at the end of each unit to help them better understand the concept of each phase for carrying out the independent project.	69. The wrap-up at the end of each unit helps me better understand the concept of each phase for performing the independent project.	1	Accepted
71. To verify if the students think that the PBBCSI model improves their English oral communication ability.	70. <b>**</b> In overall, I think the PBBCSI model improves my English oral communication ability.	1	Accepted

72. To verify if the students think that the PBBCSI model develops their <u>responsibilities</u> for expressing capabilities of English oral communication in the six aspects of learner autonomy to perform the activities, the tasks, and the project for their independent learning.	71. I think the PBBCSI model has increased my <u>responsibilities</u> or my willingness to take responsibilities for expressing capabilities of English oral communication in the six aspects of learner autonomy to perform the activities, the tasks, and the project for my independent learning.	0.67	Accepted
73. To verify if the students think that the PBBCSI model develops their capabilities or their confidence in abilities to take responsibilities for expressing capabilities of English oral communication in the six aspects of learner autonomy to perform the activities, the tasks, and the project for their independent learning.	72. I think the PBBCSI model has enhanced my <u>capabilities</u> or my confidence in abilities to take responsibilities for expressing capabilities of English oral communication in the six aspects of learner autonomy to perform the activities, the tasks, and the project for my independent learning.	0.67	Accepted
74. To verify if the students get the benefits from the PBBCSI model for their future careers.	73. I think the PBBCSI model can give me benefits for my future careers.	1	Accepted
75. The LAQ is constructed in accordance with the definitions of learner autonomy in this study.		1	Accepted
76. The LAQ is constructed in accordance with the PBBCSI model or framework.		1	Accepted
77. The LAQ (English version) is consistent with the LAQ (Thai version).		1	Accepted
<b>OVERALL</b>		0.72	Accepted

Table 56: Experts' Validation of the Tasks and the Project

Items	IOC	Results
I. Objectives		
1. The unit objectives are appropriate.	1	Accepted
2. The unit objectives are achievable.	1	Accepted
3. The unit objectives are relevant to the contents.	1	Accepted
II. Contents		
4. The contents are relevant to the PBBCSI model.	0.67	Accepted
5. The sequence of the contents is appropriate.	0.67	Accepted
6. The contents of each unit support one another to help the students perform the tasks and the project from phase to phase.	1	Accepted
Criteria	IOC	Remarks
III. The instructional materials, the before and during class activities, the after class tasks, and the project		
7. The materials, the activities, and the task match the unit objectives.	1	Accepted
8. The project matches the goals of the PBBCSI model.	1	Accepted
9. The information on the group of "English Conversation (for the Computer Engineering students)" on Facebook is well-organized.	1	Accepted
10. The group of "English Conversation (for the Computer Engineering students)" on Facebook can support the students to do the during class activity and the after class tasks and the project.	1	Accepted
11. The instructions of the activities, tasks, and the project are clear and appropriate.	1	Accepted
12. The materials, the activities, the tasks, and the project are meaningful and useful to students.	1	Accepted
13. The tasks in each unit support the students to perform the project from phase to phase.	0.67	Accepted

14. The arrangement of students to perform three pair tasks (2 students) and the project (1 student), respectively supports the students to do the project independently.	1	Accepted
15. The time allotment of the before class activity (i.e. discussing the questions in the discussion box on Facebook) is appropriate.	1	Accepted
16. The time allotment of during class activities is appropriate.	0.67	Accepted
17. The time allotment of each after class task is appropriate.	1	Accepted
18. The time allotment of giving comments on their peers' tasks and projects on Facebook is appropriate.	1	Accepted
19. The materials, resources, the activities, the tasks, and the project are authentic.	1	Accepted
IV. Lesson plan and the instructional manual		
20. The lesson plan is related to the PBBCSI model.	1	Accepted
21. The instructional manual is in accordance with the contents, the materials, and the lesson plan.	1	Accepted
22. The instructional manual provides clear steps of doing the activities and the tasks.	1	Accepted
V. The assessment and evaluation		
23. The assessment of the tasks and the project is appropriate.	0.67	Accepted
24. The assessment of students' English oral communication ability is appropriate.	0.67	Accepted
25. The measurement of students' levels of learner autonomy is appropriate.	1	Accepted
<b>OVERALL</b>	<b>.92</b>	<b>Accepted</b>

Table 57: Experts' Validation of the Student Log

1. Student log (for the during class activity) (It was deleted in the main study)

Aspects of learner autonomy	Objectives	Items	IOC	Remarks
I. Determining the goals and the objectives	1.1 To see if the students are able to set the goals of learning in the PBBCSI model and the objectives of the during class activity of the learning and teaching steps "Rehearsal."	I. Setting the goal(s) and objectives 1. Goal(s) of learning in the PBBCSI model 2. Driving question 3. Deeper questions 4. Objectives	1	Accepted
	1.2 To see if the students are able to set		1	Accepted

	the driving question (to initiate the independent project) and deeper questions (to investigate more information for answering the driving question) which are important for performing the independent project.			
II. Defining the learning progressions	2.1 To see if the students are able to define their learning progressions on each task and the project.	II. Setting the expected progression scores on the task and project rubric	1	Accepted
III. Taking the initiative	3.1 To see if the students are able to take the initiative in terms of self-initiation with (after) instructor-or-peer initiation or self-initiation without instructor-or-peer initiation on their planning the procedure (working steps).	III. Planning the procedure	1	Accepted
IV. Making decisions on selecting methods or techniques, communication strategies, and resources	4.1 To see if the students are able to decide to select useful methods or techniques, communication strategies, and resources for performing each task and the project.	III. Planning the procedure	1	Accepted
V. Monitoring the procedure of doing the activities, the tasks, and the project	5.1 To see if the students are able to monitor the steps of performing each task and the project.	IV. Monitoring the procedure	1	Accepted
-	-	V. Performing the activity	-	-

VI. Evaluating what has been acquired and performed in the tasks and the project	-	The students do not perform this aspect during class.	-	-
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## 2. Student log (for the online task and the project)

Aspects of learner autonomy	Objectives	Items	IOC	Remarks
I. Determining the goals and the objectives	1.1 To see if the students are able to set the goals of learning in the PBBCSI model and the objective of the during class activity of the learning and teaching steps “Expansion” and “Evaluation.”	I. Setting the goal(s) and objectives 1. Goal(s) of learning in the PBBCSI model 2. Driving question 3. Deeper questions 4. Objectives	1	Accepted
	1.2 To see if the students are able to set the driving question (to initiate the independent project) and deeper questions (to investigate more information for answering the driving question) which are important for performing the independent project.		1	Accepted
II. Defining the learning progressions	2.1 To see if the students are able to define their learning progressions on each task and the project.	II. Setting the expected progression scores on the task and project rubric	1	Accepted
III. Taking the initiative	3.1 To see if the students are able to take the initiative in terms of self-initiation with (after)	III. Planning the procedure	1	Accepted



	instructor-or-peer initiation or self-initiation without instructor-or-peer initiation on their planning the procedure (working steps).			
IV. Making decisions on selecting methods or techniques, communication strategies, and resources	4.1 To see if the students are able to decide to select useful methods or techniques, communication strategies, and resources for performing each task and the project.	III. Planning the procedure	1	Accepted
V. Monitoring the procedure of doing the activities, the tasks, and the project	5.1 To see if the students are able to monitor the steps of performing each task and the project.	IV. Monitoring the procedure	1	Accepted
VI. Evaluating what has been acquired and performed in the tasks and the project	6.1 To see if the students are able to assess (evaluate) and reflect on their tasks and the project in order to identify their weak points and improve their works better.	VI. Evaluating the task or the project 1) Self-assessment 2) Reflection	1	Accepted
		<b>OVERALL</b>	<b>1</b>	<b>Accepted</b>

*Table 58: Experts' Validation of the Face-to-face and Online Observation Checklists*

Before Class Observation Checklist (It was deleted in the main study.)

(Discussing about the questions in the discussion box on Facebook)

Aspects of learner autonomy	Objectives	Items	IOC	Results
Six aspects of learner autonomy	1. The before class observation checklist supports the instructor to observe the possible evidence of each aspect of learner autonomy.	1. Incidents in six aspects of learner autonomy	0.67	Accepted

During Class Observation Checklist

(It became the face-to-face observation checklist in the main study.)

Aspects of learner autonomy	Objectives	Items	IOC	Remarks
I. Determining the goals and the objectives	1.1 To see if the students are willing and able to set the objectives of the activities and the goals of learning during learning and doing the during class activities.	1.1 Students actively talk about and complete the objectives of the activities (set by the instructor and the students) and the goals of learning (set by the instructor and the students) during learning and doing the during class activities.	1	Accepted
	1.2 To see more if the students are willing and able to set the objectives of the activities and the goals of learning during learning and doing the during class activities.	1.2 Other possible incidents:	1	Accepted
II. Defining the learning progressions <sup>3</sup>	2.1 To see if the students are willing and able to define their learning progressions on their project by showing their	2.1 Students show their project progressions (e.g. submitting the draft or concept of the driving question, the deeper	1	Accepted

	project progressions according to the optional due date.	questions, data collection, etc.) according to the optional due date specified in the learning schedule of the PBBCSI syllabus.		
	2.2 To see if the students are willing and able to talk about the learning progressions on their task and project quality and the English oral communication ability in different aspects specified in the task and project rubric during class.	2.2 Students talk about the learning progressions on their task and project quality and the English oral communication ability in different aspects specified in the task and project rubric.	1	Accepted
	2.1 To see more if the students are willing and able to talk about or define the learning progressions in other ways during class.	2.3 Other possible incidents:		
III. Taking the initiative	3.1 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	3.1 With (After) instructor-or-peer initiation*, the students actively self-initiate or self-start to take common actions that are necessary for completing the activities according to the work prompts (e.g. forming the group or pair, making short notes, etc.) /or new actions that they newly create for learning (e.g. encouraging friends to participate in studying or doing the activities, trying to become an administrator or facilitator of the class, etc.)	1	Accepted
	3.2 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions	3.2 With (After) instructor-or-peer initiation, the students actively ask the questions to initiate or stimulate other students and/or the instructor to	1	Accepted

	actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	clarify or correct some problems, mistakes, and unclear points, or reflect more on some aspects ( <b>excluding</b> asking for clarifying the definitions of words).		
	3.3 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	3.3 With (After) instructor-or-peer initiation, the students actively offer new ideas or choices apart from instructor's and peers' initiation (e.g. choices of topics, technologies, websites, methods or techniques, etc.) to improve their learning and activities.	1	Accepted
	3.4 To see if the students are willing and able to self-initiate or self-start to take new actions actively without any instructor's or peers' initiation in order to find the evidence of self-initiation without instructor-or-peer initiation.	3.4 Without instructor-or-peer initiation*, the students actively self-initiate or self-start to take new actions for learning and doing the activities (e.g. browsing the Internet to find information to serve their proposes, reading the lessons and doing the exercises before class or before the instructor initiates to do so, etc.).	0.67	Accepted
	3.5 To see more if the students are willing and able to self-initiate or self-start to take common actions or new actions actively without and with (after) instructor's or peers' initiation in order to find the evidence of self-initiation without and with (after) instructor-or-peer initiation.	3.5 Other possible incidents:	1	Accepted

IV. Making decisions on selecting methods or techniques, communication strategies, and resources	4.1 To see if the students are willing and able to decide to select useful methods or techniques, communication strategies, and resources for performing the tasks and the project.	4.1 Students actively talk about selecting the appropriate methods or techniques, communication strategies, and resources for their learning and activities.	1	Accepted
	4.2 To see more if the students are willing and able to decide to select useful methods or techniques, communication strategies, and resources for performing the tasks and the project.	4.2 Other possible incidents:	1	Accepted
V. Monitoring the procedure of doing the activities, the tasks, and the project	5.1 To see if the students are willing and able to monitor the steps of performing the tasks and the project.	5.1 Students actively check the steps of doing the during class activities on the “ <i>student log (for the during class activity).</i> ”	0.67	Accepted
	5.2 To see more if the students are willing and able to monitor the steps of performing the tasks and the project.	5.2 Other possible incidents:	1	Accepted
VI. Evaluating what has been acquired and performed in the tasks and the project <sup>4</sup>	6.1 To see if the students are willing and able to participate in giving feedback and comments with the instructor.	6.1 Students may participate in giving feedback and comments with the instructor.	1	Accepted
	6.2 To see more if the students are willing and able to participate in giving feedback and comments with the instructor.	6.2 Other possible incidents:	1	Accepted

## After Class Observation Checklist

(It became the online observation checklist in the main study.)

Aspects of learner autonomy	Objectives	Items	IOC	Results
I. Determining the goals and the objectives	1.1 To see if the students are willing and able to give comments on setting the objectives of the tasks or the goals of learning after class.	1.1 Students actively give comments on setting the objectives of the task (set by the instructor and the students) or the goals of learning (set by the instructor and the students).	1	Accepted
	1.2 To see more if the students are willing and able to do as in item 1.1	1.2 Other possible incidents:	1	Accepted
II. Defining the learning progressions	2.1 To see if the students are willing and able to give comments in relation to the learning progressions scores on the tasks or the project after class.	2.1 Students actively give comments in relation to the learning progression scores on the tasks or the project.	1	Accepted
	2.2 To see more if the students are willing and able to do as in item 2.1.	2.2 Other possible incidents:	1	Accepted
III. Taking the initiative	3.1 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	3.1 With (After) instructor-or-peer initiation*, the students actively self-initiate or self-start to take common actions that are necessary for completing the activities according to the work prompts (e.g. forming the group or pair, giving comments, etc.) or new actions that they newly create for learning (e.g. encouraging friends to give comments, trying to become an administrator or facilitator of the English	1	Accepted

		Conversation group on Facebook, etc.).		
	3.2 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	3.2 With (After) instructor-or-peer initiation, the students actively ask the questions to initiate/stimulate the owners of the task or the project, and/or other students to clarify or correct some problems, mistakes, and unclear points, or reflect more on some aspects ( <b>excluding</b> asking for clarifying the definitions of words).	1	Accepted
	3.3 To see if the students are willing and able to self-initiate or self-start to react to instructor's or peers' initiation or actions actively in order to find the evidence of self-initiation with (after) instructor-or-peer initiation.	3.3 With (After) instructor-or-peer initiation, the students actively offer new ideas or choices apart from instructor's and peers' initiation (e.g. choices of topics, technologies, websites, methods or techniques, etc.) to improve the tasks or the project.	1	Accepted
	3.4 To see if the students are willing and able to self-initiate or self-start to take new actions actively without any instructor's or peers' initiation in order to find the evidence of self-initiation without instructor-or-peer initiation.	3.4 Without instructor-or-peer initiation*, the students actively self-initiate or self-start to take new actions <sup>5</sup> for giving comments on their peers' tasks and the project (e.g. browsing the Internet to find information to support their comments, consulting with experts in Computer Engineering and related fields, etc.).	0.67	Accepted
	3.5 To see more if the students are willing and able to self-initiate or self-start to take common actions or new	3.5 Other possible incidents:	1	Accepted

	actions actively without and with (after) instructor's or peers' initiation in order to find the evidence of self-initiation without and with (after) instructor-or-peer initiation.			
IV. Making decisions on selecting methods or techniques, communication strategies, and resources	4.1 To see if the students are willing and able to give comments on the appropriateness of selecting useful methods or techniques, communication strategies, and resources for performing the tasks and the project.	4.1 Students give comments on the appropriateness of <u>selecting</u> methods or techniques, communication strategies, and resources for doing the tasks or the project.	1	Accepted
	4.2 To see more if the students are willing and able to do as in 4.1.	4.2 Other possible incidents:	1	Accepted
V. Monitoring the procedure of doing the activities, the tasks, and the project	5.1 To see if the students are willing and able to give comments on monitoring the steps of doing the tasks and the project.	5.1 Students actively recommend their friends to recheck the steps of doing the tasks and the project on the student log.	1	Accepted
	5.2 To see more if the students are willing and able to give comments on monitoring the steps of doing the tasks and the project.	5.2 Other possible incidents:	1	Accepted
VI. Evaluating what has been acquired and performed in the tasks and the project	6.1 To see if the students are willing and able to give comments on evaluating the tasks and the project in terms of the task and project quality and the English oral communication ability.	6.1 Students actively give comments in relation to the criteria specified in <i>the task and project rubric</i> in terms of 1) the task and project quality ( <i>i.e. content, organization, authenticity, use of methods or techniques and resources, and reflection</i> ) and 2) the English oral communication ability ( <i>i.e. range, accuracy, fluency,</i>	1	Accepted



		<i>interaction, coherence, and pronunciation).</i>		
	6.2 To see if the students are willing and able to give comments on evaluating whether the tasks and the project can achieve the objectives of the tasks and the project (set by the instructor and the students) or the goals of learning (set by the instructor and the students).	6.2 Students actively give comments on evaluating whether the tasks and the project can achieve the objectives of the tasks and the project (set by the instructor and the students) and the goals of learning (set by the instructor and the students).	1	Accepted
	6.3 To see if the students are willing and able to give comments on how to make the tasks and the project better.	6.3 Students actively give comments on how to make their tasks and the project better.	1	Accepted
	6.4 To see more if the students are willing and able to give comments on evaluating the tasks and the project in terms of the task and project quality and the English oral communication ability.	6.4 Other possible incidents:	1	Accepted
		<b>OVERALL</b>	<b>.87</b>	<b>Accepted</b>

Table 59: Experts' Validation of Semi-Structured Interviews

Objectives	Items	IOC	Results
1. To clarify item 59. (Noted that the number of item changed due to the revision of the Pre-LAQ and Post-LAQ.)	16. *As for communication strategies in forms of language expressions taught during class (circumlocution, asking for clarification, asking for confirmation, and use of fillers and other hesitation devices), what communication strategies do you <i>often</i> <u>and</u> <i>rarely</i> use when performing the works (i.e. the during class activities, the after class tasks, and the independent project)?	1	Accepted
2. To verify/clarify items 60, 63, and 71.	17. Do you think the communication strategies that you have learned and practiced during and after class help develop your <u>English oral communication ability</u> ? A. If yes, how? B. If not, why?	1	Accepted
3. To verify/clarify items 16, 39, 61, 62, 64, 65, 72, and 73.	18. Do you think the communication strategies that you have learned and practiced during, and after class help develop <u>your responsibilities and capabilities</u> in completing the works? A. If yes, how? (Clarifying questions: -What you have learned and practiced or anything else makes you willing to do the works? -What makes you feel confident to do the works?) B. If not, why? (Clarifying questions: -What makes you <u>not</u> willing to do the works? -What makes you feel <u>unsure</u> to do the works?)	1	Accepted

<p>4. To verify/clarify items 60, 63, and 71. (The six aspects are instructed through the eight learning and teaching steps which are implemented in each of the first four phases of the PBBCSI)</p>	<p>19. Do you think the six aspects of learner autonomy which comprise <i>1) determining the goals and the objectives, 2) defining the learning progressions, 3) taking the initiative, 4) making decisions on selecting methods or techniques, communication strategies, and resources, 5) monitoring the procedure of doing the activities, the tasks, and the project, 6) evaluating what has been acquired and performed in the tasks and the project</i> help develop your English oral communication ability?  A. If yes, how?  B. If not, why?</p>	1	Accepted
<p>5. To verify/clarify items 63 and 71.</p>	<p>20. Do you think that the ways and the steps to perform the independent project that you have learned and practiced (e.g. <i>thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc.</i>) for doing the after class tasks and the independent project help develop your <u>English oral communication ability</u>?  A. If yes, how?  B. If not, why?</p>	1	Accepted
<p>6. To verify/clarify items 64 and 65.</p>	<p>21. Do you think that the ways and the steps to perform the independent project that you have learned and practiced (e.g. <i>thinking about the driving question, setting up the deeper questions to get more information for the driving question, collecting data, analyzing the results, etc.</i>) for doing the after class tasks and the independent project help develop your <u>responsibilities and capabilities</u> in completing the works?  A. If yes, how?</p>	1	Accepted

	<p>(Clarifying questions: -What makes you willing to do the works? -What makes you feel confident to do the works?) B. If not, why? (Clarifying questions: -What makes you <u>not</u> willing to do the works? -What makes you feel <u>unsure</u> to do the works?)</p>		
7. To verify/clarify items 8, 9, 31, and 32.	<p>22. After your instructor or friends start taking actions for teaching and learning (e.g. giving explanations, examples, guidelines, choices, or ideas), are you <u>willing and confident to self-initiate to take common actions</u> according to the work prompts (e.g. forming the group or pair, making short notes, etc.) and <u>new actions</u> (e.g. encouraging your friends to work, making <u>new</u> choices, ideas, and ways, being a leader or a volunteer in a group or pair work, etc.) for doing group or pair works? Why or why not?</p>	1	Accepted
8. To verify/clarify items 10, 11, 33, and 34.	<p>23. Although the instructor or friends <u>do not</u> take actions for teaching and learning, are you <u>willing and confident to self-initiate to take common and new actions</u> for doing group or pair works? Why or why not?</p>	1	Accepted
9. To verify/clarify items 12 and 35.	<p>24. Are you <u>willing and confident to self-initiate to take common and new actions, propose, and implement new choices, ideas, and ways</u> for completing your project? Why or why not?</p>	1	Accepted

10. To verify/clarify items 1-74.	25. *What do you <i>like</i> and <i>dislike</i> in the PBBCSI model? Why? What should be improved? (If the informant <u>does not</u> talk about the benefits of the PBBCSI model for his/her future careers, item 11 is asked.)	1	Accepted
To verify/clarify items 74.	26. Does the PBBCSI model give you benefits for your future careers? Why or why not?	1	Accepted
	<b>OVERALL</b>	<b>1</b>	<b>Accepted</b>

Table 60: Experts' Validation of the Task and Project Rubric

Items	IOC	Results
1. The criteria of the two main aspects of the rubric are relevant to the PBBCSI model.	0.67	Accepted
2. The rubric can assess or reflect the objectives of the tasks and the project.	1	Accepted
3. The rubric can assess or reflect the process and the product.	1	Accepted
4. The levels of each criterion are different from each other.	0.33	Revised
5. Of each criterion, the descriptors of each level are clear and appropriate.	0.33	Revised
6. The criteria in the aspect of English oral communication ability are relevant to those of the English oral communication ability test rubric.	1	Accepted
7. The task and project rubric of English version matches with that of Thai version.	0.67	Accepted
<b>OVERALL</b>	<b>.71</b>	<b>Accepted</b>

## APPENDIX K: Sample Unit 1 and Its Task

### Unit 1 Computer Technology for Life

**Job function:** Discussing and exchanging opinions towards computer technology and computer engineering field.

**Unit objectives:** Students should be able to:

A. English oral communication ability

1. Discuss the advantages of preferred computer technology in the video and the problem(s) that the computer technology is used to solve in students' careers, community, or country.
2. Demonstrate the rising-falling intonation of wh-questions.
3. Apply the communication strategy "Asking for clarification" to solve communication problems with the aspects of English oral communication ability (range, accuracy, interaction, and pronunciation).

B. Learner autonomy

4. Select the appropriate methods or techniques, communication strategies, and resources to perform the activity.

[Aspect 4 of learner autonomy: Making decisions on selecting methods or techniques, communication strategies, and resources]

5. Monitor the steps of doing the online task (via the student log).

[Aspect 5 of learner autonomy: Monitoring the task and the project completion procedures]

C. Task and independent project

6. Write the driving question for the task. [Application for their project]
7. Discuss and exchange opinions toward the driving question.
8. Apply the taught communication strategy "Asking for clarification" and the ways to do the project to conduct the online task of the initiation phase.
9. Apply responsibilities, capabilities, and independent learning in the aspects (1, 2, 4, 5, and 6) of learner autonomy for doing the online task of the initiation phase.


(Aspects 1, 2, and 6 of learner autonomy were practiced in the introduction week 2)

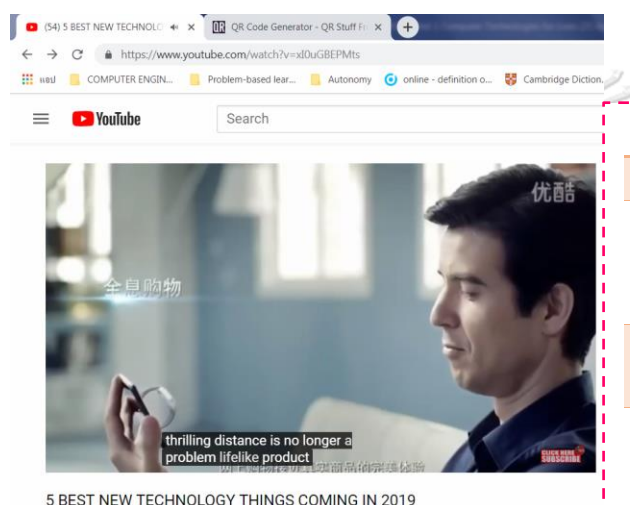
## PART ONE

### Face-to-face environment

#### 1. Preparation



- A.  Watch the video on YouTube at <https://www.youtube.com/watch?v=xI0uGBEPMts> (time: 00.51-02.10 and 04.09-04.59). What kinds of computer technology are mentioned in the video?



#### Video Vocabulary

1. track (v.)	= follow
2. dizziness (n.)	= the quality of confusing and very fast
3. thrilling (adj.)	= very exciting
4. approach (v.)	= come near to something or

- B. **Group work.** From the video, discuss with your group of 3-4 students on **ONE** computer technology that you prefer about its advantages (mentioned in the video and your opinions) and the problem(s) that the computer technology is used to solve in your careers, community, or country. Complete the information in the table on the Google docs via this link <https://bit.ly/2kXJHlr> or this QR code .



	Group ____
Preferred computer technology	Example: Holographic smartphones
Its advantages	
The problem(s) that the computer technology is used to solve	

## 2. Presentation

### Listening

#### A. Vocabulary before listening

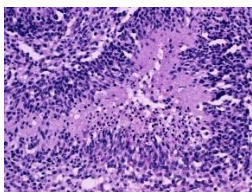
Match the words in column A with their definitions in column B.

Column A	Column B
1. user-friendly (adj.)	A. an injury to a person's body or to an organ inside their body
2. diagnose (v.)	B. to harm something
3. lesion	C. simple to use



*A lesion on a brain*

4. damage (v.)	D. a group of connected cells in parts of body
5. tissue (n.)	E. to recognize and name the exact characters of a disease or other problems by making an examination



*Human brain tissue*

Sources: Adapted from: <https://dictionary.cambridge.org/>  
<https://en.oxforddictionaries.com/definition/online>

Suggested source: <https://www.yourdictionary.com/technology> (“usage notes” about the adjectives

often applied to computer technology)

#### B. Listening comprehension



Listen to a dialogue between two American and Thai colleagues, Tom and Sarah. Answer the following questions.

1. What are the speakers mostly talking about?
2. What fields of computer technology are mentioned in the dialogue?
3. What programs mentioned in the dialogue are used for video calling?
4. What fields of computer technology are the speakers most likely to talk about next?



- 
- Tom:** Hi, Sarah, what are you doing?
- 
- Sarah:** I'm reading a website about computer technology. What do you think about it?
- 
- Tom:** I think it is very wonderful. It makes the world go round and our lives better. Look! What would the world be like if we didn't have computers?
- 
- Sarah:** What do you mean?
- 
- Tom:** Well...Let's imagine! What would you do if you didn't have any computers in your life?
- 
- Sarah:** My life would be more difficult. I couldn't do anything if I didn't have computers. They come into our normal life at home, at work, anywhere, and anytime, so they become an important part of our life. Would you go along with that?
- 
- Tom:** You're absolutely right.
- 
- Sarah:** Why do you think that?
- 
- Tom:** In my opinion, computer technology is very useful in many fields such as communication, business, education, medicine, and so on. For communication, there are many conferencing and chatting programs to do video calls in real time.
- 
- Sarah:** Can you give some examples of those programs?
- 
- Tom:** Yes. They are Google Hangouts, Facebook Messenger, Skype, and Line. These programs are very popular and user-friendly today. Computer technology can also advance medical care more effectively.
- 
- Sarah:** Could you explain that for me?
- 
- Tom:** Okay... Computer technology helps develop medical devices to diagnose and cure patients in more accurate and successful ways. For example, some surgical robots can now investigate lesions on the brain without damaging any of the surrounding tissue.
- 
- Sarah:** Oh! That's amazing. If those robots weren't used in surgery, patients wouldn't be safe. Do you agree with me?
- 
- Tom:** I see your point, but they are very expensive and surgeons need to be well trained in using them.



*A surgical robot*



## Language Expressions

Expressions	
A. Asking for opinions*	
[Asking for and giving opinions are considered developing the English oral communication ability terms of interaction]	
<ul style="list-style-type: none"> <li>• What do you think about .....?</li> <li>• What's your view on .....?</li> <li>• What are your thoughts on .....?</li> <li>• Would you go along with that?</li> <li>• Do you agree with me?</li> </ul>	
B. Giving opinions	Agreeing
<ul style="list-style-type: none"> <li>• I think .....</li> <li>• In my opinion, .....</li> <li>• From my point of view, .....</li> <li>• I believe that .....</li> <li>• I (really) feel that .....</li> </ul>	<ul style="list-style-type: none"> <li>• I (totally) agree with you/that.</li> <li>• You're absolutely right.</li> <li>• Absolutely/ Definitely/ Exactly.</li> <li>• I see your point.</li> </ul>
	Disagreeing
	<ul style="list-style-type: none"> <li>• I'm afraid I disagree.</li> <li>• I don't agree with you/that.</li> <li>• I don't think so.</li> <li>• I don't feel the same.</li> </ul>
	Partly agreeing
	<ul style="list-style-type: none"> <li>• I see your point, but .....</li> <li>• I agree with you to an extent, but...</li> <li>• You make a good point, but .....</li> </ul>
Communication Strategies: Interactional strategies	
C. Asking for clarification	
1. Asking for an explanation or definition of a word and giving its pronunciation	
Developing the English oral communication ability in terms of range and pronunciation	
<ul style="list-style-type: none"> <li>• What does that word mean?</li> <li>• Could you explain that word?</li> <li>• Could you explain the meaning?</li> </ul>	<ul style="list-style-type: none"> <li>• It means.....</li> <li>• Yes, it means.....</li> </ul>

<ul style="list-style-type: none"> <li>• Could you pronounce this word “L-E-S-I-O-N”?</li> <li>• How do you pronounce this word “S-O-P-H-I-S-T-I-C-A-T-E-D”?</li> </ul>	<ul style="list-style-type: none"> <li>• It is pronounced/said .....</li> </ul>
<b>2. Asking for explaining what has been said</b>	
<b>Developing the English oral communication ability in terms of interaction</b>	
<ul style="list-style-type: none"> <li>• What do you mean?</li> <li>• Can you clarify that for me?</li> <li>• Can you explain that concept for us?</li> <li>• Why do you think that?</li> <li>• Why should we check it first?</li> <li>• How do you check it?</li> </ul>	<ul style="list-style-type: none"> <li>• I mean...../ You should...../ I'd like you to.....</li> <li>• Yes, I mean...../ it means.....</li> <li>• OK, it's about.....</li> <li>• Because.....</li> <li>• (First,) you should.....</li> </ul>
<b>Developing the English oral communication ability in terms of accuracy</b>	
<ul style="list-style-type: none"> <li>• Why should we say this sentence in the past tense?</li> </ul>	<ul style="list-style-type: none"> <li>• Because we talk about what we would do in imaginary situations in the present unreal conditional form.</li> </ul>
<ul style="list-style-type: none"> <li>• How can we say this sentence to emphasize the continuing action? “We have developed our project for a few months”</li> </ul>	<ul style="list-style-type: none"> <li>• You can say “We have been developing our project for a few months.”</li> </ul>
<b>3. Asking for a narrowing down of what has been said</b>	
<b>Developing the English oral communication ability in terms of interaction</b>	
<ul style="list-style-type: none"> <li>• Can you be more specific?</li> </ul>	<ul style="list-style-type: none"> <li>• OK. It's about.....</li> <li>• I mean.....</li> </ul>
<b>4. Asking for examples</b>	
<b>Developing the English oral communication ability in terms of interaction</b>	
<ul style="list-style-type: none"> <li>• Can you give/share some examples?</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, they are.....</li> </ul>

\*The speakers ask for clarification and opinions, and give opinions towards those questions to interact in the conversation using the expressions and communication strategies previously mentioned, thereby improving the English oral communication ability in the aspect of interaction.

**Sources:** Adapted from <https://www.englishclub.com/vocabulary/fl-asking-for-opinions.htm>

<https://www.myenglishteacher.eu/blog/asking-giving-opinions-agreeing-disagreeing/>

### Communication Activity: Communication Problems

**A. Pair work.** Each pair (Student A and Student B) is given two cards (A and B) of prompts which have the expressions and the answers mixed together. Then follow these instructions:

1. Identify communication problems (Range, Accuracy, Interaction, and Pronunciation) for each prompt on your card.
2. Student A reads the prompt for each communication problem on card A (and Student B on card B when taking turns).
3. Student B gives responses to those prompts appropriate to the communication problems. The responses can be answers or questions appropriate to those prompts.

Examples:

Student A: Card A

Communication problem	Prompts
Pronunciation	Ex.1: How do you pronounce this word "M-O-O-S"? (question)
Range	Ex.2: It means making something stronger or more extreme. (answer)

Student A:

Communication problem	Prompts
Pronunciation	Ex.1: How do you pronounce this word "M-O-O-S"? (question)
Range	Ex.2: It means making something stronger or more extreme. (answer)

Student B:

Giving possible responses
Ex.1: It is pronounced "muus." (answer)
Ex.2: What does that word mean? OR What does it mean? (question)

**END OF PART ONE**

## PART TWO

### Extra activity for the project: Writing a driving question

**Group work.** Look at the following problems and then write the driving question to find the answers for each problem on the Google docs via this link



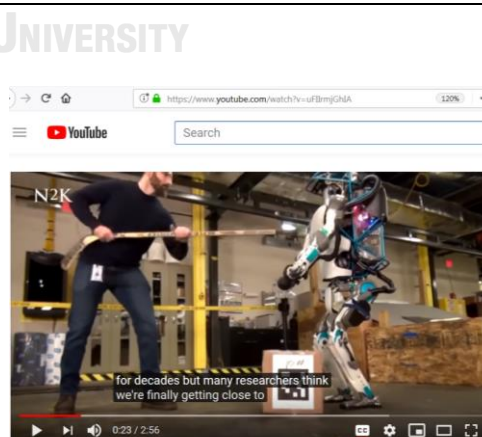
<https://bit.ly/2kLKV9W> or this QR code .

Problems	Driving Questions
Thai students have problems with English speaking.	How can we improve Thai students' English speaking ability?
1. People in Bangkok face problems with air pollution.	
2. People do not trust in net banking security.	
3. There are a lot of car accidents in Thailand.	

### 3. Rehearsal

**A. Group work.**  Watch the video on YouTube at <https://www.youtube.com/watch?v=uFlIrmjGhIA> (time: 00.00-02.56).

- Instructions:
- Part 1: Planning [25 minutes]
- Take these *tentative steps* as your guideline:
- Form a group of 3-4 students in order to discuss and exchange opinions toward the *driving question* "How does AI affect people's lives?" Watch the video.
  - Apply the pronunciation, communication strategy, and expressions you have learned to do this work as appropriate.



The Artificial Intelligence Revolution - 4 Ways AI Will Change Our Lives

<p>3. Make short notes on paper about the information in the video, points or topics you will discuss, communication strategies, and expressions you will use them for your discussion.</p>	
<p>4. At this stage, it is <b>optional</b> for looking or not looking at the notes. All of the group members must discuss this work.</p> <p>Part 2: Performing the activity (discussion) [15 minutes]</p> <p>5. Start discussing and exchanging opinions toward the <b>driving question</b> “<i>How does AI affect people’s lives?</i>”</p>	

#### Guidelines:

- AI is used in .....
- It helps us .....
- It is useful for .....(those who use it for their work)..... because .....
- We would ..... if it were not used in .....

#### 4. Performance

**A. Group work.** From the 4A work, discuss and exchange opinions toward **the driving question “How does AI affect people’s lives?”** **Except looking at the topics, try not to look at your short notes.** (While doing the activity, monitor your English oral communication ability as specified in the ‘task and project rubric’ in the aspect of B. English oral communication ability [English version: <https://shorturl.at/iKPU7> or Thai version: <https://shorturl.at/bmoxT> ]. It is not necessary to self-assess your English oral communication ability.)

#### 5. Feedback

**A.** One group of students is selected to present their discussion in front of the class. The instructor gives feedback and suggestions on their discussion using the ‘task and project rubric’ in **section B: English oral communication ability.**

#### Online environment

#### 6. Expansion

**Pair Task 1.** Find your pair. Find one **problem in your Computer Engineering field, community, or country and what computer technology can solve that problem.** Set up **the driving question** to find the answers for the problem. Perform discussions on the driving question and computer technology that can solve the problem.

**Instructions:**

Take these *tentative steps* as your guideline:

1. Set your expected scores (i.e. learning progressions) before doing this task on **the**



**task and project rubric:** English version: <https://shorturl.at/iKPU7>



or Thai version: <https://shorturl.at/bmoxT>

2. Complete the **student log (for the online task and the project)** [link:



<https://urlzs.com/rPo9j> or ].

3. To investigate the answers, explore the information on the Internet or other resources about the computer technology that can solve the problem.
4. Perform discussions on the driving question and computer technology that can solve the problem.
  - 4.1 Discuss with your pair to **find the problem** in your community or country that interests your pair and set up **the driving question** to investigate the answers for the problem.
  - 4.2 Discuss with your pair to **select the appropriate computer technology**.
  - 4.3 Apply the pronunciation, communication strategy “Asking for clarification”, and expressions you have learned to do this work as appropriate.
5. Select one social interactive platform you prefer such as Facebook Messenger, Google Hangouts, Skype, etc. for doing this task.
6. Record your discussions (on computer screen with audio) in 4.1-4.2 (taken 10-15 minutes) using the Ocam program.
7. Don't read your short notes or scripts. (**Looking at the notes affects your “Fluency”** as specified in the task and project rubric in the aspect of B. English oral communication ability.)

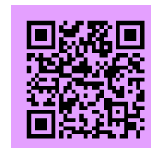


## 7. Evaluation

### Pair Task 1.

#### Instructions:

1. Assess your task using the task and project rubric (English or Thai version).
2. Post your task in the Facebook group “English Conversation (for Computer

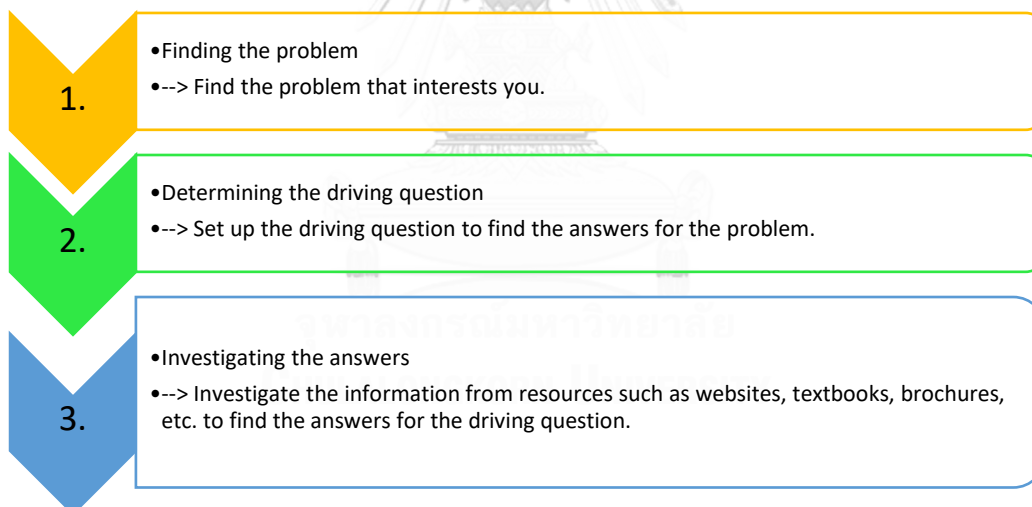


Engineering students) [link: <https://bit.ly/2K6P8zY> or  ].

3. On Facebook, **give comments** on at least one task according to the aspects in **section B: English oral communication ability** of the task and project rubric.

### Wrap up

#### Initiation Phase:



### References:

#### Vocabulary before listening

Adapted from: <https://dictionary.cambridge.org/>  
<https://en.oxforddictionaries.com/definition/online>

#### Pronunciation:

Jotikasthira, P. (2006). *Introduction to the English language system and structure*.  
 Bangkok: Academic Works Publishing Center.

#### Language Expressions:

Adapted from <https://www.englishclub.com/vocabulary/fl-asking-for-opinions.htm>

<https://www.myenglishteacher.eu/blog/asking-giving-opinions-agreeing-disagreeing/>

**Pictures**

A lesion on a brain

[https://www.google.com/search?biw=1280&bih=531&tbm=isch&sa=1&ei=U4RRXK3EKsrSwwTEv7PIDQ&q=brain+injury&oq=brain+injury&gs\\_l=img.3..35i39j0l9.248735.250649..250982...0.0..0.158.730.4j3.....1....1..qws-wiz-img.....0i67.bEmlb1x3eLY#imgrc=4HvyWBNfyCrJtM](https://www.google.com/search?biw=1280&bih=531&tbm=isch&sa=1&ei=U4RRXK3EKsrSwwTEv7PIDQ&q=brain+injury&oq=brain+injury&gs_l=img.3..35i39j0l9.248735.250649..250982...0.0..0.158.730.4j3.....1....1..qws-wiz-img.....0i67.bEmlb1x3eLY#imgrc=4HvyWBNfyCrJtM)

Human brain tissue

[https://www.google.com/search?biw=1280&bih=531&tbm=isch&sa=1&ei=IJRXKfwOYmWvQSLOYS4Ag&q=brain+tissue&oq=brain+tissue&gs\\_l=img.3..35i39j0l9.336823.341223..341462...1.0..0.190.1710.3j10.....1....1..qws-wiz-img.1ojCOpW2Je4#imgrc=ySHvDloIO7RGkM](https://www.google.com/search?biw=1280&bih=531&tbm=isch&sa=1&ei=IJRXKfwOYmWvQSLOYS4Ag&q=brain+tissue&oq=brain+tissue&gs_l=img.3..35i39j0l9.336823.341223..341462...1.0..0.190.1710.3j10.....1....1..qws-wiz-img.1ojCOpW2Je4#imgrc=ySHvDloIO7RGkM)

A surgical robot

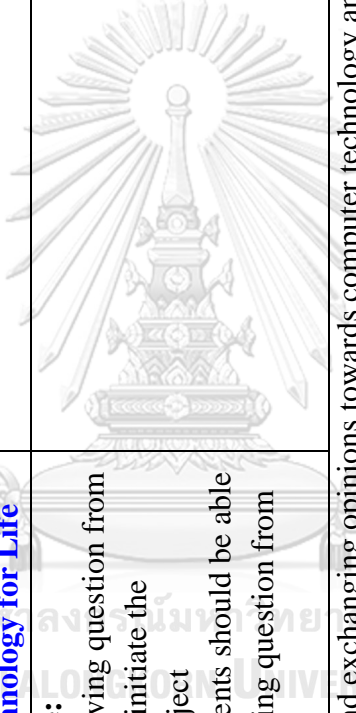
<https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwi1qv7TvZPgAhVKOisKHVsgCblQjRx6BAgBEAU&url=http%3A%2F%2Ffortune.com%2F2016%2F07%2F28%2Fsurgical-robot-development-intuitive-surgical-medtronic-google%2F&psiq=AOvVaw2t1HPLxFPwo65JbCZWod8s&ust=1548868135849254>

**YouTube videos:**


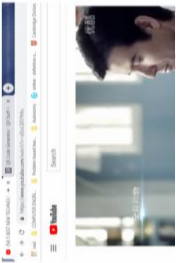
1A <https://www.youtube.com/watch?v=xlOuGBEPMts>

3A <https://www.youtube.com/watch?v=uFIrmjGhIA>

**APPENDIX L: Lesson Plan of Unit 1**

<b>Course &amp; Level</b>	<b>Main Course:</b> English Conversation <b>Proficiency level:</b> Intermediate	Approximate length of unit Approximate number of minutes weekly	2 weeks/ unit 90 minutes/ week
<b>Theme/Topic</b>	<b>Unit 1</b> <b>Computer Technology for Life</b>		
<b>PBBCSI Phase: Initiation (weeks 3-4)</b>	<b>Phase objective:</b> 1) To trigger driving question from the problems to initiate the independent project (Therefore, students should be able to write the driving question from the problems.)		
<b>Job Function</b>	1) Discussing and exchanging opinions towards computer technology and computer engineering field.		
<b>Unit Objectives</b>	<b>Learning objectives</b> Students should be able to: <b>A. English oral communication ability</b> 1) Discuss the advantages of preferred computer technology in the video and the problem(s) that the computer technology is used to solve in students' careers, community, or country. 2) Demonstrate the rising-falling intonation of wh-questions. 3) Apply the communication strategy "Asking for clarification" to solve communication problems with the aspects of English oral communication ability (range, accuracy, interaction, and pronunciation).		

	<p><b>B. Learner autonomy</b></p> <p>4) Select the appropriate methods or techniques, communication strategies, and resources to perform the activity.</p> <p>[Aspect 4 of learner autonomy: Making decisions on selecting methods or techniques, communication strategies, and resources]</p> <p>5) Monitor the steps of doing the online task (via the student log).</p> <p>[Aspect 5 of learner autonomy: Monitoring the task and the project completion procedures]</p> <p><b>C. Task and independent project</b></p> <p>6) Write the driving question for the task. [Application for their project]</p> <p>7) Discuss and exchange opinions toward the driving question.</p> <p>8) Apply the taught communication strategy “Asking for clarification” and the ways to do the project to conduct the online task of the initiation phase.</p> <p>9) Apply responsibilities, capabilities, and independent learning in the aspects (1, 2, 4, 5, and 6) of learner autonomy for doing the online task of the initiation phase.</p> <p>(Aspects 1, 2, and 6 of learner autonomy were practiced in the introduction week 2)</p>
<p><b>Instructor’s and students’ roles</b></p>	<p><b>Instructor’s roles:</b> The instructor sets learning directions for students; is an organizer and administrator of resources for students’ activities; a facilitator and a motivator to have students carry out communicative activities; a monitor while students are doing the activities; and a commentator to give feedback for students’ activities and tasks.</p> <p><b>Students’ roles:</b> Students participate in communicative activities collaboratively and cooperatively with their friends; make use of given learning directions and resources to achieve goals/objectives of the works and tasks.</p>

<b>PART ONE: Week 3</b>									
<b>Face-to-face environment</b>	<p style="text-align: center;"><b>1. Preparation</b></p> <div style="text-align: center;">  <p><b>1. Preparation</b> A. Watch the video on YouTube at <a href="https://www.youtube.com/watch?v=xI0uGBEPMts">https://www.youtube.com/watch?v=xI0uGBEPMts</a> (time: 00:51-02:10 and 04:09-04:59). What kinds of computer technology mentioned in the video?</p> </div> <div style="text-align: center;">  </div> <div style="text-align: center; border: 1px dashed red; padding: 5px; margin: 10px auto; width: fit-content;"> <p><b>Video Vocabulary</b></p> <table border="0"> <tr> <td><b>1. track (v.)</b></td> <td>= follow</td> </tr> <tr> <td><b>2. dizziness (n.)</b></td> <td>= the quality of confusing and very fast</td> </tr> <tr> <td><b>3. thrilling (adj.)</b></td> <td>= very exciting</td> </tr> <tr> <td><b>4. approach (v.)</b></td> <td>= come near to something or</td> </tr> </table> </div> <p style="text-align: center;"><b>Activity 1A</b></p> <p><b>Objective 1:</b> Discuss the advantages of preferred computer technology in the video and the problem(s) that the computer technology is used to solve in students' careers, community, or country.</p> <p><b>Material:</b> Textbook  <b>Time:</b> 10 minutes  <b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor explains the preset goal and learning outcomes on the first page of unit 1.</li> <li>2. The instructor explicitly explains about the video vocabulary in the box.</li> <li>3. Students watch a video about computer technology in the YouTube clip at <a href="https://www.youtube.com/watch?v=xI0uGBEPMts">https://www.youtube.com/watch?v=xI0uGBEPMts</a> (time: 00:51-02:10 and 04:09-04:59).</li> <li>4. Students analyze the information and answer the question “What kinds of computer technology mentioned in the video?”</li> </ol>	<b>1. track (v.)</b>	= follow	<b>2. dizziness (n.)</b>	= the quality of confusing and very fast	<b>3. thrilling (adj.)</b>	= very exciting	<b>4. approach (v.)</b>	= come near to something or
<b>1. track (v.)</b>	= follow								
<b>2. dizziness (n.)</b>	= the quality of confusing and very fast								
<b>3. thrilling (adj.)</b>	= very exciting								
<b>4. approach (v.)</b>	= come near to something or								

B. **Group work.** From the video, discuss with your group of 3-4 students on **ONE** computer technology that you prefer about its advantages (mentioned in the video and your opinions) and the problem(s) that the computer technology is used to solve in your careers, community, or country. Complete the information in the table on the Google docs via this link <https://bit.ly/2KXJfHr> or this QR code



Group _____	
Preferred computer technology Its advantages	Example: Holographic smartphones
The problem(s) that the computer technology is used to solve	



### Activity 1B


**Objective 1:** Discuss the advantages of preferred computer technology in the video and the problem(s) that the computer technology is used to solve in students' careers, community, or country.

**Material:** Textbook

**Time:** 15 minutes

**Steps:**

1. Students discuss with their group on one computer technology that they prefer about its advantages and the problems that the computer technology is used to solve in their careers, company, or country.
2. Students complete the information in the table on the Google docs via the given link
3. Students present their answers and share their ideas to the class.

<p><b>Face-to-face environment</b></p>	<p><b>2. Presentation</b></p>		
<p><b>Listening</b>  <b>Activity 2A: Vocabulary before listening</b></p> <div style="border: 1px solid black; padding: 10px;"> <p><b>2. Presentation</b>  <b>Listening</b>  <b>A. Vocabulary before listening</b>  Match the words in column A with their definitions in column B.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Column A</b></p> <ol style="list-style-type: none"> <li>1. user-friendly (adj.)</li> <li>2. diagnose (v.)</li> <li>3. lesion</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Column B</b></p> <ol style="list-style-type: none"> <li>A. an injury to a person's body or to an organ inside their body</li> <li>B. to harm something</li> <li>C. simple to use</li> <li>D. a group of connected cells in parts of body</li> <li>E. to recognize and name the exact characters of a disease or other</li> </ol> </td> </tr> </table> <div style="text-align: center; margin: 10px 0;">  <p><i>A lesion on a brain</i></p> </div> </div> <p><b>Objective:</b> Identify the meanings of difficult words in order to prepare their background knowledge before listening.</p> <p><b>Materials:</b> Textbook  <b>Time:</b> 5 minutes  <b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Without instructor instructions and support (to elicit learner autonomy behaviors of students), students match the words in column A with their definitions in column B.</li> <li>2. The instructor presents the answers to the class.</li> </ol> <p><b>Answers:</b> 1. C   2. E   3. A   4. B   5. D</p>		<p><b>Column A</b></p> <ol style="list-style-type: none"> <li>1. user-friendly (adj.)</li> <li>2. diagnose (v.)</li> <li>3. lesion</li> </ol>	<p><b>Column B</b></p> <ol style="list-style-type: none"> <li>A. an injury to a person's body or to an organ inside their body</li> <li>B. to harm something</li> <li>C. simple to use</li> <li>D. a group of connected cells in parts of body</li> <li>E. to recognize and name the exact characters of a disease or other</li> </ol>
<p><b>Column A</b></p> <ol style="list-style-type: none"> <li>1. user-friendly (adj.)</li> <li>2. diagnose (v.)</li> <li>3. lesion</li> </ol>	<p><b>Column B</b></p> <ol style="list-style-type: none"> <li>A. an injury to a person's body or to an organ inside their body</li> <li>B. to harm something</li> <li>C. simple to use</li> <li>D. a group of connected cells in parts of body</li> <li>E. to recognize and name the exact characters of a disease or other</li> </ol>		

**Activity 2B: Listening comprehension**

Objective: Identify the main idea and specific information from the listening text.

Materials: Listening text and audio CD

Time: 10 minutes

**Steps:**

1. Without instructor instructions and support (to elicit learner autonomy behaviors of students), students listen to the dialog twice.
2. The instructor presents the answers to the class.

**Answers:**

1. The advantages of computer technology.
2. Communication, business, education, and medicine.
3. Google Hangouts, Facebook Messenger, Skype, and Line.

They are likely to talk about the field of business or education.

**Pronunciation: Rising-Falling intonation on wh-questions**

Expressions	
<p><b>A. Asking for opinions</b> [Asking for and giving opinions are considered developing the English oral communication ability (EOCA) terms of coherence]</p> <ul style="list-style-type: none"> <li>• What do you think about .....?</li> <li>• What's your view on .....?</li> <li>• What are your thoughts on .....?</li> <li>• Would you go along with that?</li> <li>• Do you agree with me?</li> </ul>	
<p><b>B. Giving opinions</b></p> <ul style="list-style-type: none"> <li>• I think .....</li> <li>• In my opinion, .....</li> <li>• From my point of view, .....</li> <li>• I believe that .....</li> <li>• I (really) feel that .....</li> </ul>	
<p><b>Agreeing</b></p> <ul style="list-style-type: none"> <li>• I (totally) agree with you/that.</li> <li>• You're absolutely right.</li> <li>• Absolutely/ Definitely/ Exactly.</li> <li>• I see your point.</li> </ul>	
<p><b>Disagreeing</b></p> <ul style="list-style-type: none"> <li>• I'm afraid I disagree.</li> <li>• I don't agree with you/that.</li> <li>• I don't think so.</li> <li>• I don't feel the same.</li> </ul>	



	<p><b>Objective 2:</b></p> <ol style="list-style-type: none"> <li>1. Demonstrate the rising-falling intonation on wh-questions.</li> </ol> <p><b>Materials:</b> Textbook</p> <p><b>Time:</b> 20 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Students listen and practice the wh-questions, and notice the rising-falling intonation pattern.</li> <li>2. In the notes, the instructor explicitly explains the form of wh-questions with the rising-falling intonation pattern. Students practice the rising-falling intonation pattern on the “Language Expressions.”</li> </ol>
	<p><b>Communication activity: Communication problems</b></p> <p><b>Objective 3:</b> Apply the communication strategy “Asking for clarification” to solve communication problems with the aspects of English oral communication ability (range, accuracy, interaction, and pronunciation).</p> <p><b>Materials:</b> Two cards (A and B) of prompts</p> <p><b>Time:</b> 20 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor explicitly explains the language expressions with examples on pages 6-7 (20 minutes).</li> <li>2. Students find their partners as Student A and Student B to do the pair work.</li> <li>3. The instructor distributes two cards (A and B) of prompts to each pair of the students.</li> <li>4. Student A and Student B identify communication problems for each prompt on their own card.</li> <li>5. Student A reads the prompt for each communication problem on card A.</li> <li>6. Student B gives responses to those prompts appropriate to the communication problems.</li> <li>7. Student A checks each response with the answer key. Then take turn.</li> </ol>

Examples:

Student A: Card A

Communication problem	Prompts
	pronounce this word "M-O-O-S"?
	king something stronger or more

Pronunciation ↑

Range ↑



Student A:


Communication problem	Prompts
<b>Pronunciation</b>	pronounce this word "M-O-O-
<b>Range</b>	king something stronger or


Student B:

Giving possible responses
Ex.1: It is pronounced "muus." (answer)
OR
Ex.2: What does that word mean? What does it mean? (question)

Answers are varied.



Face-to-face environment	PART TWO: Week 4
	<p><b>Extra activity for the project: Writing a driving question</b></p> <p>Objective: 1. Write a driving question from the problem(s).</p> <p><b>Materials:</b> Textbook and Google docs at this QR code </p> <p><b>Time:</b> 20 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor explicitly explains the instructions and the driving question that can be obtained from the problems in a community and country. The driving question encourages us to find the answers to the question and the problems we encounter with.</li> <li>2. The instructor explains the example to write the driving question in the table on page 9.</li> <li>3. Students do this group work.</li> <li>4. Students share their answers on the <b>Google docs following this QR code</b> </li> <li>5. The instructor gives feedback and comments on their answers.</li> </ol> <p>Possible answers:</p> <ol style="list-style-type: none"> <li>1. How/What ways can we solve the air pollution in Bangkok?</li> <li>2. How/What ways do the banks develop their net banking security?</li> <li>3. How/What ways can we protect the car accidents in Thailand?</li> </ol>

Face-to-face environment	<p><b>3. Rehearsal</b></p> <p><b>Activity 3A</b></p> <p>Objectives:</p> <ol style="list-style-type: none"> <li>2. Demonstrate rising-falling intonation of wh-questions.</li> <li>4. Select the appropriate methods or techniques, communication strategies, and resources to perform the activity. [<b>Aspect 4 of learner autonomy</b>: Making decisions on selecting methods or techniques, communication strategies, and resources]</li> <li>7. Discuss and exchange opinions toward the driving question.</li> </ol> <p><b>Materials:</b> 1) Textbook</p> <ol style="list-style-type: none"> <li>2) The video on YouTube at  <a href="https://www.youtube.com/watch?v=uFIrmjGhIA">https://www.youtube.com/watch?v=uFIrmjGhIA</a> (time: 00.00-02.56)</li> </ol> <p><b>Time:</b> 25 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor explicitly explains the instructions.</li> <li>2. Students perform the activity according to the instructions.</li> <li>3. The instructor monitors and gives advice and suggestions if the students request.</li> </ol> <p><b>Answers:</b> Answers are varied.</p>
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Face-to-face environment	4. Performance
	<p><b>Activity 4A</b></p> <p>Objectives:</p> <ol style="list-style-type: none"> <li>2. Demonstrate rising-falling intonation of wh-questions.</li> <li>4. Select the appropriate methods or techniques, communication strategies, and resources to perform the activity. [<b>Aspect 4 of learner autonomy</b>: Making decisions on selecting methods or techniques, communication strategies, and resources]</li> <li>7. Discuss and exchange opinions toward the driving question.</li> </ol> <p><b>Materials:</b> 1) Textbook</p> <p>2) The video on YouTube at  <a href="https://www.youtube.com/watch?v=uFIrmjGhIA">https://www.youtube.com/watch?v=uFIrmjGhIA</a> (time: 00.00-02.56)</p> <p><b>Time:</b> 25 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor explicitly explains the instructions.</li> <li>2. Students perform the activity according to the instructions.</li> <li>3. The instructor monitors and gives advice and suggestions if the students request.</li> </ol> <p>Answers: Answers are varied.</p>

Face-to-face environment	5. Feedback
	<p>Objective:</p> <ol style="list-style-type: none"> <li>1. Understand how to assess their work according to the task and project rubric.</li> </ol> <p><b>Materials:</b> Task and project rubric (focus on the aspect of B. English oral communication ability)</p> <p><b>Time:</b> 20 minutes</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The instructor selects one group of students to present their discussion in front of the class.</li> <li>2. As an example for giving feedback, the instructor gives comments and suggestions for students' performance according to the task and project rubric.</li> </ol> <p>As for the “Expansion” and “Evaluation,” the instructor explicitly explains the instructions for the online task in the “Expansion” and “Evaluation” learning and teaching steps according to the instructions outlined in the textbook.</p> <p>Concerning the evaluation, the students can choose to self-assess their online tasks using the task and product rubric in English or Thai versions since choices and decision making is central to the development of learner autonomy (Benson, 2016), the students decide to select the version appropriate to them. However, the effect of using different versions are not investigated.</p> <p><b>Wrap up:</b></p> <p>The instructor wraps up the key information on the initiation phase specified in the textbook at the end of the class.</p>

<p><b>Online environment</b></p>	<p><b>6. Expansion</b>          There are two main objectives for this learning and teaching step “Expansion”:</p> <ol style="list-style-type: none"> <li>1. To apply the knowledge and capabilities of communication strategies and expressions that the students are equipped from previous learning and teaching steps to conduct the online tasks and the project.</li> <li>2. To take responsibilities and capabilities of acquired English oral communication ability (which is derived from using communication strategies and expressions to overcome communication problems and maintain the conversations to achieve the communication purposes) in <b>six aspects*</b> of learner autonomy for doing the online tasks of each PBBCSI phase and the project.</li> </ol>
<p><b>Online environment</b></p>	<p><b>Pair Task 1 (Online Task 1)</b></p> <p><b>Task objectives:</b> Students should be able to:</p> <ol style="list-style-type: none"> <li>C. Task and independent project</li> <li>6) Write the driving question for the task. [Application for their project]</li> <li>7) Discuss and exchange opinions toward the driving question.</li> <li>8) Apply the taught communication strategy “Asking for clarification” and the ways to do the project to conduct the online task of the initiation phase.</li> <li>9) Apply responsibilities, capabilities, and independent learning in the aspects (1, 2, 4, 5, and 6) of learner autonomy for doing the online task of the initiation phase.          (Aspects 1, 2, and 6 of learner autonomy were practiced in the introduction week 2)</li> </ol> <p><b>Materials:</b></p> <ol style="list-style-type: none"> <li>1. Student log (for the online task and the project)</li> <li>2. Task and project rubric (English or Thai versions)</li> <li>3. Student-selected interactive platform (e.g. Google Hangouts, Skype, etc.)</li> <li>4. Ocam program or any screen recorders that the students freely self-select for their task</li> </ol>

	 <p><b>Time:</b> 1 week (see the due date in the PBBCSI syllabus)  <b>Steps:</b> According to the instructions in the textbook.</p>
<p><b>Online environment</b></p>	<p><b>7. Evaluation</b>  There are two objectives for this learning and teaching step:</p> <ol style="list-style-type: none"> <li>1. To enable the students to evaluate their online tasks and the independent project in order to help them develop their learner autonomy in the aspect of evaluating the completed tasks and the project.</li> </ol> <p>To enable the students to make reflection on their online tasks and the project (in order to identify their weak points or problems in their works and develop them better in terms of quality and English oral communication ability specified in the task and project rubric).</p>
<p><b>Online environment</b></p>	<p><b>Task objective:</b> Students should be able to:</p> <ol style="list-style-type: none"> <li>1. Assess their online task 1 using the task and project rubric.</li> </ol> <p><b>Materials:</b> Task and project rubric, and student log (for the online task and the project)</p>  <p><b>Time:</b> 1 week (see the due date in the PBBCSI syllabus)  <b>Steps:</b> According to the instructions in the textbook.</p>



## APPENDIX M: PBBCSI Syllabus

### Syllabus of the Project-based Blended Learning with Communication Strategy Instruction (PBBCSI)

implemented in 080103034 English Conversation  
Department of Languages, Faculty of Applied Arts, KMUTNB



#### 1. Course Description (of the main course “English Conversation”)


English communication skills with an emphasis on speaking, listening, and pronunciation; functional languages in daily conversation.

#### 2. Learning Goals of the PBBCSI model

After completion of the PBBCSI model, students should develop their:

2.1 English oral communication ability in aspects of range, accuracy, fluency, interaction, coherence, and pronunciation; and

2.2 Three components of learner autonomy which include personal responsibilities, personal capabilities, and independent learning. Of each component, learner autonomy is also divided into determining the objectives, defining the learning progressions, taking the initiative, making decisions on selecting methods or techniques, communication strategies, and resources, monitoring the task and the project completion procedures, and evaluating the completed tasks and the project.

Weeks/Time	PBBCSI phases	Communication strategies	Blended learning	Contents & Learning and teaching steps	Learner autonomy	Online tasks and the project
1 20 Jun 1.5 hrs.				<p>-Introduction to the PBBCSI model</p> <p>-Pre-learner autonomy questionnaire (Pre-LAQ) before taking the PBBCSI model</p> <p>-English oral communication ability pretest <b>appointed</b> by instructor)</p>		<p>-Inform the students to apply for a Gmail account for those who don't have it.</p> <p>-Join in the Facebook group "English Conversation (for Computer Engineering students)"</p>
2 27 Jun 1.5 hrs.	<p>"English Conversation (for Computer Engineering students)"</p>	<p>Facebook group  <a href="https://bit.ly/2K6P8zY">https://bit.ly/2K6P8zY</a></p> 		<p>-Introduction to:</p> <ol style="list-style-type: none"> <li>1) 'Facebook' and other social platforms for doing the online tasks and the project</li> <li>2) The task and project rubric: Training</li> <li>3) Google docs and Google forms</li> </ol>	<p><b>Aspect 1:</b> Determining the goals and the objectives</p> <p><b>Aspect 2:</b> Defining the learning progressions</p> <p><b>Aspect 6:</b> Evaluating what has been acquired and performed in the online tasks and the independent project</p>	

3 4 Jul 1.5 hrs.	<b>I. Initiation</b> -To trigger the driving question and problems to initiate the independent project	Interactional strategies: -Asking for clarification		<b>Face-to-face environment</b>	<b>Unit 1: Computer Technology for Life</b> Job function: Discussing and exchanging opinions towards computer technology and Computer Engineering field. <b>1) Preparation</b> -Watch the video on YouTube <b>2) Presentation</b> -Listening -Pronunciation: Rising-Falling intonation of wh-questions -Language expressions and communication strategies				
<b>Weeks/Time</b>	<b>PBBCSI phases</b>	<b>Communication strategies</b>	<b>Blended learning</b>	<b>Contents &amp; Learning and teaching steps</b>	<b>Learner autonomy</b>	<b>Online tasks and the project</b>			
4 11 Jul 1.5 hrs.			<b>Face-to-face environment</b>	<b>Extra activity</b> <b>3) Rehearsal</b> -Watch the video on YouTube and perform the group work	<b>Aspect 4:</b> Making decisions on selecting methods or techniques, and resources <b>Aspect 5:</b> Monitoring the task and the project completion procedures				
				<b>4) Performance</b> -Perform the group work					





					-Instructor's feedback and comments		
				<b>Online environment</b>	<b>6) Expansion</b> -Pair task		<b>Pair Task 3</b> (due date: 29 Aug) <b>-Student log for pair task 3</b> (due date: 5 Sep)
					<b>7) Evaluation</b> -Assessing the pair task using the task and project rubric		
<b>UNIVERSITY MIDTERM EXAM WEEK (13-18 AUGUST)</b>							
9 22 Aug 1.5 hrs.	<b>IV. Solution</b> -To present the information (solutions/answers) for the driving question via the project presentation	Stalling or time-gaining strategies: -Use of fillers and other hesitation devices			<b>Unit 4: Project Presentation</b> Job function: 1) Delivering the independent project presentation on selected issues		
				<b>Face-to-face environment</b>	<b>1) Preparation</b> - Watch the video on YouTube.		
					<b>2) Presentation</b> -Listening -Pronunciation: sentence stress -Language expressions and communication strategies		
10 29 Aug 1.5 hrs.				<b>Face-to-face environment</b>	<b>3) Rehearsal</b> -Perform the pair work		<b>-Post pair task 3</b> <b>-Start commenting peers' pair tasks 3</b> (due date: 1 Sep)

				<p><b>4) Performance</b> -Perform the pair work</p> <p><b>5) Feedback</b> -Instructor's feedback and comments</p> <p><b>6) Expansion</b> -Continue carrying out the independent project</p>		<p><b>Independent project (due date: 12 Sep)</b> -Continue carrying out the project <b>-Student log for the project (due date: 26 Sep)</b></p>
<p>11 <b>5 Sep</b> 1.5 hrs.</p>	<p><b>V. Assessment &amp; Reflection</b> -To assess the project and provide students' and instructor's comments on the project for the project reflection</p>		<p><b>Online environment</b></p> <p><b>Face-to-face environment</b></p> <p><b>Online environment</b></p>	<p><b>Project Preparation</b> (Preparing all the information and/or performing the data collection and analysis for those who haven't completed)</p> <p><b>Project Presentation</b> via student-selected platform (at 10.00 a.m., Monday, 16 Sep, in the Facebook group)</p>		<p><b>-Submit student log for pair task 3</b></p> <p>-Students comment their friends' questionnaires. <b>(Due date 10 Sep)</b></p>
<p>12 <b>16 Sep</b></p>			<p><b>Online environment</b></p>	<p>-Project self-assessment and peer feedback (comments)</p>	<p>-The instructor draws the ballot to match the pairs for project presentation. - Post the independent project in the Facebook group.</p>	<p>Note: Students give comments and suggestions on the projects posted in the Facebook group <b>(due date: 17 Sep)</b></p>

<p>13 19 Sep 1.5 hrs.</p>				-	<p><b>Submit student log of project (due date: 19 Sep inside class)</b></p>
<p>14 26 Sep</p>	<p><b>VI. Revision &amp; Publication</b> -To revise and publicize the project</p>		<p><b>Online environment</b></p>	<p>Project revision and publication</p>	<p>Notes: The students revise their own project according to peer feedback (comments) and their reflection (only the physical features such as adding words for the scene of taking-turn, pictures, resources at the end, etc.), and then post 1) the <b>complete VDO of project presentation</b> 2) the questionnaire (under the VDO) 3) the link of interview clips (under the VDO) 4) resources/references (embedded at the end of the VDO) in the Facebook group of English Conversation and their own Facebook Pages to be commented (<b>due date: 6 Oct</b>).</p>
<p>15 30 Sep</p>			<p><b>Online environment</b></p>	<p>-English oral communication ability posttest (appointed by instructor) [<b>Mon, 30 Sep</b>] -Post-learner autonomy questionnaire (Post-LAQ) after taking the PBBCSI model [<b>Mon, 30 Sep</b>] -Semi-structured interview (appointed by instructor) [<b>Thu, 3 Oct</b>]</p>	
<p><b>UNIVERSITY FINAL EXAM WEEK (7-11 OCTOBER)</b></p>					



## Assessment and Evaluation of the PBBCSI Model

### 1. English oral communication ability

- The English oral communication ability pretest and posttest

Rubric: The English oral communication ability test rubric (English or Thai versions):



English version

or Thai version



The English oral communication ability pretest and posttest scores of the 3 test tasks rated against the English oral communication ability test rubric (adapted from CEFR, Council of Europe, 2017) assessed in six aspects: *range, accuracy, fluency, interaction, coherence, and pronunciation* are used to determine if the students have the improvement on English oral communication ability after taking the PBBCSI. As for the content analysis, the obtained data from the 3 test tasks of the English oral communication ability pretest and posttest are transcribed, coded, and analyzed in order to reflect the effects of the PBBCSI on each aspect of English oral communication ability and to triangulate the obtained data from the English oral communication ability pretest and posttest.

### 2. Learner autonomy

To investigate students' learner autonomy before and after taking PBBCSI, the pre-learner autonomy questionnaire (Pre-LAQ) and the post-learner autonomy questionnaire (Post-LAQ) are used. The Pre-LAQ and Post-LAQ are the same in Part 1. The Pre-LAQ consists of Part 1 only, while the Post-LAQ comprises Part 1 and 2 as follows:

*Part 1: The measurement of learner autonomy levels: personal responsibilities, personal capabilities, and independent learning*

*Part 2: Opinions towards the PBBCSI*

The development of students' learner autonomy is measured by the pre-learner autonomy questionnaire and the post-learner autonomy questionnaire. The obtained data are then triangulated with qualitative data from 1) student logs, 2) observation checklists, and 3) semi-structured interviews.

### **Assessment and Evaluation of the “English Conversation”**

As for the three online tasks and the independent project, they are used for the main course evaluation, but not for the PBBCSI evaluation. The tasks and the project are the rated against the task and project rubric (English or Thai versions):



English version

or



Thai version

The students can choose the preferred version of the rubric to self-assess their online tasks and the project since choices and decision making is central to the development of learner autonomy (Benson, 2016), the students decide to select the version appropriate to them. However, the effect of using different versions are not investigated.

As for the main course evaluation, the scores of the three online tasks [pair tasks] (25%) and the independent project (25%) are replaced for the “video interviews 1, 2, and 3” scores (10, 15, and 25%, respectively).

To be clearer, the scores of the three online tasks [pair tasks] and the project are outlined as follows:

1. Pair task 1	10%
2. Pair task 2	} 15%
3. Pair task 3	
4. Independent project	<u>25%</u>
<b>Total</b>	<b>50%</b>

**\*\*Late submissions of the online tasks [pair tasks] and the independent project are NOT assessed.**



## APPENDIX N: Independent Project

### Independent Project

#### Unit 4: Project Presentation

**Project objectives:** Students should be able to:

1. Apply responsibilities, capabilities, and independent learning in six aspects of learner autonomy for carrying out the independent project.
2. Present the solutions (answers) and related information for the problem and driving question via the project presentation.
3. Express English oral communication ability in aspects of range, accuracy, fluency, interaction, coherence, and pronunciation.
4. Apply the knowledge and capabilities of using communication strategies (**asking for clarification, asking for confirmation, circumlocution, and use of fillers and other hesitation devices**) that the students have learned in the PBBCSI phases (initiation, inquiry, analysis, and solution) to solve communication problems when carrying out the independent project.
5. Apply the ways to do the independent project that the students have learned in the PBBCSI phases along the semester to continue carrying out the independent project in another two PBBCSI phases (assessment and reflection, and revision and publication).

**Materials:**

1. Student log
2. Task and project rubric (English or Thai versions)
3. Student-selected interactive platform (e.g. Google Hangouts, Skype, etc.)
4. Ocam program

**Time:** Weeks 3-15

**Instructions:**

The **independent project** consists of three main parts: **project preparation, project presentation, and after presentation** described in more details as follows:

**I. Project Preparation**

- 1.1 Think about the **driving question** (from the **main problem** in your Computer Engineering field and related fields, careers, community, or country) and find some **innovation(s)** about computer products or technology that can help answer the driving question.
- 1.2 Apply the ways/steps of doing the independent project and communication strategies that you have learned and practiced in face-to-face and online environments for doing your independent project.
- 1.3 Optionally, attend the **instructor-student consultation (optional)** on week 11 (5 September) inside class and post your own **deeper questions and questionnaire** in Facebook group (due date: 10 September) to get peer feedback. [This step is added for doing the project only].

**II. Project Presentation**

- On week 12 (at 10.00 a.m., Monday, 16 September, in the Facebook group), the

instructor draws the ballot to match the pairs as the presenter and the customer for performing the project presentation in **parts 1 and 2**.

### Part 1

- With your pair, **present your project to the customer** on your selected social platform and record your presentation by Ocam program.

Notes:

- **Time allotted for presentation: 5-8 minutes.** (Start the project presentation at 10.00, post the **UNEDITED VDO** of presentation before 9.00, Tuesday, 17 September, in Facebook group.)

**To ensure the interaction between the presenter and the customer**, perform the discussion (Q & A session) after completing

Part 1.

### Part 2

- The customer is interested in your project, but he/she has some questions to ask for more information on the information you have presented. **Perform the discussion between you (the presenter) and the customer. Don't let the presenter know your questions before asking him/her.**
- Record your discussion by Ocam program.
- Then take turns between you (the presenter) and your pair (the customer) for doing Parts 1 and 2.

**Time allotted for the discussion: 5-8 minutes (each turn).**

### III. After Presentation

1. To ensure that you complete the project presentation as scheduled, post the **UNEDITED VDO of presentation before 9.00, Tuesday, 17 September, on Facebook group**. The unedited VDO includes the parts of when you perform the presentation and answer customer's questions.
2. Complete **self-assessment, comments, and student log**.
3. **Revise/Edit your VDO of project presentation** according to peer feedback (comments) and your reflection (revise only physical features such as adding words for the scene, resources/references at the end, etc.) **by means of Windows Movie Maker, VSDC Video Editor, etc.**
4. **Post:**
  - 1) **the complete VDO of project presentation**
  - 2) **the questionnaire**
  - 3) **the link of interview clips,**
  - 4) **resources/references of information that you use to do the project in the VDO in 1) the Facebook group of English conversation for Computer Engineering students and 2) your Facebook Page (Timeline) [TAGGED WITH YOUR INSTRUCTOR]** to be commented by at least 2 persons.



## APPENDIX O: List of Experts Validating Data Collection Instruments

1. The Research Framework, Unit of Study, Lesson Plan and Manual
  - 1.1 Asst. Prof. Paweena Channuan, Ph.D. (Naresuan University)
  - 1.2 Assoc. Prof. Piyatida Changpueng, Ph.D. (KMUTNB)
  - 1.3 Asst. Prof. Tiwaporn Kongsom, Ph.D. (KMUTNB)
  
2. The Learner Autonomy Questionnaire and Interview Questions
  - 2.1 Assoc. Prof. Spong Tangkiensirisin, Ph.D. (Thammasat University)
  - 2.2 Asst. Prof. Paweena Channuan, Ph.D. (Naresuan University)
  - 2.3 Assoc. Prof. Piyatida Changpueng, Ph.D. (KMUTNB)
  
3. Observation Checklists
  - 3.1 Asst. Prof. Paradee Praphruetkij, Ph.D. (KMUTNB)
  - 3.2 Ajarn Karnchanoke Wattanasin, Ph.D. (KMUTNB)
  - 3.3 Asst. Prof. Yaowaret Tharawoot, Ph.D. (KMUTNB)
  
4. Student Logs
  - 4.1 Asst. Prof. Paradee Praphruetkij, Ph.D. (KMUTNB)
  - 4.2 Ajarn Karnchanoke Wattanasin, Ph.D. (KMUTNB)
  - 4.3 Asst. Prof. Yaowaret Tharawoot, Ph.D. (KMUTNB)
  
5. English Oral Communication Ability Test
  - 5.1 Asst. Prof. Supalak Nakornsri, Ph.D. (KMUTNB)
  - 5.2 Asst. Prof. Tiwaporn Kongsom, Ph.D. (KMUTNB)
  - 5.3 Asst. Prof. Korapin Paranapiti, Ph.D. (Kasetsart Univesity)
  - 5.4 Asst. Prof. Songyut Akkakoson, Ph.D. (KMUTNB)
  
6. Task and Project Rubric, and English Oral Communication Ability Test Rubric
  - 6.1 Asst. Prof. Supalak Nakornsri, Ph.D. (KMUTNB)
  - 6.2 Asst. Prof. Tiwaporn Kongsom, Ph.D. (KMUTNB)
  - 6.3 Asst. Prof. Korapin Paranapiti, Ph.D. (Kasetsart Univesity)
  - 6.4 Asst. Prof. Songyut Akkakoson, Ph.D. (KMUTNB)



**APPENDIX P: List of Experts Verifying the Inter-rater Reliability of the English Oral Communication Ability Tests, Online Tasks, and the Independent Project**

1. The English oral communication ability tests (pretest and posttest)

1.1 Asst. Prof. Supalak Nakornsri, Ph.D. (KMUTNB)

1.2 Asst. Prof. Songyut Akkakoson, Ph.D. (KMUTNB)

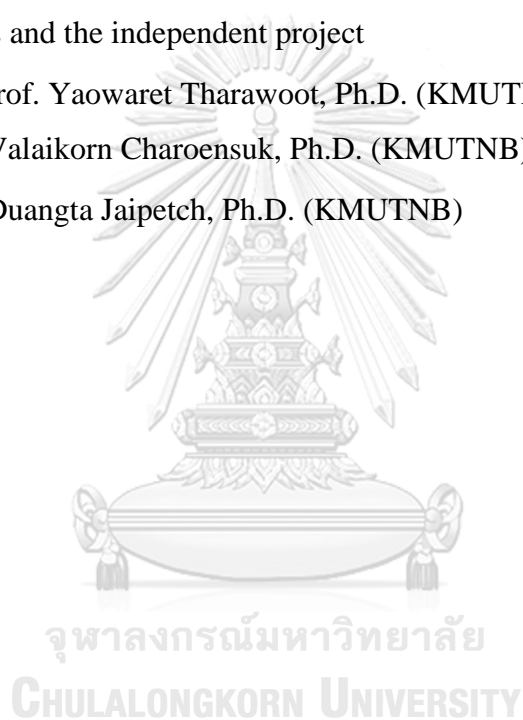
1.3 Asst. Prof. Tiwaporn Kongsom, Ph.D. (KMUTNB)

2. The online tasks and the independent project

1.1 Asst. Prof. Yaowaret Tharawoot, Ph.D. (KMUTNB)

1.2 Ajarn Valaikorn Charoensuk, Ph.D. (KMUTNB)

1.3 Ajarn Duangta Jaipetch, Ph.D. (KMUTNB)



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