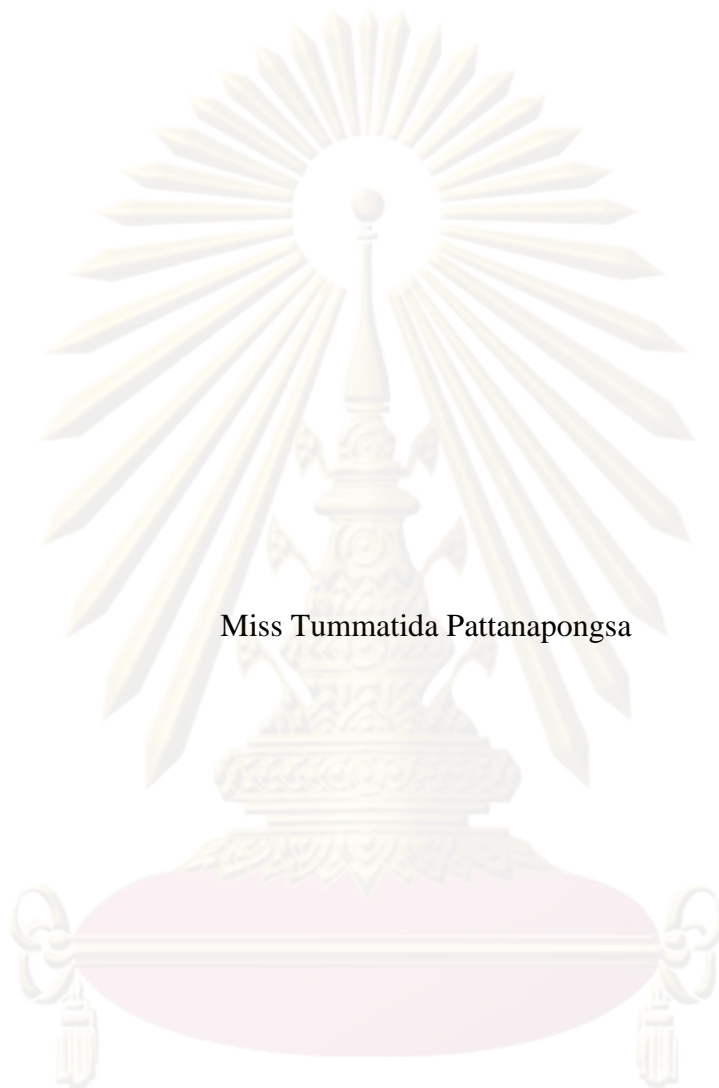


SELF-EFFICACY AND FACTORS PREDICTING ACADEMIC ACHIEVEMENT
OF TECHNICAL PHARMACY STUDENTS



Miss Tummatida Pattanapongsa

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

A Thesis Submitted in Partial Fulfillment of the Requirements
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ความมั่นใจในสมรรถนะของตนและปัจจัยที่ทำนายผลสำเร็จทางการศึกษา
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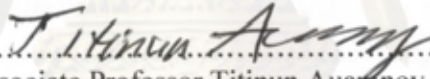
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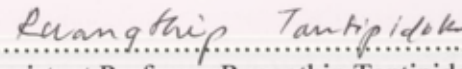
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ข้ามวิชา พัฒนพงศา : ความมั่นใจในสมรรถนะของคนและปัจจัยที่ทำนายผลสำเร็จทางการศึกษาของนักศึกษาเทคนิคเภสัชกรรม (SELF-EFFICACY AND FACTORS PREDICTING ACADEMIC ACHIEVEMENT OF TECHNICAL PHARMACY STUDENTS) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร.ฐิตินันท์ เอื้ออำนวย, 92 หน้า

แบนดูรา (2520) กล่าวว่า ความมั่นใจในสมรรถนะของคน คือความสามารถในการทำภารกิจหนึ่งๆอย่างมั่นใจ วัดดูประสค์ของงานวิจัยนี้คือ (1) เพื่อเปรียบเทียบค่าเฉลี่ยของ (ความมั่นใจในสมรรถนะของคน ทักษะคิดต่อการเรียน และผลสำเร็จทางการศึกษาในสาขาเทคนิคเภสัชกรรม) ระหว่าง (เพศ และ รายได้ผู้ปกครอง) (2) เพื่อทดสอบทฤษฎีความมั่นใจในสมรรถนะของคนของแบนดูราโดยหาความสัมพันธ์ระหว่างความมั่นใจในสมรรถนะของคนและผลสำเร็จทางการศึกษาในสาขาเทคนิคเภสัชกรรม (3) เพื่อหาความสัมพันธ์ระหว่างปัจจัยอื่นๆ ได้แก่ ทักษะคิดต่อการเรียน ความสามารถทางเชาวน์ปัญญา ความฉลาดทางอารมณ์ กิจกรรม และ ผลสำเร็จทางการศึกษาในสาขาเทคนิคเภสัชกรรม (4) เพื่อสร้างสมการ hierarchical stepwise multiple regression ในการทำนายผลสำเร็จทางการศึกษาในสาขาเทคนิคเภสัชกรรมโดยตัวแปรความมั่นใจในสมรรถนะของคนและปัจจัยอื่นๆที่ได้กล่าวมา งานวิจัยนี้เป็นการศึกษาเชิงสำรวจแบบภาคตัดขวางโดยใช้แบบสอบถามสำหรับวัดปัจจัยความมั่นใจในสมรรถนะของคน ปัจจัยอื่นๆ และ ผลสำเร็จทางการศึกษาของนักศึกษาเทคนิคเภสัชกรรมจำนวน 110 คน ที่วิทยาลัยการสาธารณสุขสุรินทร์ จังหวัดพิบูลย์โลก ปีการศึกษา 2552 และ 2553 งานวิจัยนี้พบว่านักศึกษาส่วนใหญ่เป็นเพศหญิง 67 คน (60.91%) และเพศชาย 43 คน (39.09%) รายได้ส่วนใหญ่อยู่ในช่วง 15,001 - 20,000 บาท มี 43 คน (39.09%) ค่า Cronbach's alpha coefficient ของแบบวัดความมั่นใจในสมรรถนะของคน แบบวัดทัศนคติ และแบบวัดความฉลาดทางอารมณ์ 3 ด้าน (ความดี สติปัญญา และความซุช) มีค่า 0.7157, 0.7154, 0.7151, 0.7152 และ0.7154 ตามลำดับ ค่าเฉลี่ยของความมั่นใจในสมรรถนะของคนระหว่างชาย (5.18 ± 0.30) และหญิง (5.34 ± 0.25) มีความแตกต่างอย่างมีนัยสำคัญ (p = 0.00) ค่าเฉลี่ยของผลสำเร็จทางการศึกษา ระหว่างชาย (3.09 ± 0.28) และหญิง (3.20 ± 0.22) มีความแตกต่างอย่างมีนัยสำคัญ (p = 0.03) การวิจัยได้พิสูจน์ว่าความมั่นใจในสมรรถนะของคนมีความสัมพันธ์ในทางบวกกับความสำเร็จทางการศึกษาอย่างมีนัยสำคัญ (r = **+0.96, R² = 0.92, p = 0.00) และยังพบความสัมพันธ์ในทางบวกอย่างมีนัยสำคัญระหว่างความฉลาดทางอารมณ์ ความสามารถทางเชาวน์ปัญญา และผลสำเร็จทางการศึกษาเช่นกัน (r = **+0.91, R² = 0.83, p = 0.00 และ r = **+0.38, R² = 0.14, p = 0.00 ตามลำดับ) ผล correlation ระหว่างความฉลาดทางอารมณ์ และ ความมั่นใจในสมรรถนะของคน, ความฉลาดทางอารมณ์ และ ความสามารถทางเชาวน์ปัญญา, ความสามารถทางเชาวน์ปัญญา และ ความมั่นใจในสมรรถนะของคน, และ กิจกรรม และ ความมั่นใจในสมรรถนะของคนพบว่า r = **+0.89, R² = 0.79, p = 0.00, r = **+0.33, R² = 0.11, p = 0.00, r = **+0.31, R² = 0.10, p = 0.00 และ r = *+0.18, R² = 0.03, p = 0.03 ตามลำดับ การวิเคราะห์ hierarchical stepwise multiple regression เพื่อหาสมการทำนายพบว่า 4 ตัวทำนายที่มีอิทธิพลและมีนัยสำคัญในสมการคือ ความมั่นใจในสมรรถนะของคน ความฉลาดทางอารมณ์ ความสามารถทางเชาวน์ปัญญา และเพศ โดย Beta = **+0.74, ** + 0.25, **+0.08 และ **-0.07, (p = 0.00, 0.00, 0.00 และ 0.00 ตามลำดับ) ผลสรุปของงานวิจัยสนับสนุนแนวคิดของแบนดูราเรื่องความมั่นใจในสมรรถนะของคน โดยถ้านักศึกษายังมีความมั่นใจในสมรรถนะของคนต่อการเรียนมาก ก็จะประสบความสำเร็จในการเรียนมากขึ้น นอกจากนี้ ความฉลาดทางอารมณ์ ความสามารถทางเชาวน์ปัญญา และเพศ เป็นตัวทำนายที่มีนัยสำคัญต่อความสำเร็จทางการศึกษาด้วยเช่นกัน

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สาขาวิชา เกษศาสตรสังคมและบริหาร
ปีการศึกษา 2552
ลายมือชื่อ นิสิต... ๕๙๙๘ ๘๘๘... น.ส.พ.พ.ส.ด้า.....
ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

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TUMMATIDA PATTANAPONGSA: SELF-EFFICACY AND FACTORS
PREDICTING ACADEMIC ACHIEVEMENT OF TECHNICAL PHARMACY
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Ph.D., 92 pp.

Self-efficacy is the construct of confidence in competent in a specific task established by Bandura 1977. The objectives were: (1) To compare means of (self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, and Technical Pharmacy academic achievement) between (gender and parent's income). (2) To test Bandura's self-efficacy concept by finding correlation between self-efficacy for studying Technical Pharmacy and Technical Pharmacy academic achievement. (3) To find correlation between all other factors namely-attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, activity participation during studying and Technical Pharmacy academic achievement. (4) To formulate the hierarchical stepwise multiple regression analysis model to predict Technical Pharmacy academic achievement by self-efficacy for studying Technical Pharmacy and the other mentioned factors. A cross-sectional deductive survey by the questionnaire was employed to investigate relationship between self-efficacy for studying Technical Pharmacy and the other factors and Technical Pharmacy academic achievement of 110 students at Sirindhorn College of Public Health Phitsanuloke class of 2009 and 2010. This study found that most of students 67 (60.91%) were female and 43 (39.09%) were male. Most of parent's income of students 43 (39.09%) were in the range of 15,001 - 20,000 Baht. Cronbach's Alpha coefficient of scales of self-efficacy, attitude, and 3 aspects of EQ (Goodness, Intelligence, and Happiness) were 0.7157, 0.7154, 0.7151, 0.7152, and 0.7154, respectively. The average scores of self-efficacy between male (5.18 ± 0.30) and female (5.34 ± 0.25) were significantly different ($p = 0.00$). The average scores of academic achievement between male (3.09 ± 0.28) and female (3.20 ± 0.22) were significantly different ($p = 0.03$). Significant positive correlation between self-efficacy and academic achievement was confirmed ($r = **+0.96$, $R^2 = 0.92$, $p = 0.00$). There were significant positive correlation between EQ, IQ, and academic achievement as well ($r = **+0.91$, $R^2 = 0.83$, $p = 0.00$ and $r = **+0.38$, $R^2 = 0.14$, $p = 0.00$, respectively). Correlations between EQ and self-efficacy, EQ and IQ, IQ and self-efficacy, and activity and self-efficacy were found $r = **+0.89$, $R^2 = 0.79$, $p = 0.00$, $r = **+0.33$, $R^2 = 0.11$, $p = 0.00$, $r = **+0.31$, $R^2 = 0.10$, $p = 0.00$, and $r = *+0.18$, $R^2 = 0.03$, $p = 0.03$, respectively. Hierarchical stepwise multiple regression analysis estimated the prediction equations. The first four most influence and statistical significant predictors of the model were self-efficacy, EQ, IQ, and gender with Beta = $**+0.74$, $**+0.25$, $**+0.08$, and $** -0.07$, ($p = 0.00$, 0.00 , 0.00 , and 0.00 , respectively). Conclusions: This deductive research supported Bandura's concept of self-efficacy that the more confidence in competent in studying students had, the more academic achievement they got. Moreover, EQ, IQ, and gender were significant predictors of academic achievement model as well.

จุฬาลงกรณ์มหาวิทยาลัย

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LIST OF DIAGRAMS

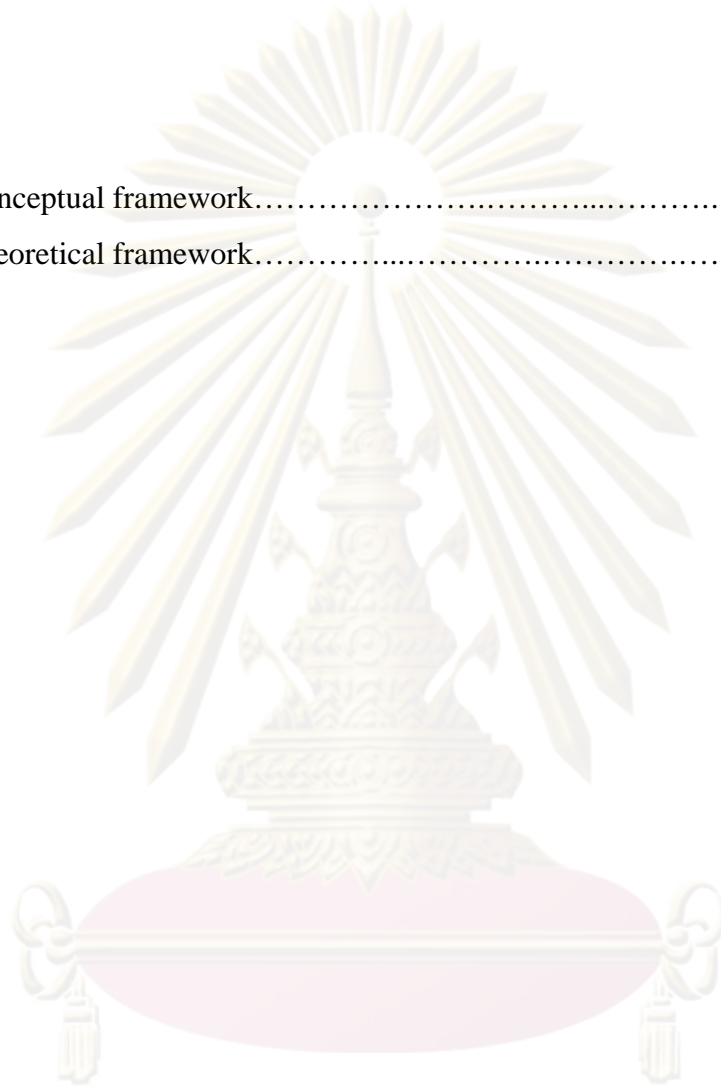
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LIST OF ABBREVIATIONS

ATSTP	Attitude toward Studying Technical Pharmacy
CGPA	Cumulative Grade Point Average
EI	Emotional Intelligence
EQ	Emotional Quotient
GPA	Grade Point Average
IQ	Intelligence Quotient
MRA	Multiple Regression Analysis
One Way ANOVA	One Way Analysis of Variance
SD	Standard Deviation
SE	Self Efficacy
SETP	Self Efficacy for studying Technical Pharmacy
SPSS	Statistical Package for the Social Sciences
TEAP	Total Extracurricular Activity Participation
TPAA	Technical Pharmacy Academic Achievement



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CHAPTER I

INTRODUCTION

1.1 Rationale and background

In an effort to improve students' cognitive and affective outcomes in academic achievement or school learning, educational psychologists and educators had searched for variables (personal and environmental) that could be manipulated in favor of academic gains especially in Technical Pharmacy due to students' poor performance from Examiner Report. Zimmerman, Bandura, and Martinez-Pons stated that all of the personal variables that had attracted researcher in this area of educational achievement, self-efficacy seemed to be gaining more popularity. Factors affected academic achievement were not only mental ability but also psychological trait (Zimmerman, Bandura, and Martinez-Pons, 1992). Kelly also stated that an academic achievement was focused on student progress and achieve at college-in class, in a laboratory or fieldwork. Academic achievement was performance accomplishment and it was affected by student's self-efficacy. Academic achievement, such as graduating 1st in one's class, was sometimes a purely quantitative matter (Kelly, 1940).

Self-efficacy (SE) is a key factor of Self-efficacy Theory developed by Bandura who defined it as confident perceiving in doing a specific work and in a specific situation. SE in each person is an important variable influencing on behavioral controlling. SE was accepted in the field of social science and psychology. Psychologists were confident on theories which related to behavioral control, environment, and thinking because these were sources of SE and were also an important tool to adjust mind state. SE influenced on concentration of one's attention to fight against to get individual's target and to increase ability of consideration and emotional adjustment. People should have confidence and know exactly how to use their ability to get a target. SE was proved that it was a key factor in predicting behavior significantly in various target groups and in various behaviors, for example—weight control behavior and academic achievement. These behaviors were predicted or motivated to increase SE (Bandura et al., 1996). Ayotola and Adedeji examined the relationship between Mathematics self-efficacy and achievement in Mathematics. 352 senior secondary students were the samples in the study. The results showed that teacher should find ways of enhancing Mathematics self-efficacy in students and should place emphasis on students' confidence to succeed in Mathematics achievement (Ayotola and Adedeji, 2009).

Technical Pharmacy is a Diploma of Public Health Program with 2 years for completing education certificated in Public Health (Pharmacy Technique) at Sirindhorn College of Public Health consisting of 7 colleges covering areas of Thailand with the same curriculum. The objectives of the Technical Pharmacy curriculum are to educate and practice Technical Pharmacy students to develop both of their knowledge and skills in Technical Pharmacy field related to the health care system of Thailand. Students are supposed to bring their knowledge applying in Technical Pharmaceutical field effectively and co-operating with pharmacists. Lee and Phillip stated that academic achievement could partly be predicted by mental ability and it needed the aspect of psychological trait as well. Factors influencing academic achievement were both mental ability and psychological trait (Lee and Bobko, 1994). Various kinds of factor were used to predict student's academic achievement namely—self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, Intelligence Quotient (IQ), Emotional Quotient (EQ), parent's income, gender, and activity participation during studying.

Attitude toward studying Technical Pharmacy (ATSTP) is another important factor that predicted academic achievement. Attitude was an activator to make students get their target or academic achievement. Papanastasiou and Zembylas examined how pupils' attitudes toward science and their beliefs about themselves affected their achievements in science and vice versa. The research area provided an interesting location for the study, being a developing nation that had adopted educational ideas from a variety of countries including the US, UK, and Greece. The results of this study demonstrated the differential effects that science achievement and science attitudes could have on each other depending on the characteristics of the educational systems of the country. The findings indicated various directions for future research. The result showed those pupils' attitudes toward science and their beliefs about themselves both affected and did not affect their achievements in science (Papanastasiou and Zembylas, 2002).

Intelligence quotient (IQ) is an age-related measure of intelligence. It was defined as 100 times mental age. The word quotient means the result of dividing one quantity by another and intelligence could be defined as mental ability and quickness of mind.

Intelligence is the capacity to learn or understand. Although intelligence is possessed by all people, it varies in amount for each person. In psychology, intelligence was defined as the capacity to acquire knowledge or understanding. IQ tests were part of what was generally referred to as psychological testing. Such test content might be addressed to almost any aspect of intellectual or emotional make-up including personality, attitude, intelligence or emotion. The purposes were to measure intelligence (Carter and Russell, 2002). Duckworth

and Seligman stated that a longitudinal study of 140 eighth-grade students, self-discipline measured by self-report, parent report, teacher report, and monetary choice questionnaires predicting final grades, school attendance, standardized achievement-test scores, and selection into a competitive high school program the following semester. In a replication with 164 eighth graders, a behavioral delay-of gratification task, a questionnaire on study habits, and a group-administered IQ test were added. Self-discipline was measured for more than twice as much variance as IQ in final grades, high school selection, school attendance, hours spent doing homework, hours spent watching television (inversely), and the time of day students began their homework. These findings suggested that IQ affected self-discipline and final grades significantly (Duckworth and Seligman, 2005).

Emotional Intelligence (EQ) is a relative recent behavior. The early Emotional Intelligence theory was originally developed during the 1970s and 80s by the work and writings of psychologists. EQ was increasingly relevant to organizational development and developing people because the EQ principles provided a way to understand and assess people's behaviors, management styles, interpersonal skills, and potential (Goleman, 2000). Petrides, Frederickson, and Furnham examined the role of EQ in academic performance and in deviant behavior at school on a sample of 650 students in British secondary education. EQ moderated the relationship between cognitive ability and academic performance. Students with high EQ scores were less likely to have had unauthorized absences and less likely to have been excluded from school. Most EQ effects persisted even after controlling for personality variance. It was concluded that the constellation of emotion-related self-perceived abilities and dispositions that the construct of EQ encompasses was implicated in academic performance (Petrides, Frederickson, and Furnham, 2004).

Naderi and colleagues mentioned in the research that there was significant discussion concerning the causal preference of intelligence, gender, and academic achievement. A number of researchers examined intelligence, gender, and academic achievement as equal constructs. Others considered that intelligence and gender as predictors of academic achievement were reciprocal. Others emphasized that intelligence and gender predicted academic achievement. Naderi and colleagues examined intelligence and gender as predictors of academic achievement among undergraduate students. Participants ($n = 153$, $105 = \text{male}$ and $48 = \text{female}$) completed intelligence test and the cumulative grade point average (CGPA). Multiple regression analysis revealed a pattern of relationship and indicated that intelligence and gender explained 0.019 of the variance in academic achievement (Naderi et al., 2008). Gallagher and colleagues studied about the difference between male and female whether affect academic achievement. The result indicated that

gender affected individual's self-efficacy and academic achievement (Gallagher et al., 2000). Zhu stated that many researches showed that male did better in mathematics than female. Moreover, many complex variables included biological, psychological, and environmental variables were revealed to contribute to gender differences in mathematical problem solving. Zhu also suggested that the combined influence of all affective variables namely— biological, psychological, and environmental variables might account for the gender differences in mathematical problem solving patterns (Zhu, 2007).

Parent's income is one factor affecting academic achievement. Davis-Kean examined the process of how socioeconomic status, specifically parents' income, indirectly related to children's academic achievement through parents' beliefs and behaviors. Data from a national, cross-sectional study of children were used for the study. There were 868 subjects aged between 8-12 years old, divided approximately equally across gender (436 females and 433 males). This sample was 49% non-Hispanic European American and 47% African American. Using structural equation modeling techniques, Davis-Kean found that the socioeconomic factors were related indirectly to children's academic achievement through parents' beliefs and behaviors but the process of these relations was different by racial group. Parents' years of schooling also was found to be an important socioeconomic factor to take into consideration in both policy and research when looking at school-age children (Davis-Kean, 2005).

Magdol showed that students attended to a school activity making them succeed their academic achievement. Students whose time in school-based activity was increased maintained or improved their grades and scores on standardized achievement tests, even though students received less classroom instructional time than students in control groups (Magdol, 1994). Ekstrom and colleagues showed that high school dropouts reported lower levels of participation in extracurricular activities (Ekstrom et al., 1986).

Under the need of quality health provider, it had become quite an important policy for the teachers of Technical Pharmacy to consider how to improve the student's Technical Pharmacy achievement. To meet such a challenge, the colleges had regarded it as an important task to promote Technical Pharmacy achievement of their students. From the above motives, this study aimed to predict student's academic achievement by using self-efficacy, attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, parent's income, gender, and activity participation during studying. These factors trended to affect student's score. Furthermore, it had not any research which studied by using these important factors all together especially in the field of Technical Pharmacy.

1.2 Significant of the problem

Sirindhorn College of Public Health was assigned to produce quality technical pharmacists. The research was set to find factors influenced Technical Pharmacy academic achievement. This research aimed to predict Technical Pharmacy academic achievement by using these factors-namely, self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, parent's income, gender, and activity participation during studying to motivate or develop Technical Pharmacy student's academic achievement.

1.3 Objectives of the study

1. To compare means of self-efficacy between male and female.
2. To compare means of attitude between male and female.
3. To compare means of academic achievement between male and female.
4. To compare means of self-efficacy among parent's income.
5. To compare means of attitude among parent's income.
6. To compare means of academic achievement among parent's income.
7. To find correlation between IQ and attitude.
8. To find correlation between EQ and attitude.
9. To find correlation between activity and attitude.
10. To find correlation between IQ and academic achievement.
11. To find correlation between EQ and academic achievement.
12. To find correlation between activity and academic achievement.
13. To find correlation between self-efficacy and academic achievement.
14. To find correlation between attitude and self-efficacy.
15. To find correlation between attitude and academic achievement.
16. To estimate hierarchical stepwise multiple regression analysis model to predict academic achievement.

1.4 Expected benefits

The results could be used to motivate or develop Technical Pharmacy student's academic achievement due to students' poor performance.

1.5 Research questions

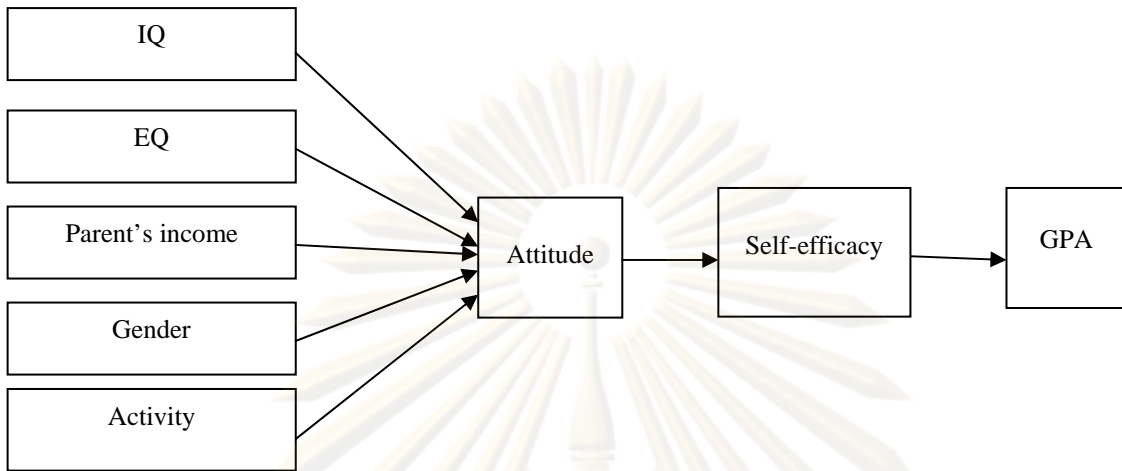
1. Did gender make any statistical significant difference in self-efficacy?
2. Did gender make any statistical significant difference in attitude?
3. Did gender make any statistical significant difference in academic achievement?
4. Did parent's income make any statistical significant difference in self-efficacy?
5. Did parent's income make any statistical significant difference in attitude?
6. Did parent's income make any statistical significant difference in academic achievement?
7. Did IQ predict attitude?
8. Did EQ predict attitude?
9. Did activity predict attitude?
10. Did IQ predict academic achievement?
11. Did EQ predict academic achievement?
12. Did activity predict academic achievement?
13. Did self-efficacy predict academic achievement?
14. Did attitude predict self-efficacy?
15. Did attitude predict academic achievement?
16. What factors statistical significantly predicted Technical Pharmacy academic achievement?

1.6 Conceptual framework

The conceptual framework shows the relationship between factors and academic achievement.

ศูนย์วิจัยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Picture 1.1 Conceptual framework



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

CHAPTER II

LITERATURE REVIEW

This chapter is composed of three sections. The first section describes regarding self-efficacy and self-efficacy influenced academic achievement. The second section reviews related literatures that studied regarding academic achievement and other influenced factors namely—attitude toward studying, Intelligence Quotient (IQ), Emotional Quotient (EQ), parent's income, gender, and activity participation on academic achievement. The third section offers theoretical framework.

2.1 Self-efficacy

Bandura originally defined self-efficacy as the conviction that one could successfully execute the behavior required to produce the desired outcome in specific situations. Bandura also theorized that perceptions and expectations of self-efficacy influenced the types of activities engaged in by individuals, the extent of effort and of time expended, and persistence in the face of adversity (Bandura, 1977). Korchin stated that self-efficacy was confidence in one's capability to perform a specific thing in a specific situation. Psychologists emphasized a widely shared precept: that a sense of control over personal behavior, environment, and one's own thoughts and feelings (the core of self-efficacy) was essential to good psychological adjustment (Korchin, 1976). Maddux and Lewis also stated that self-efficacy beliefs influenced psychological adjustment through their impact on goal-setting persistence, cognitive efficacy, and emotional adaptation. To have good psychological adjustment, a person must feel control, competence, and mastery (Maddux and Lewis, 1995).

Ormrod stated that self-efficacy was described as the belief that one could perform in a manner to attain targets. It was a belief that one had the capabilities to execute the courses of actions required to manage prospective situations (Ormrod, 2006). Steinberg described self-efficacy in other ways as the concept was evolved in the literature and in society: as the sense of belief that one's actions had an effect on the environment; as a person's judgment of his or her capabilities based on mastery criteria; a sense of a person's competence within a specific framework, focusing on the person's assessment of their abilities to perform specific tasks in relation to goals and standards rather than in comparison with others' capabilities.

Additionally, it built on personal past experiences of mastery (Steinberg, 1998).

2.2 Self-efficacy influenced academic achievement

An academic achievement was focused on student progress and achieve at college-in class, in a laboratory and fieldwork. An academic achievement, such as graduating 1st in one's class, was sometimes a purely quantitative matter. Kelley mentioned that factors which affected academic achievement were not only mental ability but also psychological trait. An academic achievement was performance accomplishment and it was affected by student's self-efficacy (Kelley, 1940).

Technical Pharmacy is a Diploma of Public Health Program with 2 years for completing education. The Technical Pharmacy program was certificated in Public Health (Pharmacy Technique) at Sirindhorn College of Public Health. There are 7 Sirindhorn Colleges of Public Health covering all areas of Thailand with the same of curriculum. The objectives of the Technical Pharmacy curriculum are to educate and practice Technical Pharmacy students to develop both of their knowledge and skills in Technical Pharmacy field related to the health care system of Thailand. Students are supposed to apply their knowledge to Technical Pharmaceutical field and co-operating with pharmacists effectively. In an effort to improve students' cognitive and affective outcomes in academic achievement and/or school learning, educational psychologists and educators had searched for variables (personal and environmental) that could be manipulated in favor of academic gains especially in Technical Pharmacy due to student's poor performance from Examiner Report.

Zimmerman, Bandura, and Martinez-Pons stated that all of the personal variables that had attracted researcher in this area of educational achievement, self-efficacy seemed to be gaining more popularity (Zimmerman, Bandura, and Martinez-Pons, 1992). The view of agency to be advanced here was based on; (a) children construct scientific concepts by drawing on their existing ideas and experience (Rieber and Carton, 1987) and (b) social interactions indirect mediated knowledge construction (Vygotsky, 1986).

According to Bandura's social cognitive theory, student's judgments of their capability to perform academic tasks or self-efficacy predicted their capability to accomplish such tasks (Bandura, 1986). Pajaris and Miller demonstrated that the value of self-efficacy was used for predicting student's performances. Self-efficacy predicted mathematics problem-solving greater degree than self-beliefs such as anxiety and previous academic experience (Pajares and Miller, 1994). A research showed that students who developed self-

efficacy were better able to manage their learning. They could resist the temptations and social pressures to engage their academic achievements. As a result, students with strong self-efficacy beliefs were more likely to successfully complete their education. They were better equipped for a range of occupational options in competitive society. On the other hand, it was found that students who had a low sense of academic self-efficacy were more likely to engage in problem behaviors such as delinquency, school failure and dropping out of school, jeopardizing their chances at academic success and subsequent employment prospects (Bandura, 1997). Kelloway analyzed the network of psychosocial influenced through which efficacy beliefs affected academic achievement. More specifically, direct and mediated paths of influence of children's self-efficacy beliefs to academic achievement were analyzed with a range of factors including socio-economic status, IQ, attitude and EQ (The meaning of these factors will be explained later). The results indicated that the full set of self-efficacy and attitude influenced a large amount of variance in academic achievement (Kelloway, 1998). Maddux and Lewis predicted and described relationships between self-efficacy and academic achievement in three ways. First, while Bandura and colleagues analyzed problem behavior in their model, the research extended this work by examining hard-core delinquent activities (e.g. physical aggression, property offences and theft). Second, the study examined the mediating roles of academic aspirations and delinquency in the relationships between self-efficacy and academic achievement. In particular, Maddux and Lewis hypothesized that academic aspirations mediates the relationships between self-efficacy and academic achievement. Finally, Maddux and Lewis stated that not only all relationships to be tested but also the proposed model was statistically compared to two alternatives (a partially-mediated model and a non-mediated model) (Maddux and Lewis, 1995).

The concept of self-efficacy as domain-specific or task-specific was proven to be a better predictor of actual behavior than a general self-efficacy concept (Bandura, 1997; Multon, Brown, and Lent, 1991; Valentine, Dubois, and Cooper, 2004). Across these different domains of functioning, self-efficacy beliefs influenced the courses of action. People used their self-efficacy to pursue how long they would persevere in the face of obstacles and failures, how much effort they put into endeavors, their resilience to adversity, how much stress and depression they experienced in coping with taxing environmental demands, and the level of accomplishments they realized (Bandura, 1991, 1997; Bandura et al., 2001). Zimmerman defined the academic self-efficacy as personal judgments of one's capabilities to organize and execute courses of action to attain designated types of educational performances (Zimmerman, 1995). Academic self-efficacy was reported to

promote academic achievement directly related (Bandura, 1997; Bandura et al., 1996). In a meta-analysis (Multon et al., 1991), self-efficacy was found to be related to academic performance. Many researchers reported a direct positive relationship between self-efficacy and academic achievement (Bandura et al., 1996; Chemers et al., 2001; Greene et al., 2004; Pintrich and DeGroot, 1990; Schunk, 1994; Sharma and Silbereisen, 2007; Zimmerman and Bandura, 1994). For example, Greene and colleagues tested a model explaining the impact of 220 high school students' perceptions of classroom structures on their self-efficacy and academic achievement. Self-efficacy had a direct positive relationship with successful learning (Greene et al., 2004). Researchers found that self-efficacy had a positive effect on with academic achievement (Roeser, Midgley, and Urdan, 1996; Brown, Lent, and Larkin, 1989; Saunders et al., 2004). The abilities to establish friendships, form sustainable peer relationships, receive positive peer praise and be socially acceptable at school were all important tasks for success at school and were found to be directly related to academic achievement (Patrick, Hicks, and Ryan, 1997). Children's beliefs that they had the social efficacy to form and sustained satisfying peer relationships also enabled them to have academic success (Bandura et al., 1996).

Bandura emphasized that people with higher self-efficacy had higher confidence level when encountering difficulties. Self-efficacy was the important factor of behavioral performance, task performance or personal achievement. Bandura claimed that the assessment for personal self-efficacy relied mainly on the past job performance (Bandura, 1982).

Schunk stated that academic self-efficacy refers to one's convictions to perform successfully at designated levels (Schunk, 1991). Ample evidence accrued during the past two decades demonstrated the strong and positive influence of efficacy beliefs on various aspects of student achievement (Bandura and Schunk, 1981; Betz and Hackett, 1981; Pajares and Miller, 1994; Pintrich and De Groot, 1990; Schunk, 1982, 1983, 1984; Zimmerman, Bandura, and Martinez-Pons, 1992; see also Pajares, 1996, for a review and Multon, Brown, and Lent, 1991, for a meta-analysis). Schunk documented that as students' self-efficacy perceptions strengthened, their performance also noticeably improved (Schunk, 1982, 1983, 1984). Pintrich and De Groot reported that academic self-efficacy also positively correlated to various outcome measures such as grades, seatwork performances, scores on exams and quizzes, and quality of essays and reports (Pintrich and De Groot, 1990).

Ayotola and Adedeji examined the relationship between Mathematics self-efficacy and achievement in Mathematics. 352 senior secondary students were used for the study. They found that teacher should find ways of enhancing Mathematics self- efficacy in student

and should place emphasis on student's confidence to succeed in Mathematics achievement (Ayotola and Adedeji, 2009).

Carroll and colleagues stated that self-efficacy, aspiration, and other psychosocial influences accounted for considerable variance in academic achievement through a range of mediational pathways, although no research to date had tested the mediational relationships identified. The present research investigated the structural relations among self-efficacy, academic aspirations, and delinquency, on the academic achievement of 935 students aged 11-18 years from ten schools in two Australian cities. The children's self-efficacy scale, an adapted self-report delinquency scale (Revised), and children's academic aspirations scale were administered to participants prior to academic achievement being assessed using mid-year school grades. Structural equation modeling was employed to test three alternative models for the relationships from academic, social, and self-regulatory efficacy on academic achievement. A partial mediation model showed the best overall fit to the data. Academic and self-regulatory efficacy had an indirect negative (Carroll et al., 2009).

Jeng and Shih examined the impact of attribution on self-efficacy in Mechanics (Statics and Dynamics) and the relationships of self-efficacy and Mechanics achievement in Department of Mechanical Engineering students. 345 freshmen in a Technology University were used as participants in this two-year longitudinal study. Results showed that the beneficial attributers possessed higher self-efficacy than individuals with less beneficial attribution. Further, it was shown that Mechanical Engineering students with higher self-efficacy achieved better proficiency level during the consecutive Mechanics proficiency test every half-year. Meanwhile, students with higher self-efficacy were likely to set higher goal level for the subsequent tests, and students with higher goal setting performed better than students with lower goal setting. Together findings in this study showed that the effective way to improve Mechanics performance in Mechanical Engineering students might lie in how to increase the self-efficacy (Jeng and Shih, 2008).

Lee and Bobko stated that only 45% of academic achievement could be predicted by mental ability and it needed the aspect of psychological trait as well. Factors influencing academic achievement were both mental ability and psychological trait (Lee and Bobko, 1994). All of the above suggested that self-efficacy was a good predictor of academic achievement.

2.3 Attitude influenced self-efficacy

Attitude was proved that it was related to self-efficacy and trended to have positively related to self-efficacy. Torkzadeh and Van-Dyke reported on the effects of training on Internet self-efficacy and computer user attitudes. Using a 17-item internet self-efficacy scale and a 20-item computer user attitude scale in a sample of 189, the relationship between training and computer user attitude and internet self-efficacy is examined. Survey responses were collected at both the beginning and end of an introductory computer course. Results suggested that training significantly improved Internet self-efficacy for males and females. Respondents with 'high' and 'low' attitude toward computers seemed to equally benefit from training programs. However, respondents with 'high' attitude toward computers had higher self-efficacy scores than respondents with 'low' attitude toward computers. Training programs did not seem to influence attitudes toward computer usage for males or females. Implications of these findings were discussed and further research opportunities described (Torkzadeh and Van-Dyke, 2002).

Tor Busch studied related to attitudes towards management by objectives: an empirical investigation of self-efficacy and goal commitment. The aim of this study was to investigate the relationship between attitudes towards Management by objectives (MBO) and the concepts of self-efficacy and goal commitment, and the relationship between knowledge about the MBO program and these two concepts. Participation was used as a control variable. The results revealed that self-efficacy in improving productivity and commitment to productivity goals were both positively correlated to attitudes towards MBO. Furthermore, participation and self-efficacy in working with formal management systems were positively correlated to knowledge about the MBO plan. The study established self-efficacy and goal commitment as significant constructs in explaining attitudes towards MBO in the public administration (Busch, 1998). This study examined the relationships among personal and family valuing of education, self-esteem, academic stress, and educational self-efficacy for 530 female undergraduates. Personal and family valuing of education and self-esteem were related to educational self-efficacy; academic stress was related to self-esteem and self-efficacy. No differences existed between Euro-American women and women of color, and for both groups, personal valuing of education, self-esteem, and academic stress predicted educational self-efficacy. Implications for research and practice are introduced (Dixon Rayle, Arredondo, and Robinson Kurpius, 2005)

2.4 Attitude influenced academic achievement

Attitude toward studying Technical Pharmacy was another important factor predicted academic achievement. Attitude was an activator to make them get their target or academic achievement. Papastasiou and Zembylas examined how students' attitudes towards science and their beliefs about themselves affected their achievements in science, and vice versa. Cyprus city provided an interesting location for the study, being a developing nation that has adopted educational ideas from a variety of countries, including the US, UK and Greece. The results of this study demonstrated the differential effects that science achievement and science attitudes could have on each other, depending on the characteristics of the educational systems of the country. The findings indicated various directions for future research (Papastasiou and Zembylas, 2002).

2.5 Intelligence Quotient (IQ) influenced attitude

IQ related to attitude, from the literature review, IQ had positively related to attitude. Students' characteristics had been the subject of many studies (Janos, Fung, and Robinson, 1985; Kerr, Colangelo, and Gaeth, 1988; Loeb and Jay, 1987; Olszewski-Kubilius, Kulieke, and Krasney, 1988; Whalen and Csikszentmihalyi, 1989). Anyway, most focusing on a single dimension that was IQ. Schowinski and Reynolds looked solely in high-IQ children (Schowinski and Reynolds, 1985). Generally, these single-dimension studies suggested that high IQ students had positive academic attitude and academic self-concepts but negative or ambiguous social relationships. However, high IQ students had higher academic attitude and social self-concepts in some studies (Karnes and Wherry, 1981; Kelly and Colangelo, 1985), but negative or ambiguous social confidence (Kerr, Colangelo, and Gaeth, 1988) and lower expectations for social versus academic success (Ross and Parker, 1980) in others.

2.6 Intelligence Quotient (IQ) influenced academic achievement

An intelligence quotient (IQ) was a score derived from one of several different standardized tests designed to assess intelligence. The term IQ, from the German Intelligence-Quotient, was devised by the German psychologist William Stern in 1912 as a proposed method of scoring early modern children's intelligence tests such as those developed by Alfred Binet Theodore Simon in the early 20th Century from Indiana University (2007). Although the term IQ was in common use, the scoring of modern IQ tests

such as the Wechsler Adult Intelligence Scale was based on a projection of the subject's measured rank on the Gaussian bell curve with a center value (average IQ) of 100, and a standard deviation of 15, although not all tests adhere to that standard deviation. The IQs of a large enough population could be modeled with a Normal Distribution. IQ scores had been shown to be associated with such factors as morbidity and mortality, parental social status, and to a substantial degree, parental IQ. While its inheritance had been investigated for nearly a century, controversy remained as to how much is inheritable, and the mechanisms of inheritance were still a matter of some debate (Cervilla et al., 2004). Devlin, Daniels and Roeder stated that IQ scores were used in many contexts: as predictors of educational achievement or special needs, by social scientists who study the distribution of IQ scores in populations and the relationships between IQ score and other variables, and as predictors of job performance and income. The average IQ scores for many populations had been rising at an average rate of three points per decade since the early 20th century with most of the increase in the lower half of the IQ range: a phenomenon called the Flynn effect. It was disputed whether these changes in scores reflect real changes in intellectual abilities, or merely methodological problems with past or present testing (Devlin, Daniels, and Roeder, 1997).

The IQ test in this study was designed and developed by Mensa non-profit organization. The original aimed to create a society that was non-political and free from all racial or religious distinctions. The IQ test was developed with the aim of measuring people's IQ. The test was Culture Fair, i.e. it minimized the effect of cultural variables, such as language, mathematics, etc. The test was based on logic, but was furthermore designed to test learning capability, memory, innovative thinking and the ability to simultaneously address several problems. The test measured the general intelligence. The calculation of IQ was based on answers from more than 250,000 people. The test was version 3.0, 2003. Mensa organization was founded in England in 1946 by Roland Berrill, a barrister, and Dr. Lance Ware, a scientist and lawyer. They had the idea of forming a society for bright people, the only qualification for membership of which was a high IQ. The original aims were, as they are today, to create a society that was non-political and free from all racial or religious distinctions. The society welcomed people whose IQ was in the top 2% of the population, with the objective of enjoying each other's company and participating in a wide range of social and cultural activities (Mensa Organization, 2009 : online). Duckworth and Seligman also showed a longitudinal study of 140 eighth-grade students. Self-discipline measured by self-report, parent report, teacher report, and monetary choice questionnaires predicted final grades, school attendance, standardized achievement-test scores, and selection into a

competitive high school program the following semester. In a replication with 164 eighth graders, a behavioral delay-of gratification task, a questionnaire on study habits, and IQ test were added. Self-discipline was measured and accounted for more than twice as much variance as IQ in final grades, high school selection, school attendance, hours spent doing homework and the time of day students began their homework. These findings suggested that self-discipline and IQ affected final grades significantly (Duckworth and Seligman, 2005). Sameroff and colleagues examined that how risks of IQ scores affected 215 children in 4 years old. The study included risks such as the mental health of the mother, mother's anxiety, mother's education, minority group status, and stressful life events. The study found that the presence of a single risk had affected on IQ (Sameroff et al., 1987). Furthermore, the more risk factors, the more likely IQ was jeopardized. High-risk children were more (Magdol, 1994).

2.7 Emotional Quotient (EQ) influenced attitude

EQ trended to positively relate to attitude. Wang and Yuan studied on risk-based decision making (RBDM). It was critical in successful construction project management, in which decision makers' attitudes. Most previous studies in construction project risk management had been focusing on the factors contributing to the success of risk management, but little attention was given to factors significantly affecting decision makers' risk attitudes in construction projects. To improve RBDM, they investigated the critical factors affecting contractors' risk attitudes in construction projects in the research. Literatures reviews, interviews and questionnaires were used for the identification of factors affecting contractors' risk attitudes. Statistical methods of ranking analysis and factor analysis were also implemented for verification and further analysis. The results showed that the most important three factors were consequenced Emotional management based on EQ, experience, and completeness of project information. Results from factor analysis on the identified critical factors revealed that they could be grouped into four categories, namely: 1. Knowledge and experience 2. Demographic data 3. Personal emotional management based on EQ 4. Environment. The significance of this research was that the findings did not only provide decision making support for contractors by deepening their understandings of the factors that affected their risk attitudes, but also served as a useful reference for further studies (Wang and Yuan, 2010). Costarelli and Stamou explored the possible differences in body image, emotional intelligence, anxiety levels and disordered eating attitudes in a group of Taekwondo and Judo athletes and non-athletes. The interrelationships of the above

parameters were also examined. A total of 60 subjects were recruited: 20 were national and international Taekwondo and Judo athletes and 40 were non-athletes. Subjects completed the following questionnaires: the Eating Attitudes Test (EAT-26), the Multidimensional Body-Self Relations Questionnaire (MBSRQ), the State-Trait Anxiety Inventory (STAI), and the BarOn Emotional Intelligence Questionnaire (BarOn EQ-I). Athletes had higher levels of emotional intelligence compared to the control group, particularly in factors such as assertiveness (P-value < 0.01) and flexibility (P-value < 0.01). The differences were more pronounced in the female athletes compared with the non-athletes, with statistically significant differences in most of the intrapersonal factors (P-value < 0.01), including self-regard and self-actualization, in the adaptability factors and in most of the mood factors. There were no significant differences in terms of disordered eating attitudes (EAT-26) between the two groups. Regression analysis revealed that disordered eating attitudes were significantly positively correlated with anxiety levels (P-value < 0.001) and with self-classified weight (P-value < 0.001). Athletes had higher levels of emotional intelligence and a healthier body image compared to non-athletes, but there were no significant differences in terms of disordered eating attitudes (Costarelli and Stamou, 2009).

2.8 Emotional Quotient (EQ) influenced academic achievement

Emotional Quotient (EQ) is one of the predictor of academic achievement described the ability, capacity, skill in the case of EQ model, a self-perceived ability, to identify, assess, and manage the emotions of one's self, of others, and of groups. Different models had been proposed for the definition of EQ and disagreement exists as to how the term should be used these disagreements, which were often highly technical, the ability EQ and EQ models (but not the mixed models) enjoy support in the literature and had successful applications in different domains (Mayer, Salovey, and Caruso, 2008). Petrides and others examined the role of EQ in academic performance and in deviant behavior at school on a sample of 650 pupils in British secondary education. EQ moderated the relationship between cognitive ability and academic performance. In addition, pupils with high EQ scores were less likely to have had unauthorized absences and less likely to had been excluded from school. Most EQ effects persisted even after controlling for personality variance. It was concluded that the constellation of emotion-related self-perceived abilities and dispositions that the construct of EQ encompasses was implicated in academic performance. The EQ test in this study was the EQ test of Department of Mental Health, Ministry of Public of Thailand (Petrides, Frederickson, and Furnham, 2004).

2.9 Gender influenced self-efficacy

Lent and others demonstrated that self-efficacy was differed by gender. The relationship between gender and self-efficacy had been a focus of self-efficacy research. Researchers reported that male students at high school and college levels tended to be more confident than female students in mathematics, science, and technology (Lent, Lopez, and Bieschke, 1991; Pajares and Miller, 1994). Kumar and Lal examined the role of self-efficacy and gender differences among the adolescents as revealed by intelligence test. A random sample of 200 students (100 boys and 100 girls) studying in under-graduation was selected from different colleges of the city of Chandigarh. Self-efficacy scale was developed by Jerusalem and Schwarzer was used to classify subjects. General Mental Ability Test was developed by Jalota was used to have the dependent variable scores. Analysis of variance was applied and the F-ratio revealed significant effect of self-efficacy. Significant gender differences were also found, where female scored higher than their male counterparts. No interaction was found in self-efficacy and gender (Kumar and Lal, 2006). A quantitative observational study exploring the relationship of gender to mathematics self-efficacy and the frequency of back substitution in multiple-choice assessment sampled undergraduates at a western United States parochial university. Research questions addressed: to what extent were there gender differences in mathematics self-efficacy, as demonstrated on multiple-choice test items; and to what extent are there gender differences in the frequency of employing back substitution as an informed guessing strategy on multiple-choice test items? Instruments were (a) a representative multiple-choice test algebra equation, and (b) a mathematics self-efficacy survey accompanying a standardized multiple-choice algebra examination. While results revealed no significant gender differences in mathematics self-efficacy or back-substitution strategy, findings concerning test-wise strategies application and learner performance accuracy can benefit educators (Goodwin, Ostrom, and Scott, 2009).

2.10 Gender influenced attitude

Zhu stated that male had positive attitude and did better in mathematics than female. Many complex variables included biological, psychological and environmental variables were revealed to contribute to gender differences in mathematical problem solving. Zhu also suggested that the combined influence of all affective variables, namely biological,

psychological and environmental variables might account for the gender differences in mathematical problem solving patterns (Zhu, 2007). Busch investigated gender differences regarding computer attitudes and perceived self-efficacy, computer anxiety, computer linking and computer confidence. The results revealed gender differences in perceived attitude and self-efficacy regarding completion of complex tasks. The results showed that male students had previously had more experience and reported that they had previously had more encouragement from parents and friend (Busch, 1995).

2.11 Gender influenced academic achievement

Gallagher and colleagues had studied about the difference between male and female whether affected self-efficacy and academic achievement. The result indicated that gender affected both of individual's self-efficacy and academic achievement (Gallagher et al., 2000). Naderi and colleagues showed that girls' academic performance was better than boys' academic performance at the primary level but was not consistently so at the secondary level. There had been significant discussion concerning the causal preference of intelligence, gender, and academic achievement. Naderi and colleagues examined intelligence and gender as predictors of academic achievement among undergraduate students. Participants (n = 153, 105 = male and 48 = female) completed intelligence test and the cumulative grade point average (CGPA). The finding showed a lower correlation independent variables (score of intelligence and gender) and CGPA in this study. A multiple regression analysis revealed a pattern of relationship. It indicated that intelligence and gender explained 0.019 of the variance in academic achievement (Naderi et al., 2008).

2.12 Income influenced self-efficacy

A study was to examine the characteristics of general self-efficacy and subjective well-being and their relations in low SES college students in China. 102 low SES college students and 164 regular college students were administered on General Self-efficacy Scale and Index of Well-Being, Index of General Affect. Low SES college students scored significantly lower than their peers on general self-efficacy and subjective well-being. Significant gender differences were not found. Individuals with stronger general self-efficacy reported higher level of subjective well-being. General self-efficacy of low SES college students had significantly positive correlation with General Affect, Life Satisfaction and Well-Being. Research results indicated that SES had an important effect on general self-

efficacy and subjective well-being. General self-efficacy positively related to subjective well-being (Tong and Song, 2004).

2.13 Income influenced attitude

Parent's income trended to positively relate to attitude. Duncan and Brooks-Gunn stated that low parent's income adolescents affected their attitude, feelings of humiliation. Negative attitudes could be affected their social, cognitive and personality development negatively (Duncan and Brooks-Gunn, 2000). Kilinc studied related to the effects of poverty on high school students' socialization. In developing country, the situation had caused inequality of income distribution, growing gap between socioeconomic classes and consequently, the increase in poverty. When the increase in the number of adolescents from low socioeconomic status families was considered, the necessity of studying those adolescents' relations with their teachers and peers became evident. Participants of the study consisted of 40 high school students (20 boys and 20 girls) from low SES families. In the study adolescents were interviewed about their social standing to determine their attitude and how they feel about their statuses within the school and in the society in general. Data were gathered by a semi structured interview form. In order to obtain detailed information by observing participants' reactions, in-depth interview technique was applied individually by the researcher, herself. Data were analyzed by content analysis. It had been found that participants did not just enter into relations nor participate social activities because of their poverty, but also majority of those students' self-esteem was underdeveloped. Participants in this study had also shown negative personality and cognitive development characteristics for they could not meet their socialization needs. This could be understood by students' statements about their low self-esteem and their low academic success (Kilinc, 2007).

2.14 Income influenced academic achievement

Dornbusch, Ritter, and Magdol stated that the negative effects of living in a low-income community might be offset by parenting style and social relationships with persons outside the community—family and friends, church, and other organizations. Studies comparing the relative influence of the family and the community had been inconclusive. Some assert that community effects might be explained by individual family factors. The average parenting style in a community might outweigh the style of individual parents in influencing their adolescents' grades (Dornbusch and Ritter, 1991; Magdol, 1994).

Davis-Kean examined the process of how socioeconomic status, specifically parents' income, indirectly related to children's academic achievement through parents' beliefs and behaviors. Data from a national, cross-sectional study of children were used for this study. There were 868 subjects aged between 8–12 years old, divided approximately equally across gender (433 males and 436 females). This sample was 49% non-Hispanic European American and 47% African American. Using structural equation modeling techniques, Davis-Kean found that the socioeconomic factors were related indirectly to children's academic achievement through parents' beliefs and behaviors but that the process of these relations was different by racial group. Parents' years of schooling also was found to be an important socioeconomic factor to take into consideration in both policy and research when looking at school-age children (Davis-Kean, 2005).

Maani and Kalb showed that a general international observation found that adolescents from disadvantaged families were more likely to leave school at age 16 years old. In this paper it extend the literature on school-leaving decisions by using a new and extensive panel data set from New Zealand; and by examining the effect of family income, and personal and environmental characteristics since childhood on both academic performance and subsequent schooling choices. Results obtained from single equations and joint estimation, allowing for possible endogeneity of academic performance; reveal the importance of the role of academic performance in models of demand for education. Several factors that were at work for a long time, such as household income at different points in time, influence the school leaving decision through academic performance. These results point to the role that stimulating academic performance might play in breaking cycles of disadvantage (Maani and Kalb, 2005).

2.15 Activity participation influenced attitude

Activity trended to positively related to attitude. Marsh studied on extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals. Effects of total extracurricular activity participation (TEAP) during the last 2 years of high school were examined using the large, nationally representative High School and Beyond data. After controlling background variables and sophomore outcomes, TEAP had small but statistical significant positive related with 17 of 22 senior and postsecondary outcomes (e.g., social and academic self-concept, attitude, educational aspirations, coursework selection, academic achievement and college attendance). Whereas there were small nonlinear components, increases in TEAP across almost the whole range of TEAP scores were

associated with increases in benefits for most of the outcomes. Results contradicted zero-sum models positing that TEAP detracted from more narrowly defined academic goals and support a commitment-to-school hypothesis in which identification with school and school values was enhanced by TEAP (Marsh, 1992).

2.16 Activity participation influenced academic achievement

Magdol showed that students attended to a school activity making them succeed their academic achievement. Students whose time in school-based activity was increased maintained or improved their grades and scores on standardized achievement tests, even though they received less classroom instructional time than students in control groups (Magdol, 1994).

Ekstrom and colleagues showed that high school dropouts reported lower levels of participation in extracurricular activities (Ekstrom et al., 1986). Barker, Gump, and Magdol showed that in small schools, participation was more active, and there was more pressure on individual students to participate. Students in these schools benefited from the challenges and developmental opportunities of activities. In large schools, fewer students participate in activities and students who felt alienated from the school were especially likely to be left out of extracurricular activities (Barker and Gump, 1964; Magdol, 1994).

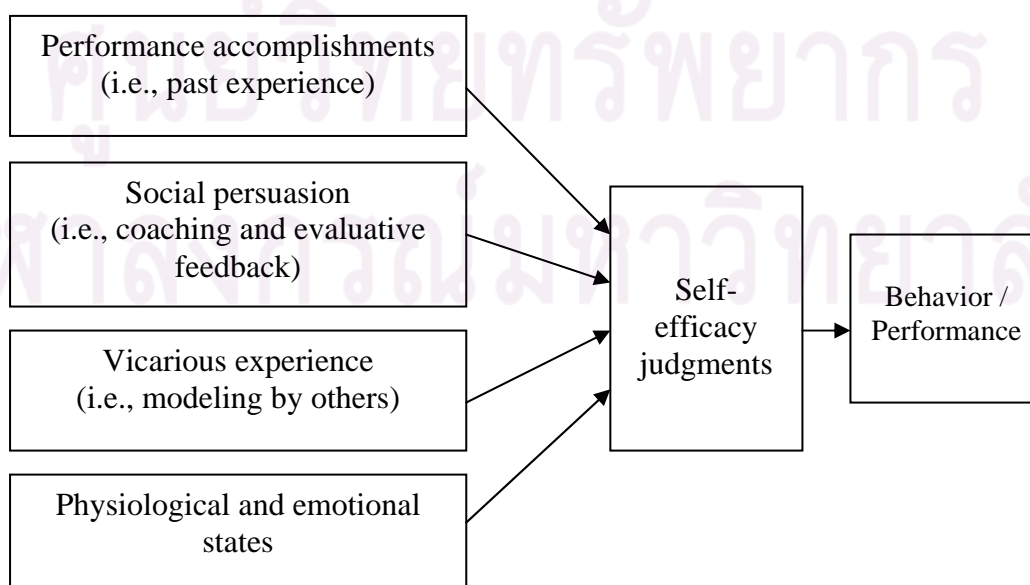
From the above motives, this study aimed to predict student's academic achievement by using self-efficacy for studying Technical pharmacy, Intelligence Quotient, attitude toward studying Technical Pharmacy, Emotional Quotient, gender, parent's income, and activity which trended to affect student's score. Anyway, it had not been any research studied by using these important factors all together especially in the field of Technical Pharmacy.

2.17 Theoretical framework

Self-efficacy was an important factor of Bandura's social cognitive theory which suggested that an individual's behavior, environment, and cognitive factors, i.e., outcome expectations and self-efficacy were all highly related. Bandura also defined self-efficacy as a judgment of one's ability to execute a particular behavior pattern (Bandura, 1978). Wood and Bandura expanded upon this definition by suggesting that self-efficacy formed a central role in the regulatory process through which an individual's motivation and performance attainments were governed (Wood and Bandura, 1989). Self-efficacy also determined how

much effort people would spend on a task and how long they would persist with it. People with strong self-efficacy exerted greater efforts to master a challenge while those people with weak self-efficacy was likely to reduce their efforts or even quit (Bandura and Schunk, 1981; Brown and Inouyne, 1978; Schunk, 1981, and Weinberg, Gould, and Jackson, 1979). Bandura suggested that there were four major sources of information used by individuals when forming self-efficacy judgments (Bandura, 1977). In order of strength, the first was performance accomplishments, which referred to personal assessment information that was based on an individual's personal mastery accomplishments, i.e., past experiences with the specific task being investigated. Previous successes raised mastery expectations, while repeated failures lower them (Gist and Mitchell, 1992; Saks, 1995). The second was vicarious experience, which was gained by observing others perform activities successfully. This was often referred to as modeling, and it could generate expectations in observers that they could improve their own performance by learning from what they had observed (Bandura, 1978; Gist and Mitchell, 1992). Social persuasion was the third, and it referred to activities where people were led, through suggestion, into believing that they could cope successfully with specific tasks. Coaching and giving evaluative feedback on performance were common types of social persuasion. The final source of information was physiological and emotional states. The individual's physiological or emotional state influenced self-efficacy judgments with respect to specific tasks. Emotional reactions to such tasks (e.g., anxiety) could lead to negative judgments of one's ability to complete the tasks (Bandura, 1977; Bandura and Cervone, 1986).

Picture 2.1 Theoretical framework



Bandura reviewed a variety of different lines of self-efficacy research. He concluded that self-efficacy had considerable potential explanatory power (Bandura, 1982). Perceived self-efficacy helped to account for a wide variety of individual behaviors, including: changes in coping behavior produced by different modes of influence, levels of physiological stress reactions, self-regulation, achievement strivings, growth of intrinsic interest, and choice of career pursuits (Bandura, 1978; Gist and Mitchell, 1992 and Gist, 1989). From observation of the results from various experiments, Bandura concluded that Behavior was raw data that must be cognitively appraised for its efficacy value (Bandura, 1982). Other authors had also concluded that the empirical evidence supporting self-efficacy was very strong (Gist, Schwoerer, and Rosen, 1989; Locke, 1991).



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

CHAPTER III

METHODOLOGY

A cross-sectional survey following the questionnaire guideline method was employed to study the relationship between Technical Pharmacy academic achievement (TPAA) and self-efficacy for studying Technical Pharmacy (SETP) with the other predictors namely— Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), activity participation during studying (APS), gender, and parent's income—of Technical Pharmacy students in the year 2009 - 2010.

3.1 Study design

This study was a deductive cross-sectional research based on Bandura's Self-efficacy Theory. The questionnaire was employed to predict Technical Pharmacy academic achievement by 7 factors namely—self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, gender, parent's income, and activity participation during studying.

3.2 Legal-ethical issue

The study was reviewed and approved by the Ethics Committee of the Faculty of Pharmaceutical Sciences, Chulalongkorn University.

3.3 Population

The population for this study consisted of 110 Technical Pharmacy students at Sirindhorn College of Public Health Phitsanuloke class of 2009 - 2010.

3.4 Sample size calculation and sampling method

The sample size recommended by using multiple regression analysis and by using rule of thumb (15 samples were suggested for 1 independent variable however sample size must not less than 100). Since this study had 7 independent variables, it was at least 100

samples. However, the study over calculated for losing data to 110 samples. The samples were the 110 Technical Pharmacy students at Sirindhorn College of Public Health Phitsanuloke class of 2009-2010.

3.5 Instruments

The 22-page self-administered questionnaire consisted of 164 questions was used in this study. It was divided into 5 parts: 1. Demographic, academic, and activity data namely—gender, parent's income, Grade Point Average, and activity participation during studying test 2. Self-efficacy of studying Technical Pharmacy test 3. Intelligence Quotient test 4. Emotional Quotient test 5. Attitude toward studying Technical Pharmacy test.

Activity participation during studying test was applied from SCA. The test was visual analog scale with 30 questions for collecting activity participation during studying data. The test was developed and covered all activities in Sirindhorn College of Public Health Phitsanuloke. In this study applied SCA because it was specific for collecting the data of activity participation during studying of Technical Pharmacy students in Sirindhorn College of Public Health Phitsanuloke (SCPHPL, 2009 : online).

Self-efficacy of studying Technical Pharmacy test was applied from Wood, Locke, and Mone based on Self-efficacy Theory by Bandura. The test was visual analog scale with 30 questions to collect self-efficacy data. This study applied Wood, Locke, and Mone scale because it was specifically designed and appropriated for students (Wood and Locke, 1987; Mone, 1994; Bandura, 1977).

Intelligence Quotient test was applied from Mensa organization. The scale was multiple choices with 36 questions. It was designed and developed by Mensa non-profit organization to measure people's Intelligence Quotient version 3.0, 2003. The test was culture fair by minimizing the effect of cultural variables. The test was based on logic and was furthermore designed to test learning capability, memory, innovative thinking and the ability to simultaneously address several problems. The test measured the general intelligence. The calculation of Intelligence Quotient was based on answers from more than 250,000 people. In this study used Mensa scale because the test measured the general intelligence minimizing the effect of cultural variables such as language and mathematics based on logic and it appropriated to the time to do the questionnaire in the study (Mensa Organization, 2009 : online).

Emotional Quotient test was applied from Department of Mental Health of Thailand. The test was visual analog scale with 52 questions for collecting Emotional Quotient data.

The test was developed and applied based on Thai people's behavior by Department of Mental Health of Thailand. In this study used EQ test of Mental Health Department of Thailand because it was specifically designed for Thai people (Department of Mental Health of Thailand, 1999 : online).

Attitude toward studying Technical Pharmacy test was applied from Triandis test. The test was visual analog scale with 30 questions for collecting attitude toward studying Technical Pharmacy data. The test was developed and applied based on Triandis test. It was the standard scale for testing attitude. Triandis test was specifically applied and appropriated for students in this study (Triandis, 1971).

3.6 Pretest

As part of the planned pretest of this questionnaire, 10 former Technical Pharmacy students completed the questionnaire to assess its face validity and content validity. Questionnaire format was modified largely based on suggestions from these pretest subjects. The final survey instrument and sample methodology were approved by researchers and experts.

3.7 Pilot test

An initial simulation of 10 questionnaire packets was performed, serving as a pilot test for the purpose of previewing the questions, calculating time of answering the questions, and fine tuning of some peripheral aspects of the questionnaire. The pilot test responses showed a need for scale modification and other physical refinement of the survey, which was done. Review of the modified questionnaire form showed these changes to enhance reliability, sensitivity, and variation of responses. Consistency of the test was assessed for internal reliability with Cronbach's Alpha coefficient. The reliability coefficient of scale was 0.7156.

3.8 Analysis procedure

All data were reported in the aggregate to avoid inadvertent identification of an individual. Consideration was given to the loss of power with multiple statistical testing. For testing these hypotheses consisted of 7 independent variables and 1 independent variable by SPSS version 17.0. There were 16 hypotheses generated from the models in this study. The

basic model for testing the 16 hypotheses consisted of 1 dependent variables—Technical Pharmacy academic achievement (TPAA) and 7 independent variables namely—self-efficacy for studying Technical Pharmacy (SETP), attitude toward studying Technical Pharmacy (ATSTP), Intelligence Quotient (IQ), Emotional Quotient (EQ), gender, parent’s income, and activity participant during studying (APS) in the year 2009-2010.

3.9 Variables

3.9.1 Dependent variable

There was 1 dependent variable in this study. The dependent variable was Technical Pharmacy academic achievement (TPAA).

3.9.2 Independent variables

There were 7 independent variables in this study. The independent variables were self-efficacy for studying Technical Pharmacy (SETP), Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), gender, parent’s income, and activity participation during studying (APS).

3.10 Data analysis

Data were described as frequencies, percent and means with standard deviations (SD). All analyses were performed by using the SPSS program version 17.0 with default setting (P-value < 0.05) as the level of statistical significance. One Way ANOVA, Pearson’s product moment correlation, and Hierarchical stepwise multiple regression analysis method were used for statistical analysis.

Each of the first to sixth hypotheses contained 1 category independent variable (X) (1X has more than 1 value) and 1 continuous dependent variable (Y). So One Way ANOVA analysis was applied to find relationships between them (P-value < 0.05).

$$Ho 1 : \mu_{SETP_{male}} = \mu_{SETP_{female}}$$

$$Ho 2 : \mu_{ATSTP_{male}} = \mu_{ATSTP_{female}}$$

$$Ho 3 : \mu_{TPAA_{male}} = \mu_{TPAA_{female}}$$

$$Ho 4 : \mu_{SETP_{parent's\ income0}} = \mu_{SETP_{parent's\ income1}} = \mu_{SETP_{parent's\ income2}} = \mu_{SETP_{parent's\ income3}} = \mu_{SETP_{parent's\ income4}} = \mu_{SETP_{parent's\ income5}} = \mu_{SETP_{parent's\ income6}} = \mu_{SETP_{parent's\ income7}} = \mu_{SETP_{parent's\ income8}} = \mu_{SETP_{parent's\ income9}}$$

$$\begin{aligned} \text{Ho 5 : } & \mu_{\text{ATSTP}_{\text{parent's income0}}} = \mu_{\text{ATSTP}_{\text{parent's income1}}} = \mu_{\text{ATSTP}_{\text{parent's income2}}} = \\ & \mu_{\text{ATSTP}_{\text{parent's income3}}} = \mu_{\text{ATSTP}_{\text{parent's income4}}} = \mu_{\text{ATSTP}_{\text{parent's income5}}} = \mu_{\text{ATSTP}_{\text{parent's income6}}} = \\ & \mu_{\text{ATSTP}_{\text{parent's income7}}} = \mu_{\text{ATSTP}_{\text{parent's income8}}} = \mu_{\text{ATSTP}_{\text{parent's income9}}} \\ \text{Ho 6 : } & \mu_{\text{TPAA}_{\text{parent's income0}}} = \mu_{\text{TPAA}_{\text{parent's income1}}} = \mu_{\text{TPAA}_{\text{parent's income2}}} = \\ & \mu_{\text{TPAA}_{\text{parent's income3}}} = \mu_{\text{TPAA}_{\text{parent's income4}}} = \mu_{\text{TPAA}_{\text{parent's income5}}} = \mu_{\text{TPAA}_{\text{parent's income6}}} = \\ & \mu_{\text{TPAA}_{\text{parent's income7}}} = \mu_{\text{TPAA}_{\text{parent's income8}}} = \mu_{\text{TPAA}_{\text{parent's income9}}} \end{aligned}$$

Each of the seventh to fifteenth hypotheses contained 1 dependent variable and 1 independent variable. In each case, both were continuous variables, so Pearson's product moment correlation was applied to find relationships between them (P-value < 0.05).

$$\begin{aligned} \text{Ho 7 : } & \rho_{\text{IQ} \cdot \text{ATSTP}} = 0 \\ \text{Ho 8 : } & \rho_{\text{EQ} \cdot \text{ATSTP}} = 0 \\ \text{Ho 9 : } & \rho_{\text{APS} \cdot \text{ATSTP}} = 0 \\ \text{Ho 10 : } & \rho_{\text{IQ} \cdot \text{TPAA}} = 0 \\ \text{Ho 11 : } & \rho_{\text{EQ} \cdot \text{TPAA}} = 0 \\ \text{Ho 12 : } & \rho_{\text{APS} \cdot \text{TPAA}} = 0 \\ \text{Ho 13 : } & \rho_{\text{SETP} \cdot \text{TPAA}} = 0 \\ \text{Ho 14 : } & \rho_{\text{ATSTP} \cdot \text{SESTP}} = 0 \\ \text{Ho 15 : } & \rho_{\text{ATSTP} \cdot \text{TPAA}} = 0 \end{aligned}$$

The sixteenth hypothesis had 1 continuous dependent variable (Technical Pharmacy academic achievement) measured in ratio scale and 7 independent variables namely—self-efficacy for studying Technical Pharmacy (SETP), Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), and activity participation during studying (APS) were ratio scale. On the other hand, gender, and parent's income were category data. Therefore, hierarchical stepwise multiple regression analysis method was employed to evaluate. These statistical tests were one-sided with a significant level of $\alpha = 0.05$.

$$\text{Ho 16: } \text{TPAA} = b_0 + b_1\text{SETP} + b_2\text{ATSTP} + b_3\text{IQ} + b_4\text{EQ} + b_5\text{gender} + b_6\text{parent's income} + b_7\text{APS} + e$$

$$\begin{aligned} Z_{\text{TPAA}} = & b_1Z_{\text{SETP}} + b_2Z_{\text{ATSTP}} + b_3Z_{\text{IQ}} + b_4Z_{\text{EQ}} + b_5Z_{\text{gender}} + \\ & b_6Z_{\text{parent's income}} + b_7Z_{\text{APS}} + e \end{aligned}$$

CHAPTER IV

RESULTS

This chapter presented the data analysis and interpretation. The study results were explained including tables and graphs. It started with descriptive statistical analysis, scale reliability, inference statistics by which the study's response data were interpreted, and the results and evaluative statistical analysis, on which its 16 hypotheses were tested.

Self-efficacy for studying Technical Pharmacy (SETP), attitude toward studying Technical Pharmacy (ATSTP), Intelligence Quotient (IQ), Emotional Quotient (EQ), gender, parent's income, and activity participation during studying (APS) were factors collected to find the relationship with Technical Pharmacy academic achievement (TPAA).

The first section summarized descriptive analysis: response rate, demographic characteristics, and scale reliability. The second section presented results of the evaluative analysis, from the statistical procedures employed in this study namely—analysis of variance, Pearson's product moment correlation, and hierarchical stepwise multiple regression analysis.

Descriptive statistic analysis was used to examine the demographic characteristics of the respondents. A Pearson's product moment correlation was employed to examine the relationship between factors. Hierarchical stepwise multiple regression analysis was conducted to find the predictor model of Technical Pharmacy academic achievement.

Data process (coding and computer entry) was done by 2 investigators. The test for entry error was done by double check, throughout the entire sample, of every response item against its incorrect initial keyboard entry.

4.1 Descriptive statistic analysis

The data collection was conducted during 2 April 2010 to 9 April 2010 at Sirindhorn College of Public Health Phitsanuloke class of 2009 and 2010. The students were divided into 2 groups. Before students did the questionnaire, the researcher informed the objectives of the research, described the detail of the questionnaire, and answered questions about the questionnaire to students. While the students were doing the questionnaire, they could ask researchers anytime when they had any problems. The 22-page self-administered questionnaire consisted of 164 questions was used in this study. The questionnaire was

divided into 5 parts: 1. Demographic data namely—gender, parent’s income—Grade Point Average, and activity participation during studying test 2. Self-efficacy of studying Technical Pharmacy test 3. Intelligence Quotient test 4. Emotional Quotient test 5. Attitude toward studying Technical Pharmacy test. The first group did the questionnaire for 3 hours and 17 minutes and the second group did the questionnaire for 2 hours and 53 minutes.

4.1.1 Response rate

The data collection was conducted during 2 April 2010 to 9 April 2010 at Sirindhorn College of Public Health Phitsanuloke class of 2009 and 2010. The sample size recommended by using multiple regression analysis was 15 cases for 1 independent variable however sample size must not less than 100 cases. In this study contained 7 independent variables therefore the calculated sample size was 105 Technical Pharmacy students ($7 * 15 = 105$) and the study was planned to correct 110. Final Return Rate was 110 samples (100 %).

4.1.2 Demographic characteristics

All 110 respondents were Technical Pharmacy students at Sirindhorn College of Public Health Phitsanuloke year 2009-2010 (The summary of demographic data including gender and parent’s income were shown in Table 4.1).

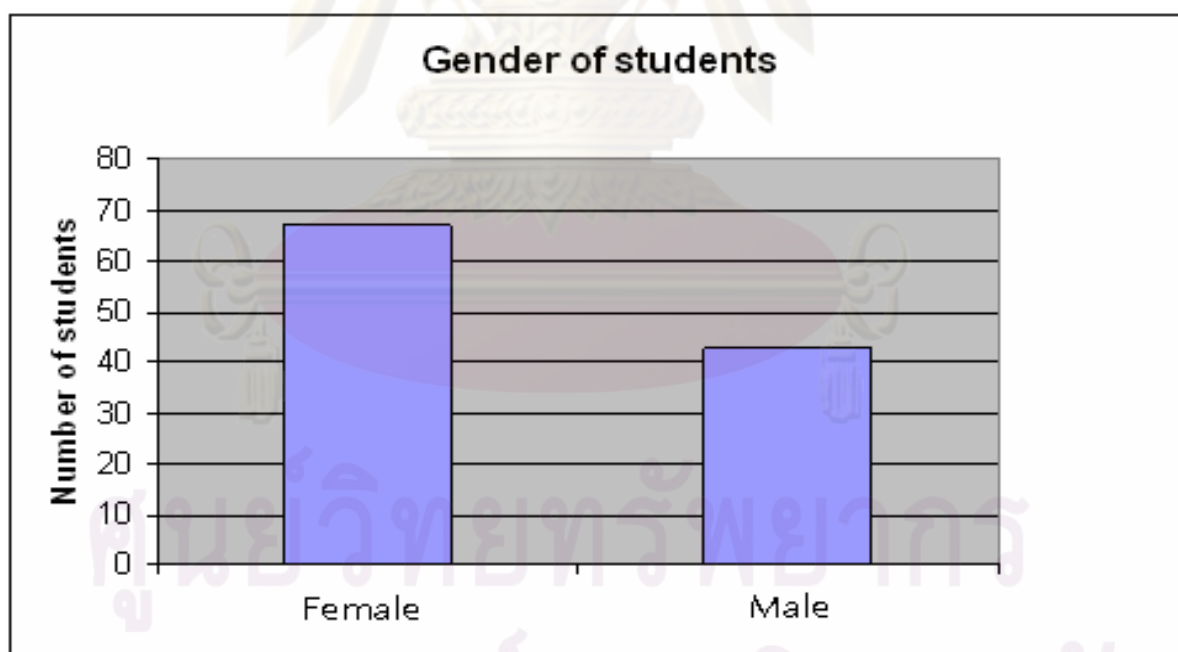
Most of students 67 (60.91%) were female and 43 (39.09%) were male (The graph was shown in Figure 4.1).

Most of parent’s income of students 43 (39.09%) were in the range of 15,001 - 20,000 Baht, 33 (30.00%) were in the range of less than 15,001 Baht, and 24 (21.82%) were in the range of 20,001 - 25,000 Baht (The graph was shown in Figure 4.2).

Table 4.1 Demographic data of the respondents (Categorical data)

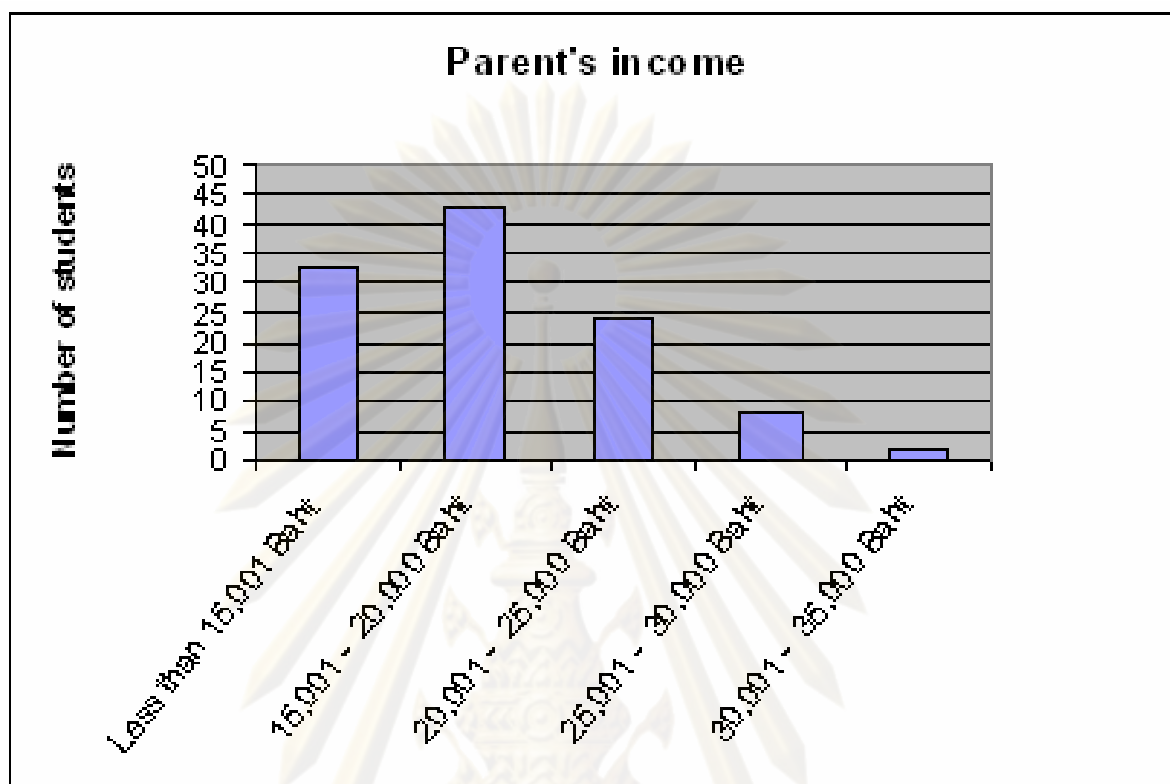
Demographic Characteristics	Frequency	Percent
Gender		
Male	43	39.09
Female	67	60.91
Parent's income (Baht)		
Less than 15,001	33	30.00
15,001 - 20,000	43	39.09
20,001 - 25,000	24	21.82
25,001 - 30,000	8	7.27
30,001 - 35,000	2	1.82
Total	110	100

Diagram 4.1 Gender of students (n = 110)



Note: 67 students (60.91%) were female and 43 students (39.09%) were male.

Diagram 4.2 Levels of parent's income of students (n = 110)



Note: 43 students (39.09%) were in the range of 15,001 - 20,000 Baht, 33 students (30.00%) were in the range of less than 15,001 Baht, 24 students (21.82%) were in the range of 20,001 - 25,000 Baht, 8 students (7.27%) were in the range of 25,001-30,000 Baht, and 2 students (1.82%) were in the range of 30,001 - 35,000 Baht.

4.1.3 Descriptive statistics

In Table 4.2, the average score and standard deviation of self-efficacy for studying Technical Pharmacy was 5.28 ± 0.28 . The average score and standard deviation of attitude toward studying Technical Pharmacy was 6.76 ± 0.37 . The average score and standard deviation of Intelligence Quotient was 104.22 ± 9.61 . The average score and standard deviation of Emotional Quotient was 6.24 ± 0.24 . The average score and standard deviation of activity participation during studying of students was 5.31 ± 0.81 . The average score and standard deviation of Grade Point Average was 3.16 ± 0.25 .

Table 4.2 Descriptive statistics (n = 110)

	Min	Max	Mean	SD
Self-efficacy for studying Technical Pharmacy (SETP)	4.59	5.79	5.28	0.28
Attitude toward studying Technical Pharmacy (ATSTP)	4.84	7.80	6.76	0.37
Intelligence Quotient (IQ)	91.00	121.00	104.22	9.61
Emotional Quotient (EQ)	5.23	7.38	6.24	0.24
Activity participation during studying (APS)	3.40	8.50	5.31	0.81
Grade Point Average (GPA)	2.49	3.87	3.16	0.25

4.1.4 Scale reliability

Consistency of these tests was assessed for internal reliability with Cronbach's Alpha coefficient. The reliability coefficients of scale for self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, and 3 aspects of Emotional Quotient (Goodness, Intelligence, and Happiness) were 0.7157, 0.7154, 0.7151, 0.7152, and 0.7154, respectively.

4.2 Evaluative analysis

Data were described as frequencies, percents and means with standard deviations (SD). All analysis were performed by using the SPSS program version 17.0 with default setting P-value < 0.05 as the level of statistical significance. Analysis of variance, Pearson's product moment correlation, and hierarchical stepwise multiple regression analysis method were used for statistical analysis.

4.2.1 Analysis of hypotheses

For the first to sixth hypotheses:

$$\text{Ho 1 : } \mu\text{SETP}_{\text{male}} = \mu\text{SETP}_{\text{female}}$$

$$\text{Ho 2 : } \mu\text{ATSTP}_{\text{male}} = \mu\text{ATSTP}_{\text{female}}$$

$$\text{Ho 3 : } \mu\text{TPAA}_{\text{male}} = \mu\text{TPAA}_{\text{female}}$$

$$\text{Ho 4 : } \mu\text{SETP}_{\text{parent's income0}} = \mu\text{SETP}_{\text{parent's income1}} = \mu\text{SETP}_{\text{parent's income2}} = \mu\text{SETP}_{\text{parent's income3}} = \mu\text{SETP}_{\text{parent's income4}} = \mu\text{SETP}_{\text{parent's income5}} = \mu\text{SETP}_{\text{parent's income6}} = \mu\text{SETP}_{\text{parent's income7}} = \mu\text{SETP}_{\text{parent's income8}} = \mu\text{SETP}_{\text{parent's income9}}$$

$$\text{Ho 5 : } \mu\text{ATSTP}_{\text{parent's income0}} = \mu\text{ATSTP}_{\text{parent's income1}} = \mu\text{ATSTP}_{\text{parent's income2}} = \mu\text{ATSTP}_{\text{parent's income3}} = \mu\text{ATSTP}_{\text{parent's income4}} = \mu\text{ATSTP}_{\text{parent's income5}} = \mu\text{ATSTP}_{\text{parent's income6}} = \mu\text{ATSTP}_{\text{parent's income7}} = \mu\text{ATSTP}_{\text{parent's income8}} = \mu\text{ATSTP}_{\text{parent's income9}}$$

$$\text{Ho 6 : } \mu\text{TPAA}_{\text{parent's income0}} = \mu\text{TPAA}_{\text{parent's income1}} = \mu\text{TPAA}_{\text{parent's income2}} = \mu\text{TPAA}_{\text{parent's income3}} = \mu\text{TPAA}_{\text{parent's income4}} = \mu\text{TPAA}_{\text{parent's income5}} = \mu\text{TPAA}_{\text{parent's income6}} = \mu\text{TPAA}_{\text{parent's income7}} = \mu\text{TPAA}_{\text{parent's income8}} = \mu\text{TPAA}_{\text{parent's income9}}$$

Each of the first to sixth hypotheses contained 1 category independent variable and 1 continuous dependent variable. So One Way ANOVA was applied to compare means of self-efficacy for studying Technical Pharmacy between male and female, to compare means of attitude toward studying Technical Pharmacy between male and female, and to compare the means of Grade Point Average between male and female (The results were shown in Table 4.3 to 4.5). One Way ANOVA was applied to compare means of self-efficacy for studying Technical Pharmacy among ranges of parent's income, to compare means of attitude toward studying Technical Pharmacy among ranges of parent's income, and to compare means of Grade Point Average among ranges of parent's income (The results were shown in Table 4.6 to 4.8).

Table 4.3 One Way ANOVA analysis of self-efficacy for studying Technical Pharmacy (SETP) between male and female (n = 110).

		N	Min	Max	Mean	SD	F	P-value
Self-efficacy for studying Technical Pharmacy (SETP)	Female	67	4.59	5.79	5.34	0.25	**9.00	0.00
	Male	43	4.63	5.77	5.18	0.30		

** significant level at P-value < 0.01

The average score and standard deviation of self-efficacy for studying Technical Pharmacy of male was 5.18 ± 0.30 ranged from 4.63 to 5.77. The average score and standard deviation of self-efficacy for studying Technical Pharmacy of female was 5.34 ± 0.25 ranged from 4.59 to 5.79. F-test of the average scores of self-efficacy for studying Technical Pharmacy between male and female was **9.00 (P-value = 0.00). Conclusion: The average scores of male and female were statistical significantly different. In other words, male and female self-efficacy for studying Technical Pharmacy was statistical different.

Table 4.4 One Way ANOVA analysis of attitude toward studying Technical Pharmacy (ATSTP) between male and female (n = 110).

		N	Min	Max	Mean	SD	F	P-value
Attitude toward studying Technical Pharmacy (ATSTP)	Female	67	4.84	7.50	6.77	0.38	0.12	0.73
	Male	43	5.55	7.80	6.75	0.36		

The average score and standard deviation of attitude toward studying Technical Pharmacy of male was 6.75 ± 0.36 ranged from 5.55 to 7.80. The average score and standard deviation of attitude toward studying Technical Pharmacy of female was 6.77 ± 0.38 ranged from 4.84 to 7.50. F-test of the average scores of attitude toward studying Technical Pharmacy between male and female was 0.12 (P-value = 0.73). Conclusion: The average scores of male and female were not statistical significantly different. In other words, male and female attitude toward studying Technical Pharmacy were not statistical different.

Table 4.5 One Way ANOVA analysis of Grade Point Average (GPA) between male and female (n = 110).

		N	Min	Max	Mean	SD	F	P-value
Grade Point Average (GPA)	Female	67	2.49	3.87	3.20	0.22	*4.75	0.03
	Male	43	2.49	3.85	3.09	0.28		

* significant level at P-value < 0.05

The average score and standard deviation of Grade Point Average of male was 3.09 ± 0.28 ranged from 2.49 to 3.85. The average score and standard deviation of Grade Point Average of female was 3.20 ± 0.22 ranged from 2.49 to 3.87. F-test of the average scores of Grade Point Average between male and female was *4.75 (P-value = 0.03). Conclusion: The average scores of male and female were statistical significantly different. In other words, male and female Grade Point Average were statistical significantly different.

Table 4.6 One Way ANOVA analysis of self-efficacy for studying Technical Pharmacy (SETP) among ranges of parent's income(n = 110).

		N	Min	Max	Mean	SD	F	P-value
Self-efficacy for studying Technical Pharmacy (SETP)	Less than 15,001	33	4.63	5.77	5.28	0.26	0.09	0.99
	15,001 - 20,000	43	4.70	5.77	5.27	0.29		
	20,001 - 25,000	24	4.82	5.79	5.28	0.30		
	25,001 - 30,000	8	4.59	5.65	5.26	0.31		
	30,001 - 35,000	2	5.37	5.40	5.39	0.02		

The average scores and standard deviations of self-efficacy for studying Technical Pharmacy of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 5.28 ± 0.26 , 5.27 ± 0.29 , 5.28 ± 0.30 , 5.26 ± 0.31 , 5.39 ± 0.02 , respectively. The average score and standard deviation of self-efficacy for studying Technical Pharmacy of 30,001 – 35,000 was 5.39 ± 0.02 ranged from 5.37 to 5.40. The average score and standard deviation of self-efficacy for studying Technical Pharmacy of less than 15,001 was 5.28 ± 0.26 ranged from 4.63 to 5.77. The average score and standard deviation of self-efficacy for studying Technical Pharmacy of 20,001 – 25,000 was 5.28 ± 0.30 ranged from 4.82 to 5.79. F-test of the average scores of self-efficacy for studying Technical Pharmacy among ranges

of parent's income was 0.09 (P-value = 0.99). Conclusion: The average scores of range of parent's income were not statistical significantly different. In other words, self-efficacy for studying Technical Pharmacy among ranges of parent's income were not statistical different.

Table 4.7 One Way ANOVA analysis of attitude toward studying Technical Pharmacy (ATSTP) between ranges of parent's income (n = 110).

		N	Min	Max	Mean	SD	F	P-value
Attitude toward studying Technical Pharmacy (ATSTP)	Less than 15,001	33	5.55	7.80	6.76	0.43	2.28	0.07
	15,001 - 20,000	43	6.22	7.50	6.81	0.27		
	20,001 - 25,000	24	6.25	7.30	6.77	0.25		
	25,001 - 30,000	8	4.84	6.95	6.41	0.71		
	30,001 - 35,000	2	6.98	7.08	7.03	0.07		

The average scores and standard deviations of attitude toward studying Technical Pharmacy of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 6.76 ± 0.43 , 6.81 ± 0.27 , 6.77 ± 0.25 , 6.41 ± 0.71 , 7.03 ± 0.07 , respectively. The average score and standard deviation of attitude toward studying Technical Pharmacy of 30,001 - 35,000 was 7.03 ± 0.07 ranged from 6.98 to 7.08. The average score and standard deviation of attitude toward studying Technical Pharmacy of 15,001 - 20,000 was 6.81 ± 0.27 ranged from 6.22 to 7.50. The average score and standard deviation of attitude toward studying Technical Pharmacy of 20,001 - 25,000 was 6.77 ± 0.25 ranged from 6.25 to 7.30. F-test of the average score of attitude toward studying Technical Pharmacy among ranges of parent's income was 2.28 (P-value = 0.06). Conclusion: The average scores of range of parent's income were not statistical significantly different. In other words, attitude toward studying Technical Pharmacy among parent's income were not statistical different.

Table 4.8 One Way ANOVA analysis of Grade Point Average (GPA) between ranges of parent's income (n = 110).

		N	Min	Max	Mean	SD	F	P-value
Grade Point Average (GPA)	Less than 15,001	33	2.49	3.85	3.15	0.23	0.12	0.94
	15,001 - 20,000	43	2.79	3.85	3.16	0.25		
	20,001 - 25,000	24	2.79	3.87	3.17	0.28		
	25,001 - 30,000	8	2.49	3.42	3.11	0.28		
	30,001 - 35,000	2	3.21	3.21	3.21	0.00		

The average scores and standard deviations of Grade Point Average of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 3.15 ± 0.23 , 3.16 ± 0.25 , 3.17 ± 0.28 , 3.11 ± 0.28 , 3.21 ± 0.00 , respectively. The average score and standard deviation of Grade Point Average of 30,001 - 35,000 was 3.21 ± 0.00 . The average score and standard deviation of Grade Point Average of 20,001 - 25,000 was 3.17 ± 0.28 ranged from 2.79 to 3.87. The average score and standard deviation of Grade Point Average of 15,001 - 20,000 was 3.16 ± 0.25 ranged from 2.79 to 3.85. F-test of the average scores of Grade Point Average among ranges of parent's income was 0.12 (P-value = 0.94).

Conclusion: The average scores of range of parent's income were not statistical significantly different. In other words, Grade Point Average among ranges of parent's income were not statistical different.

For the seventh to fifteenth hypotheses:

The seventh to fifteenth hypotheses had 2 continuous (Ratio scale) variables. The data for these hypotheses were analyzed via Pearson's product moment correlation method. The statistical significance α was set to 0.05 (The results were shown in Table 4.9).

$$H_0 7 : \rho_{IQ. ATSTP} = 0$$

$$H_0 8 : \rho_{EQ. ATSTP} = 0$$

$$H_0 9 : \rho_{APS. ATSTP} = 0$$

$$H_0 10 : \rho_{IQ. TPAA} = 0$$

$$H_0 11 : \rho_{EQ. TPAA} = 0$$

$$H_0 12 : \rho_{APS. TPAA} = 0$$

$$Ho\ 13 : \rho_{SETP.TPAA} = 0$$

$$Ho\ 14 : \rho_{ATSTP.SESETP} = 0$$

$$Ho\ 15 : \rho_{ATSTP.TPAA} = 0$$



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Table 4.9 Pearson's correlation matrix.

	Self-efficacy for studying Technical Pharmacy (SETP)	Activity participation during studying (APS)	Attitude toward studying Technical Pharmacy (ATSTP)	Intelligence Quotient (IQ)	Emotional Quotient (EQ)	Grade Point Average (GPA)
Self-efficacy for studying Technical Pharmacy (SETP)	1					
Activity participation during studying (APS)	*0.18	1				
Attitude toward studying Technical Pharmacy (ATSTP)	0.11	-0.07	1			
Intelligence Quotient (IQ)	**0.31	-0.01	0.06	1		
Emotional Quotient (EQ)	**0.89	0.14	0.15	**0.33	1	
Grade Point Average (GPA)	**0.96	0.16	0.08	**0.38	**0.91	1
Mean	5.28	5.31	6.76	104.22	6.24	3.16
SD	0.28	0.81	0.37	9.61	0.24	0.25

* significant level at P-value < 0.05

** significant level at P-value < 0.01

$$H_0 7: \rho_{IQ . ATSTP} = 0$$

This study found that the relationship between Intelligence Quotient and attitude toward studying Technical Pharmacy were not statistical significant ($r = +0.06$, $R^2 = 0.00$, P-value = 0.28).

Conclusion: Intelligence Quotient and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

$$H_0 8: \rho_{EQ . ATSTP} = 0$$

This study found that the relationship between Emotional Quotient and attitude toward studying Technical Pharmacy were not statistical significant ($r = +0.15$, $R^2 = 0.02$, P-value = 0.06).

Conclusion: Emotional Quotient and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

$$H_0 9: \rho_{APS . ATSTP} = 0$$

This study found that the relationship between activity participation during studying and attitude toward studying Technical Pharmacy were not statistical significant ($r = -0.07$, $R^2 = 0.00$, P-value = 0.22).

Conclusion: Activity participant during studying and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

$$H_0 10: \rho_{IQ . TPAA} = 0$$

This study found that the relationship between Intelligence Quotient and Technical Pharmacy academic achievement were positively statistical significant ($r = **+0.38$, $R^2 = 0.14$, P-value = 0.00).

Conclusion: Intelligence Quotient and Technical Pharmacy academic achievement statistical significantly positively correlated.

$$H_0 11: \rho_{EQ.TPAA} = 0$$

This study found that the relationship between Emotional Quotient and Technical Pharmacy academic achievement were positively statistical significant ($r = **+0.91$, $R^2 = 0.83$, $P\text{-value} = 0.00$).

Conclusion: Emotional Quotient and Technical Pharmacy academic achievement statistical significantly positively correlated.

$$H_0 12: \rho_{APS.TPAA} = 0$$

This study found that the relationship between activity participation during studying and Technical Pharmacy academic achievement were not statistical significant ($r = +0.16$, $R^2 = 0.03$, $P\text{-value} = 0.05$).

Conclusion: Activity participation during studying and Technical Pharmacy academic achievement did not statistical significantly correlate.

$$H_0 13: \rho_{SETP.TPAA} = 0$$

This study found that the relationship between self-efficacy for studying Technical Pharmacy and Technical Pharmacy academic achievement were positively statistical significant ($r = **+0.96$, $R^2 = 0.92$, $P\text{-value} = 0.00$).

Conclusion: Self-efficacy for studying Technical Pharmacy and Technical Pharmacy academic achievement statistical significantly positively correlated.

$$H_0 14: \rho_{ATSTP.SESETP} = 0$$

This study found that the relationship between attitude toward studying Technical Pharmacy and self-efficacy for studying Technical Pharmacy were not statistical significant ($r = +0.11$, $R^2 = 0.01$, $P\text{-value} = 0.12$).

Conclusion: Attitude toward studying Technical Pharmacy and self-efficacy for studying Technical Pharmacy did not statistical significantly correlate.

Ho 15: $\rho_{ATSTP.TPAA} = 0$

This study found that the relationship between attitude toward studying Technical Pharmacy and Technical Pharmacy academic achievement were not statistical significant ($r = +0.08$, $R^2 = 0.01$, $P\text{-value} = 0.19$).

Conclusion: Attitude toward studying Technical Pharmacy and Technical Pharmacy academic achievement did not statistical significantly correlate.

Conclusions: Among the 7 independent variables in this model, self-efficacy for studying Technical Pharmacy had the largest statistical significant positive correlation with Technical Pharmacy academic achievement ($r = **+0.96$, $R^2 = 0.92$, $P\text{-value} = 0.00$). Emotional Quotient and Intelligence Quotient had the statistical significant positive correlation with Technical Pharmacy academic achievement as well. Emotional Quotient had the statistical significant positive correlation with Technical Pharmacy academic achievement ($r = **+0.91$, $R^2 = 0.83$, $P\text{-value} = 0.00$) and Intelligence Quotient had the statistical significant positive correlation with Technical Pharmacy academic achievement ($r = **+0.38$, $R^2 = 0.14$, $P\text{-value} = 0.00$). It meant that the more students had self-efficacy for studying Technical Pharmacy, Emotional Quotient, and Intelligence Quotient, the more students got Technical Pharmacy academic achievement.

Moreover, this study found that correlations between Emotional Quotient had the statistical significant positive correlation with self-efficacy for studying Technical Pharmacy ($r = **+0.89$, $R^2 = 0.79$, $P\text{-value} = 0.00$), Emotional Quotient had the statistical significant positive correlation with Intelligence Quotient ($r = **+0.33$, $R^2 = 0.11$, $P\text{-value} = 0.00$), Intelligence Quotient had the statistical significant positive correlation with self-efficacy for studying Technical Pharmacy ($r = **+0.31$, $R^2 = 0.10$, $P\text{-value} = 0.00$), and activity participant during studying had the statistical significant positive correlation with self-efficacy for studying Technical Pharmacy ($r = *+0.18$, $R^2 = 0.03$, $P\text{-value} = 0.03$).

For the sixteenth hypothesis:

The sixteenth hypothesis had 1 continuous (Ratio scale) dependent variable— Technical Pharmacy academic achievement (TPAA) and 7 independent variables—self-efficacy for studying Technical Pharmacy (SETP), attitude toward studying Technical Pharmacy (ATSTP), Intelligence Quotient (IQ), Emotional Quotient (EQ), gender, parent's

income, and activity participation during studying (APS)—described in this equation.

Statistical analysis of this data was calculated via hierarchical stepwise multiple regression analysis ($\alpha < 0.05$). To identify appropriate multiple regression model for self-efficacy and factors predicting academic achievement of Technical Pharmacy students.

Ho 16: Model predicting Technical Pharmacy academic achievement

$$TPAA = b_0 + b_1 \text{male} + b_2 \text{parent's income} + b_3 \text{IQ} + b_4 \text{EQ} + b_5 \text{APS} + b_6 \text{ATSTP} + b_7 \text{SETP}$$

$$Z_{TPAA} = b_1 Z_{\text{male}} + b_2 Z_{\text{parent's income}} + b_3 Z_{\text{IQ}} + b_4 Z_{\text{EQ}} + b_5 Z_{\text{APS}} + b_6 Z_{\text{ATSTP}} + b_7 Z_{\text{SETP}}$$

Self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, gender, parent's income, and activity participation during studying were factors collected to find the multiple relationship with Technical Pharmacy academic achievement.

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Table 4.10 Correlation Matrix

	Grade Point Average (GPA)	Male	Parent's income	Intelligence Quotient (IQ)	Emotional Quotient (EQ)	Activity participation during studying (APS)	Attitude toward studying Technical Pharmacy (ATSTP)	Self-efficacy for studying Technical Pharmacy (SETP)
Grade Point Average (GPA)	1							
Male	*-0.21	1						
Parent's income	0.00	-0.06	1					
Intelligence Quotient (IQ)	**0.38	-0.14	0.05	1				
Emotional Quotient (EQ)	**0.91	**0.24	0.01	**0.33	1			
Activity participation during studying (APS)	0.16	-0.03	-0.09	-0.01	0.14	1		
Attitude toward studying Technical Pharmacy (ATSTP)	0.08	-0.03	-0.09	0.06	0.15	-0.07	1	
Self-efficacy for studying Technical Pharmacy (SETP)	**0.96	**0.28	0.01	**0.31	**0.89	*0.18	0.11	1
Mean	3.16	0.39	1.12	104.22	6.24	5.31	6.76	5.28
SD	0.25	0.49	0.98	9.61	0.24	0.81	0.37	0.28

* significant level at P-value < 0.05 (1-tailed)

** significant level at P-value < 0.01 (1-tailed)

There were 7 independent variables in the equation. Self-efficacy for studying Technical Pharmacy had the largest statistical significant positive correlation with Technical Pharmacy academic achievement ($r = **+0.96$, $R^2 = 0.92$, $P\text{-value} = 0.00$). Emotional Quotient ($r = **+0.91$, $R^2 = 0.83$, $P\text{-value} = 0.00$), Intelligence Quotient ($r = **+0.38$, $R^2 = 0.14$, $P\text{-value} = 0.00$), and Male ($r = *-0.21$, $R^2 = 0.04$, $P\text{-value} = 0.02$) had the statistical significant correlation with Technical Pharmacy academic achievement as well.

Conclusion: 1. The more students had self-efficacy for studying Technical Pharmacy, the more students got Technical Pharmacy academic achievement. 2. The more students had Emotional Quotient, the more students got Technical Pharmacy academic achievement. 3. The more students had Intelligence Quotient, the more students got Technical Pharmacy academic achievement. 4. Being female made students have more Technical Pharmacy academic achievement.

Moreover, this study found that self-efficacy for studying Technical Pharmacy had the statistical significant positive correlation with Emotional Quotient. It meant that the more students had self-efficacy for studying Technical Pharmacy, the more students had Emotional Quotient ($r = **+0.89$, $R^2 = 0.79$, $P\text{-value} = 0.00$). Emotional Quotient had the statistical significant positive correlation with Intelligence Quotient. It meant that the more students had Emotional Quotient, the more students had Intelligence Quotient ($r = **+0.33$, $R^2 = 0.11$, $P\text{-value} = 0.00$). Self-efficacy for studying Technical Pharmacy had the statistical significant positive correlation with Intelligence Quotient. It meant that the more students had self-efficacy for studying Technical Pharmacy, the more students had Intelligence Quotient ($r = **+0.31$, $R^2 = 0.10$, $P\text{-value} = 0.00$). Self-efficacy for studying Technical Pharmacy had the statistical significant negative correlation with male. It meant that being female made students had more self-efficacy for studying Technical Pharmacy ($r = *-0.28$, $R^2 = 0.08$, $P\text{-value} = 0.00$). Emotional Quotient had the statistical significant negative correlation with male. It meant that being female made students have more Emotional Quotient ($r = *-0.24$, $R^2 = 0.06$, $P\text{-value} = 0.01$). Activity participant during studying had the statistical significant positive correlation with self-efficacy for studying Technical Pharmacy. It meant that the more students participated activity during studying, more students had self-efficacy for studying Technical Pharmacy ($r = *+0.18$, $R^2 = 0.03$, $P\text{-value} = 0.03$).

Table 4.11 Coefficients

	b	SE	Beta	t	P-value	b	SE	Beta	t	P-value	b	SE	Beta	t	P-value
1 (Constant)	-2.95	0.28		-10.70	0.00	-2.75	0.31		-8.80	0.00	-2.00	0.19		-10.30	**0.00
Male	-0.01	0.02	-0.02	-0.45	0.65	-0.01	0.02	-0.02	-0.45	0.65	-0.03	0.01	-0.07	-2.72	**0.00
Parent's income	0.00	0.01	-0.01	-0.22	0.83	0.00	0.01	-0.01	-0.36	0.72	0.00	0.01	-0.02	-0.66	0.51
Intelligence Quotient (IQ)	0.00	0.00	0.09	2.11	0.04	0.00	0.00	0.09	2.13	0.04	0.00	0.00	0.08	3.14	**0.00
Emotional Quotient (EQ)	0.93	0.05	0.88	20.22	0.00	0.94	0.05	0.89	20.28	0.00	0.26	0.06	0.25	4.59	**0.00
Activity participation during studying (APS)	0.01	0.01	0.04	0.99	0.32	0.01	0.01	0.03	0.84	0.40	0.00	0.01	-0.01	-0.44	0.66
2 Attitude toward studying Technical Pharmacy (ATSTP)						0.04	0.03	0.06	1.38	0.17	-0.03	0.02	-0.04	-1.76	0.08
Self-efficacy for studying Technical Pharmacy (SETP)											0.67	0.05	0.74	13.64	**0.00
r											0.76				
R ²											0.57				

* significant level at P-value < 0.05 (1-tailed)

** significant level at P-value < 0.01 (1-tailed)

$$TPAA = -2.00 + **0.67 SETP + **0.26 EQ + **0.00 IQ - **0.03 male - 0.03 ATSTP + 0.00 parent's income + 0.00 APS$$

$$Z_{TPAA} = +**0.74Z_{SETP} + **0.25Z_{EQ} + **0.08Z_{IQ} - **0.07Z_{male} - 0.04Z_{ATSTP} - 0.02Z_{parent's\ income} - 0.01Z_{APS}$$

The three steps of hierarchical stepwise multiple regression analysis statistics were used to explore the relationship (predicted) between Technical Pharmacy academic achievement and all 7 predictors (self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, Intelligence Quotient, Emotional Quotient, gender, parent's income, and activity participation during studying).

The directional nature of the hypotheses, one-tailed t-tests were used to assess for significance. It yielded 2 equations of Technical Pharmacy academic achievement prediction as the followings;

1. Unstandardized prediction equation

$$\text{TPAA} = -2.00 + **0.67\text{SETP} + **0.26\text{EQ} + **0.00\text{IQ} - **0.03\text{male} - 0.03\text{ATSTP} \\ + 0.00\text{parent's income} + 0.00\text{APS}$$

** significant at 0.01 level (1-tailed)

Given all other variables constant, when 1. Self-efficacy for studying Technical Pharmacy score increased one unit, Technical Pharmacy academic achievement would statistical significantly increase 0.67 unit (P-value = 0.00). 2. Emotional Quotient score increased one unit, Technical Pharmacy academic achievement would statistical significantly increase 0.26 unit (P-value = 0.00). 3. Intelligence Quotient score increased one unit, Technical Pharmacy academic achievement would statistical significantly increase 0.00 unit (P-value = 0.00). 4. Being female made Technical Pharmacy academic achievement statistical significantly increase 0.03 unit (P-value = 0.00).

2. Standardized prediction equation

$$Z_{\text{TPAA}} = +**0.74Z_{\text{SETP}} + **0.25Z_{\text{EQ}} + **0.08Z_{\text{IQ}} - **0.07Z_{\text{male}} - 0.04Z_{\text{ATSTP}} \\ - 0.02Z_{\text{parent's income}} - 0.01Z_{\text{APS}}$$

** significant level at P-value < 0.01 (1-tailed)

Given all other variables constant, when 1. Self-efficacy for studying Technical Pharmacy score increased one standard unit, Technical Pharmacy academic achievement would statistical significantly increase 0.74 unit (P-value = 0.00). 2. Emotional Quotient score increased one standard unit, Technical Pharmacy academic achievement would statistical significantly increase 0.25 unit (P-value = 0.00). 3. Intelligence Quotient score increased one standard unit, Technical Pharmacy academic achievement would statistical

significantly increase 0.08 unit (P-value = 0.00). 4. Being female made Technical Pharmacy academic achievement statistical significantly increase 0.07 unit (P-value = 0.00).

The influence of the predictors could be evaluated from the standardized prediction equation. The four most statistical significant variables those predicted Technical Pharmacy academic achievement were self-efficacy for studying Technical Pharmacy (Beta = $^{**}+0.74$, P-value = 0.00), Emotional Quotient (Beta = $^{**}+0.25$, P-value = 0.00), Intelligence Quotient (Beta = $^{**}+0.08$, P-value = 0.00), and gender (Beta = $^{**}-0.07$, P-value = 0.00), respectively.

Factors did not had the statistical significantly correlation with Technical Pharmacy academic achievement namely—attitude toward studying Technical Pharmacy, parent's income, and activity participation during studying. The possible related factors were the size of sample, local culture, and the specification of Technical Pharmacy students.

R^2 equaled to 0.57. It meant 57% variance of Technical Pharmacy academic achievement could be explained by all of these 7 predictors. The variance of these 7 predictors namely—self-efficacy for studying Technical Pharmacy, Emotional Quotient, Intelligence Quotient, gender, attitude toward studying Technical Pharmacy, parent's income, and activity participation during studying could accounted for 57% variance of Technical Pharmacy academic achievement.

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CHAPTER V

DISCUSSION AND CONCLUSION

In this study, a cross-sectional deductive survey research by questionnaire was employed to study the relationship between self-efficacy for studying Technical Pharmacy (SETP) with the other predictors namely—Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), activity participation during studying (APS), demographic data namely—gender and parent's income—and Technical Pharmacy academic achievement (TPAA) for 110 students who studied Technical Pharmacy at Sirindhorn College of Public Health Phitsanuloke. The data were collected during 2 April 2010 to 9 April 2010.

The objectives of this study were: 1. To compare means of (self-efficacy for studying Technical Pharmacy, attitude toward studying Technical Pharmacy, and Technical Pharmacy academic achievement) between (gender and parent's income). 2. To test Bandura's self-efficacy concept by finding correlation between self-efficacy for studying Technical Pharmacy and Technical Pharmacy academic achievement. 3. To find correlation between all other factors namely—Intelligence Quotient, attitude toward studying Technical Pharmacy, Emotional Quotient, activity participation during studying and Technical Pharmacy academic achievement. 4. To formulate the hierarchical stepwise multiple regression analysis model to predict Technical Pharmacy academic achievement by self-efficacy for studying Technical Pharmacy and the other mentioned factors. The results were presented and discussed in four sections e.g. descriptive statistics, One Way ANOVA, Pearson's product moment correlations, and hierarchical stepwise multiple regression analysis. In addition, conclusion, recommendation, qualifications, and future study were also provided.

The study found that most of students 67 (60.91%) were female and 43 (39.09%) were male. Most of parent's income of students 43 (39.09%) were in the range of 15,001 - 20,000 Baht, 33 (30.00%) were less than 15,001 Baht, and 24 (21.82%) were 20,001 - 25,000 Baht.

5.1 Assessment of research questions

This study examined the relationship between self-efficacy for studying Technical Pharmacy (SETP) with the other predictors namely—Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), activity participation during studying (APS), demographic data namely—gender and parent’s income—and Technical Pharmacy academic achievement (TPAA). The study posed 16 fundamental inquiries:

1. Did gender make any statistical significant difference in self-efficacy?
2. Did gender make any statistical significant difference in attitude?
3. Did gender make any statistical significant difference in academic achievement?
4. Did parent’s income make any statistical significant difference in self-efficacy?
5. Did parent’s income make any statistical significant difference in attitude?
6. Did parent’s income make any statistical significant difference in academic achievement?
7. Did IQ predict attitude?
8. Did EQ predict attitude?
9. Did activity predict attitude?
10. Did IQ predict academic achievement?
11. Did EQ predict academic achievement?
12. Did activity predict academic achievement?
13. Did self-efficacy predict academic achievement?
14. Did attitude predict self-efficacy?
15. Did attitude predict academic achievement?
16. What factors statistical significantly predicted Technical Pharmacy academic achievement?

5.1.1 The first to sixth questions

1. Did gender make any statistical significant difference in self-efficacy?

One Way ANOVA compared means of self-efficacy for studying Technical Pharmacy between male and female found that the average scores and standard deviations of self-efficacy for studying Technical Pharmacy of male and female were 5.18 ± 0.30 and $5.34 \pm$

0.25, respectively. It was statistical significantly different ($F = **9.00$, $P\text{-value} = 0.00$). In other words, male and female had statistical significantly different to self-efficacy for studying Technical Pharmacy.

2. Did gender make any statistical significant difference in attitude?

One Way ANOVA compared means of attitude toward studying Technical Pharmacy between male and female found that the average scores and standard deviations of attitude toward studying Technical Pharmacy of male and female were 6.75 ± 0.36 and 6.77 ± 0.38 , respectively. It was not statistical significantly different ($F = 0.12$, $P\text{-value} = 0.73$). In other words, male and female had no statistical significantly different to attitude toward studying Technical Pharmacy.

3. Did gender make any statistical significant difference in academic achievement?

One Way ANOVA compared means of Grade Point Average (GPA) between male and female found that the average scores and standard deviations of Grade Point Average of male and female were 3.09 ± 0.28 and 3.20 ± 0.22 , respectively. It was statistical significantly different ($F = *4.75$, $P\text{-value} = 0.03$). In other words, male and female had statistical significantly different to Grade Point Average.

4. Did parent's income make any statistical significant difference in self-efficacy?

One Way ANOVA compared means of self-efficacy for studying Technical Pharmacy among ranges of parent's income found that the average scores and standards deviation of self-efficacy for studying Technical Pharmacy among ranges of parent's income of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 5.28 ± 0.26 , 5.27 ± 0.29 , 5.28 ± 0.30 , 5.26 ± 0.31 , 5.39 ± 0.02 , respectively. It was not statistical significantly different ($F = 0.09$, $P\text{-value} = 0.99$). In other words, self-efficacy for studying Technical Pharmacy had no statistical significantly different among ranges of parent's income.

5. Did parent's income make any statistical significant difference in attitude?

One Way ANOVA analyzed means of attitude toward studying Technical Pharmacy among ranges of parent's income found that the average scores and standard deviations of attitude toward studying Technical Pharmacy among ranges of parent's income of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 6.76 ± 0.43 , 6.81 ± 0.27 , 6.77 ± 0.25 , 6.41 ± 0.71 , 7.03 ± 0.07 , respectively. It was not statistical significantly different ($F = 2.28$, $P\text{-value} = 0.07$). In other words, attitude toward studying Technical Pharmacy had no statistical significantly different among ranges of parent's income.

6. Did parent's income make any statistical significant difference in academic achievement?

One Way ANOVA analyzed means of Grade Point Average among ranges of parent's income of less than 15,001, 15,001 - 20,000, 20,001 - 25,000, 25,001 - 30,000, and 30,001 - 35,000 were 3.15 ± 0.23 , 3.16 ± 0.25 , 3.17 ± 0.28 , 3.11 ± 0.28 , 3.21 ± 0.00 , respectively. It was not statistical significantly different ($F = 0.12$, $P\text{-value} = 0.96$). In other words, Grade Point Average was not statistical significantly different among ranges parent's income.

5.1.2 The seventh to fifteenth questions

7. Did IQ predict attitude?

Intelligence Quotient did not statistical significantly correlate with attitude toward studying Technical Pharmacy ($r = +0.06$, $R^2 = 0.00$, $P\text{-value} = 0.28$). It meant that Intelligence Quotient and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

8. Did EQ predict attitude?

Emotional Quotient did not statistical significantly correlate with attitude toward studying Technical Pharmacy ($r = +0.15$, $R^2 = 0.02$, $P\text{-value} = 0.06$). It meant that Emotional Quotient and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

9. Did activity predict attitude?

Activity participation during studying did not statistical significant correlate with attitude toward studying Technical Pharmacy ($r = -0.07$, $R^2 = 0.00$, $P\text{-value} = 0.22$). It meant that activity participant during studying and attitude toward studying Technical Pharmacy did not statistical significantly correlate.

10. Did IQ predict academic achievement?

Intelligence Quotient statistical significantly positively correlated with Technical Pharmacy academic achievement ($r = **+0.38$, $R^2 = 0.14$, $P\text{-value} = 0.00$). It meant that the more students had Intelligence Quotient, the more students got Technical Pharmacy academic achievement.

11. Did EQ predict academic achievement?

Emotional Quotient statistical significantly positively correlated with Technical Pharmacy academic achievement ($r = **+0.91$, $R^2 = 0.83$, $P\text{-value} = 0.00$). It meant that the more students had Emotional Quotient, the more students got Technical Pharmacy academic achievement.

12. Did activity predict academic achievement?

Activity participation during studying did not statistical significantly correlate with Technical Pharmacy academic achievement ($r = +0.16$, $R^2 = 0.03$, $P\text{-value} = 0.05$). It meant that activity participation during studying and Technical Pharmacy academic achievement did not statistical significantly correlate.

13. Did self-efficacy predict academic achievement?

Self-efficacy for studying Technical Pharmacy statistical significantly positively correlated with Technical Pharmacy academic achievement ($r = **+0.96$, $R^2 = 0.92$, $P\text{-value} = 0.00$). It meant that the more students had self-efficacy for studying Technical Pharmacy, the more students got Technical Pharmacy academic achievement.

14. Did attitude predict self-efficacy?

Attitude toward studying Technical Pharmacy did not statistical significantly correlate with self-efficacy for studying Technical Pharmacy ($r = +0.11$, $R^2 = 0.01$, $P\text{-value} = 0.12$). It meant that attitude toward studying Technical Pharmacy and self-efficacy for studying Technical Pharmacy did not statistical significantly correlate.

15. Did attitude predict academic achievement?

Attitude toward studying Technical Pharmacy did not statistical significantly correlate with Technical Pharmacy academic achievement ($r = +0.08$, $R^2 = 0.01$, $P\text{-value} = 0.19$). It meant that attitude toward studying Technical Pharmacy and Technical Pharmacy academic achievement did not statistical significantly correlate.

5.1.3 The sixteenth question

16. What factors statistical significantly predicted Technical Pharmacy academic achievement?

The study found that the 4 most significant variables which predicted Technical Pharmacy academic achievement were: self-efficacy for studying Technical Pharmacy (Beta = $**+0.74$, $P\text{-value} = 0.00$), Emotional Quotient (Beta = $**+0.25$, $P\text{-value} = 0.00$), Intelligence Quotient (Beta = $**+0.08$, $P\text{-value} = 0.00$), and gender (Beta = $** -0.07$, $P\text{-value} = 0.00$), respectively.

Finally, the model yielded the Technical Pharmacy academic achievement prediction equation as the followings:

$$TPAA = -2.00 + **0.67SETP + **0.26EQ + **0.00IQ - **0.03male - 0.03ATSTP + 0.00parent's\ income + 0.00APS$$

$$Z_{TPAA} = +**0.74Z_{SETP} + **0.25Z_{EQ} + **0.08Z_{IQ} - **0.07Z_{male} - 0.04Z_{ATSTP} - 0.02Z_{parent's\ income} - 0.01Z_{APS}$$

** significant level at $P\text{-value} < 0.01$ (1-tailed)

The R^2 (coefficient of determination) was the total percent variance of dependent variable (Technical Pharmacy academic achievement) could be explained by all of the 7 dependent variables—self-efficacy for studying Technical Pharmacy (SETP) with the other predictors namely—Intelligence Quotient (IQ), attitude toward studying Technical Pharmacy (ATSTP), Emotional Quotient (EQ), activity participation during studying (APS), gender, and parent's income or how good the 7 predictors were? The R^2 had value range from 0 to 1. The higher R^2 value indicated a better of explanatory power of the model resulted in greater prediction of the dependent variables. In the study got approval medium R^2 (0.57). The explanations were: Firstly, very trustworthy conceptual model that was modified form solid reviewing literatures of well-known scholars made researcher watchfully decide on valid predictors and get rid of irrelevant variables. In short, most specification errors were cancelled. Secondly, qualified tests specifically Locke and Mone self-efficacy test, Triandis attitude test, Mensa IQ test, EQ test of Department of Mental Health of Thailand, and SCA for activity participation during studying test were cautiously selected and employed therefore, less uncertainty of validity and reliability of these scales were identified. Thirdly, data were collected from all students at one time (2 groups). Last but not least, respondents answered the questionnaire in the class that could be explained and clarified all misunderstanding the meaning of ambiguous questions to all students.

5.2 Conclusion and recommendation

The study found that self-efficacy for studying Technical Pharmacy (Beta = $**+0.74$, P-value = 0.00), Emotional Quotient (Beta = $**+0.25$, P-value = 0.00), Intelligence Quotient (Beta = $**+0.08$, P-value = 0.00), and gender (Beta = $** -0.07$, P-value = 0.00), respectively were the statistical significant predictors of Technical Pharmacy academic achievement in the model with $R^2 = 0.57$. Meaning: 57.00 percent variance of Technical Pharmacy academic achievement could be explained by variance of all 7 predictors. In other words, the qualification of all 7 predictors was 0.57.

Self-efficacy for studying Technical Pharmacy, Emotional Quotient, Intelligence Quotient, and gender were the most four statistical significant influence factors for predicting Technical Pharmacy academic achievement. The finding of the study can be helpful for the educational policy of Sirindhorn College of Public Health Phitsanuloke. The students should be educated and motivated how to cope with these factors and do the more practice. The students might be tested for their Emotional Quotient and Intelligence Quotient. If the students have low score, they should practice to get the better score.

From Self-efficacy Theory by Bandura, the college can apply 4 sources for motivating students' self-efficacy. These sources are: 1. Experience or enactive attainment, it was the most important factor deciding a person's self-efficacy. Simply put, success raised self-efficacy, failure lowers it. 2. Modeling or vicarious experience. This was a process of comparison between oneself and someone else. When people saw someone succeeding at something, their self-efficacy will increase. When people saw someone failing, their self-efficacy will decrease. This process was more effectual when a person saw him- or herself as similar to his or her own model. If a peer who was perceived as having similar ability succeeds, this would usually increase an observer's self-efficacy. 3. Social persuasions related to encouragements/ discouragements. These could have a strong influence—most people remembered times where something said to them significantly altered their confidence. While positive persuasions increased self-efficacy, negative persuasions decreased it. It was generally easier to decrease someone's self-efficacy than it was to increase it. 4. Physiological Factors was a factor. In unusual, stressful situations, people commonly exhibited signs of distress; shakes, aches and pains, fatigue, fear, nausea, etc. A person's perceptions of these responses could markedly alter a person's self-efficacy. Thus, it was the person's belief in the implications of their physiological response that altered their self-efficacy, rather than the sheer power of the response (Bandura, 1977). Furthermore, self-efficacy skills and intelligence skills can be learned, however, for this to happen, students must be personally motivated, practice extensively what they learn, receive feedback, and reinforce their new skills (Serrat, 2009; Chiu, 2009).

5.3 Qualification of this study

The qualification of this study was to address these limitations properly. The study had as well suggested some research directions so to get a better understanding in the future, as the followings:

5.3.1 Qualification of the questionnaire

Regarding many tests in the questionnaire; students had to take a long time for completing all the tests in this study. Long duration to complete all the tests might affect concentration of students.

The questionnaire in the study ordered each part as the following: 1. demographic data namely—gender, parent's income—GPA data, activity participation during studying

test. 2. Self-efficacy for studying Technical Pharmacy test. 3. Intelligence Quotient test. 4. Emotional Quotient test. 5. Attitude toward studying Technical Pharmacy test. The questionnaire started the first part with the easy test (demographic data) and ordered the difficult tests at the end (Intelligence Quotient test and attitude toward studying Technical Pharmacy test). For the most effectiveness, it was recommended that the questionnaire should be ordered from the most difficult part (Intelligence Quotient test and attitude toward studying Technical Pharmacy test) to the easiest part (demographic data) because the more students did the test, the more they could get tried to do the test. If the easiest part was ordered at the end of the questionnaire, the students would not get too tried to do all of the tests completely.

5.3.2 Qualification of the statistical analysis

This research could be improved by using Two Way ANCOVA statistics (The first to sixth hypotheses). It would yield more reliable and precise results when got rid of confounders. Future research design would minimize error form extraneous variables namely—self-regulation and healthy of the students by applying partial correlation instead of simple correlation liked this research. The more powerful statistical techniques were employed, the more accurate and reliable outcomes the study would achieve unconditionally.

5.4 Future study

Future study should be done with more Technical Pharmacy students in different colleges in Thailand and with more accurately questions by adding more valid constructs and proper indicators in the questionnaire to increase scale reliability. This could be generalized findings and also would provide a better precise result to all Thai Technical Pharmacy students in the future. Furthermore, the study design could be improved by using Two Way ANCOVA statistics and could minimize error form extraneous variables by applying partial correlation instead of simple correlation. The more powerful statistical techniques were employed, the more accurate and reliable outcomes. And regarding to many tests in this study, long duration could affect concentration of students. The appropriated time and the appropriated quantity of the questions should be concerned in future study. Moreover, the questionnaire in the study should be ordered from the most difficult part (Intelligence Quotient test and attitude toward studying Technical Pharmacy test) to the easiest part

(demographic data) because the more students did the test, the more they could get tried to do the test. If the easiest part was ordered at the end of the questionnaire, the students would not get too tried to do all of the tests completely.



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APPENDICES

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

APPENDIX A

แบบสอบถาม

ความมั่นใจในสมรรถนะของตนและปัจจัยที่มีผลต่อความสำเร็จ
ทางการศึกษาของนักศึกษาเทคนิคเภสัชกรรม

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม

วัตถุประสงค์ เพื่อศึกษาความมั่นใจในสมรรถนะของตนและปัจจัยที่มีผลต่อความสำเร็จทางการศึกษาของนักศึกษาเทคนิคเกษตรกรรมเพื่อเป็นแนวทางในการหาสาเหตุของการควบคุมพฤติกรรมอย่างมีประสิทธิภาพมากที่สุด

แบบสอบถามแบ่งออกเป็น 5 ส่วน

1. แบบบันทึกข้อมูลส่วนบุคคล ข้อมูลการศึกษา และ ข้อมูลกิจกรรม (Demographic data, academic data, and activity data)
2. แบบทดสอบความมั่นใจในสมรรถนะของตน (Self-efficacy)
3. แบบทดสอบความสามารถทางเชาว์ปัญญา (IQ)
4. แบบทดสอบความฉลาดทางอารมณ์ (EQ)
5. แบบทดสอบทัศนคติ (Attitude)

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ส่วนที่ 1 แบบบันทึกข้อมูลส่วนบุคคล ข้อมูลการศึกษา และ ข้อมูลกิจกรรม

โปรดตอบแบบสอบถาม โดยกาเครื่องหมาย ✓ ลงในช่อง O ที่ตรงคำตอบของนักศึกษา

1. เพศ O ชาย O หญิง

2. รายได้รวมของผู้ปกครองต่อเดือน

- | | |
|-----------------------|-----------------------|
| O ต่ำกว่า 15,001 บาท | O 15,001 – 20,000 บาท |
| O 20,001 – 25,000 บาท | O 25,001 – 30,000 บาท |
| O 30,001 – 35,000 บาท | O 40,001 – 45,000 บาท |
| O 45,001 – 50,000 บาท | O 50,001 – 55,000 บาท |
| O 55,001 – 60,000 บาท | O สูงกว่า 60,000 บาท |

3. เกรดเฉลี่ยสะสม _____

4. กิจกรรม

คำชี้แจง จงกากบาท (X) ทับบนเส้นตามกิจกรรมที่นักศึกษาเข้าร่วม

ตัวอย่าง

ฉันเข้าร่วมกิจกรรมโครงการรณรงค์ประหยัดน้ำของวิทยาลัย

ไม่เลย _____ เลขทุกครั้ง

0 1 2 3 4 5 ~~6~~ 7 8 9 10

4.1 ฉันเข้าร่วมกิจกรรมรับน้อง

ไม่เลย _____ เลขทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.2 ฉันเข้าร่วมกิจกรรมกีฬาวิทยาลัยประจำปี

ไม่เลย _____ เลขทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.3 ฉันเข้าร่วมงานปีใหม่ของวิทยาลัย

ไม่เลย _____ เลขทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.4 ฉันเข้าร่วมกิจกรรมวันไหว้ครู

ไม่เลย _____ เลขทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.5 ฉันเข้าร่วมโครงการอาสาโรงเรียน

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.6 ฉันเป็นหัวหน้าชั้นปี

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.7 ฉันมีตำแหน่งเป็นกรรมการชั้นปี

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.8 ฉันเป็นหัวหน้าชมรมใดๆในวิทยาลัย

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.9 ขณะที่ฉันเรียนที่วิทยาลัย ฉันเล่นกีฬาใดๆเป็นประจำ

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

4.10 ฉันเดินทางไปเที่ยวต่างจังหวัดเป็นหมู่คณะกับเพื่อนในวิทยาลัย

ไม่เลย _____ เคยทุกครั้ง

0 1 2 3 4 5 6 7 8 9 10

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ส่วนที่ 2 แบบทดสอบความมั่นใจในสมรรถนะของตน

คำชี้แจง จงกากบาท (X) ทับบนเส้นตามระดับความมั่นใจของนักศึกษา

ตัวอย่าง

ฉันสามารถออกไปแนะนำประวัติของตนเองต่อหน้าเพื่อนๆ ในชั้นเรียนได้อย่างคล่องแคล่ว

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.1 ฉันไม่สามารถควบคุมผลการเรียนของฉันให้อยู่ในเกณฑ์ที่ดีได้

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.2 ฉันรู้สึกว่าการปัจจัยต่างๆต่างก็ส่งเสริมให้ฉันจะมีผลการเรียนที่ดี

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.3 ฉันไม่คิดว่าผลการเรียนของฉันจะอยู่ในเกณฑ์ที่สูงกว่าค่าเฉลี่ย

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.4 ฉันคิดว่าฉันสามารถเรียนจบได้ภายใน 2 ปี

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.5 ฉันไม่คิดว่าฉันอ่านหนังสือเตรียมสอบปลายภาคมากกว่าเพื่อนคนอื่นๆ

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.6 ฉันจะสามารถทำข้อสอบเสร็จทันก่อนเวลาสอบจะหมดลง

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.7 ฉันไม่คิดว่าฉันมีความเข้าใจขณะที่เรียนในชั้นเรียนได้เป็นส่วนมาก

ไม่มั่นใจเลย	มั่นใจมากที่สุด
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

2.8 หากฉันทำคะแนนสอบที่ผ่านมาได้ไม่ดี จะไม่มีผลต่อกำลังใจในการสอบปลายภาคของฉัน

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.9 ฉันไม่คิดว่าฉันเตรียมพร้อมในการสอบมากกว่าเพื่อนคนอื่นๆ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.10 บุคคลรอบตัวของฉันทำให้ฉันมีกำลังใจในการสอบ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.11 ฉันไม่คิดว่าฉันมีวิธีจดจำเนื้อหาการเรียนได้ดีกว่าเพื่อนคนอื่นๆ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.12 ฉันคิดว่าฉันสามารถจำเนื้อหาในขณะที่ยังเรียนในชั้นเรียนได้เป็นอย่างดี

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.13 หากข้อสอบออกนอกเหนือจากที่เรียนในชั้นเรียน ฉันคิดว่าฉันจะทำไม่ได้อย่างแน่นอน

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.14 ฉันคิดว่าจะไม่มีอุปสรรคใดที่จะทำให้ฉันสอบตก

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.15 ฉันไม่คิดว่าวันประกาศผลสอบ ฉันจะรู้สึกดี

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.16 ฉันคิดว่าสภาพจิตใจของฉันพร้อมสำหรับการสอบ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.17 เวลาสอบ ฉันมักจะวอกแวกคิดนอกเรื่องจากที่สอบ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.18 ฉันคิดว่าสภาพร่างกายของฉันพร้อมสำหรับการสอบ

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.19 ฉันไม่คิดว่า ฉันคู่ควรกับผลการเรียนที่ดีเยี่ยม

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.20 ฉันเชื่อว่าการอ่านหนังสือของฉันจะส่งผลดีต่อคะแนนสอบอย่างแน่นอน

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.21 ฉันไม่สามารถอธิบายเนื้อหาวิชาต่างๆ ให้เพื่อนเข้าใจได้

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.22 ฉันมั่นใจว่าเวลาที่ฉันใช้ในการเตรียมตัวสอบจะช่วยให้ฉันสอบได้คะแนนดี

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.23 ฉันไม่คิดว่าฉันได้เตรียมตัวอ่านหนังสือพร้อมสำหรับการสอบ

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.24 เนื้อหาส่วนใดที่ฉันไม่เข้าใจ ฉันมีวิธีที่จะทำให้เข้าใจได้

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.25 ฉันมีความมั่นใจในการทำข้อสอบปลายภาค

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.26 ฉันไม่มีความเข้าใจเนื้อหาที่เรียน ขณะที่ยังเรียนในชั้นเรียน

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.27 ฉันคิดว่าการสอบปลายภาคครั้งนี้จะช่วยส่งเสริมเกรดเฉลี่ยสะสมของฉันให้ดีขึ้น

ไม่มั่นใจเลย มั่นใจมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

2.28 ฉันไม่คิดว่าฉันใช้เวลาในการเตรียมสอบมาเพียงพอ

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

2.29 ฉันคิดว่าเนื้อหาที่ฉันอ่าน จะต้องออกสอบอย่างแน่นอน

ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

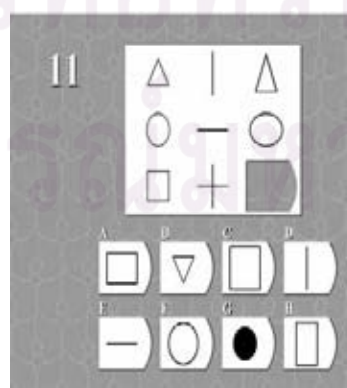
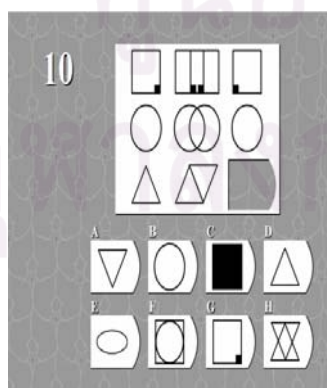
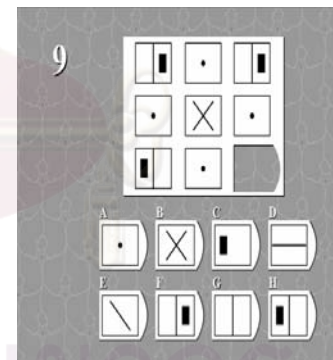
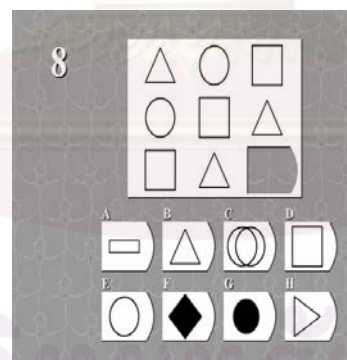
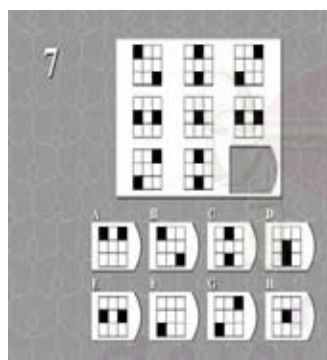
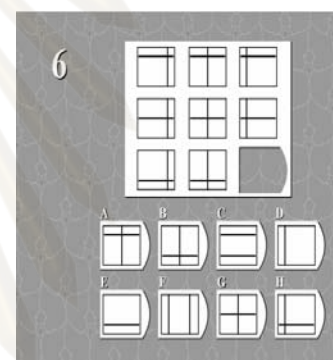
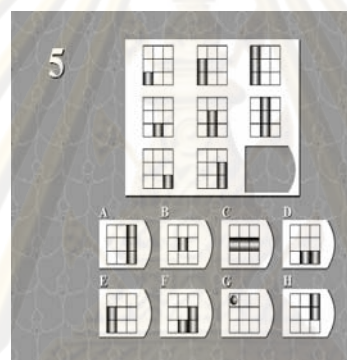
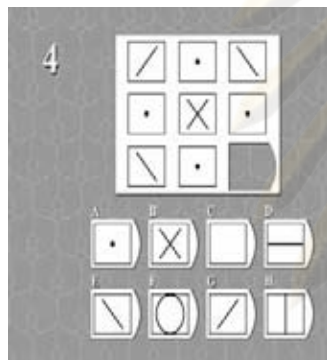
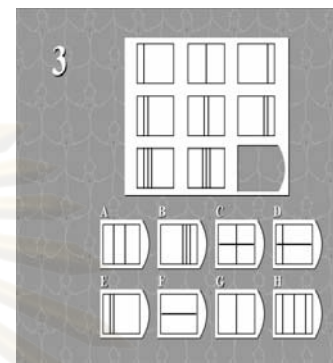
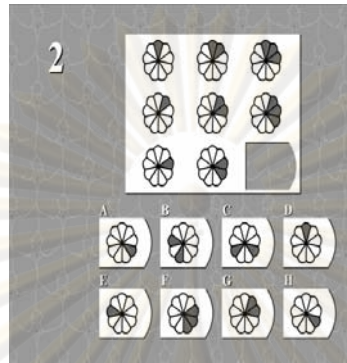
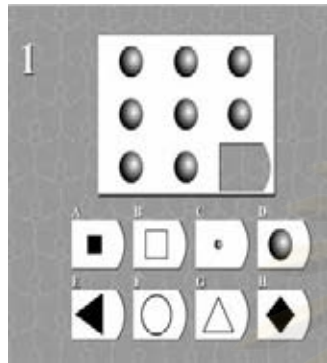
2.30 ถ้าให้สอบเดี๋ยวนี้อ ฉันคิดว่าจะสอบไม่ผ่าน

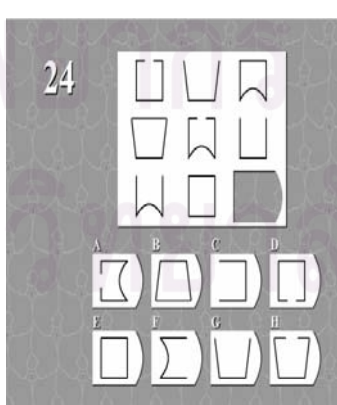
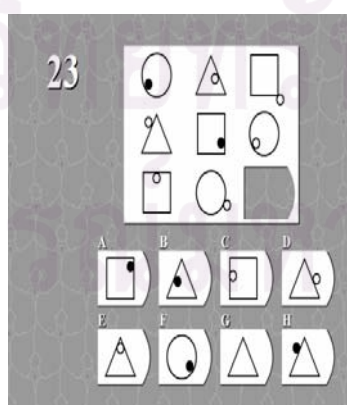
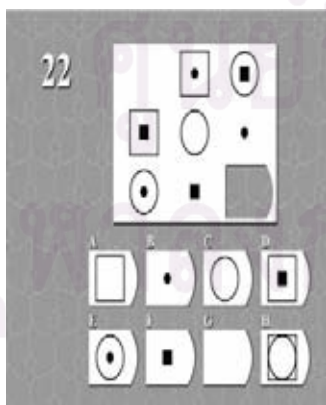
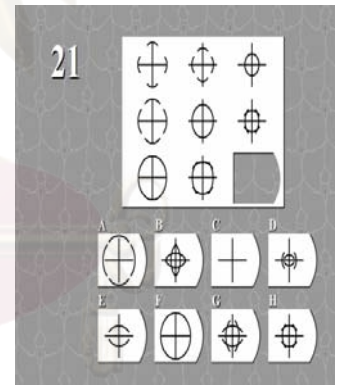
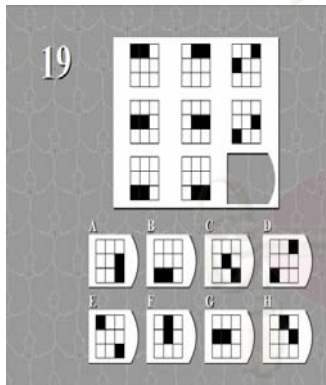
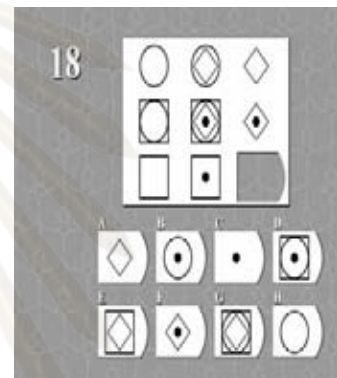
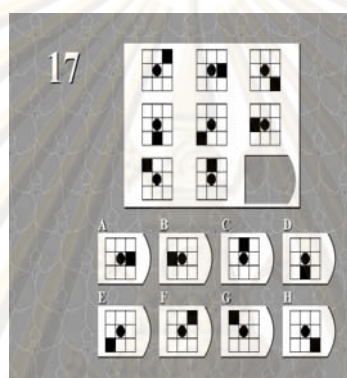
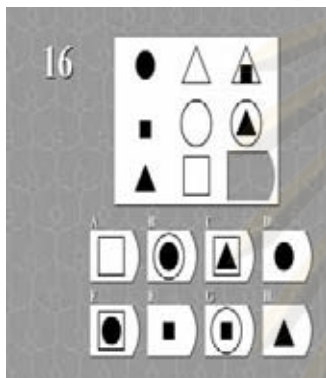
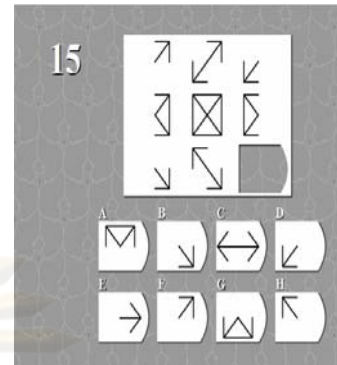
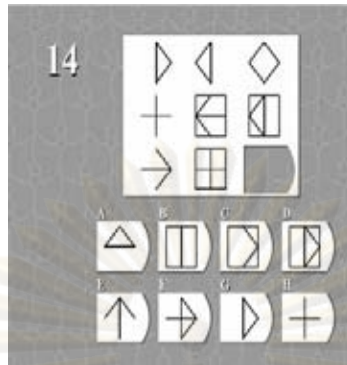
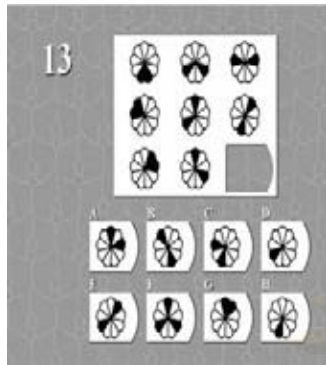
ไม่มั่นใจเลย											มั่นใจมากที่สุด
	0	1	2	3	4	5	6	7	8	9	10

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ส่วนที่ 3 แบบทดสอบความสามารถทางเชาว์ปัญญา (IQ)

คำสั่ง จงกากบาทลงตรงข้อที่คิดว่าถูกต้องมากที่สุด





25

A B C D

E F G H

26

A B C D

E F G H

27

A B C D

E F G H

28

A B C D

E F G H

29

A B C D

E F G H

30

A B C D

E F G H

31

A B C D

E F G H

32

A B C D

E F G H

33

A B C D

E F G H

34

A B C D

E F G H

35

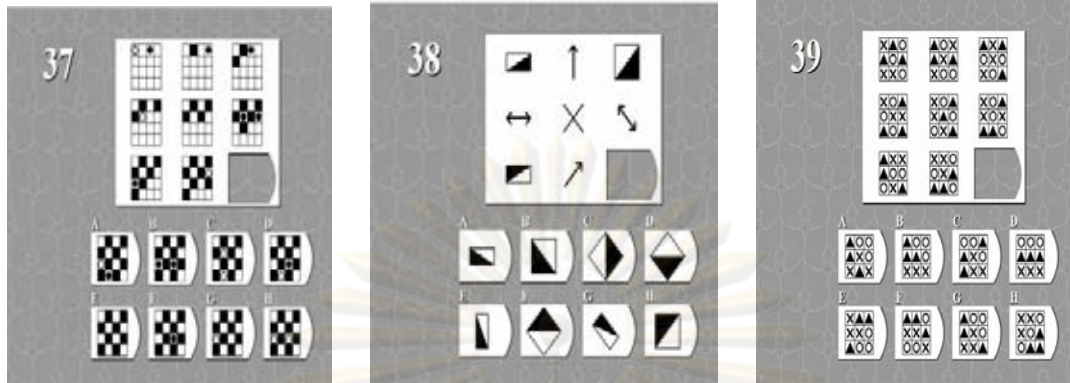
A B C D

E F G H

36

A B C D

E F G H



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ส่วนที่ 4 แบบทดสอบความฉลาดทางอารมณ์ (EQ)

คำชี้แจง จงกากบาท (X) ทับบนเส้นตามระดับความคิดเห็นของนักศึกษา

ตัวอย่าง

ฉันรู้สึกว่าคุณมีความสุขกับการเรียน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.1 เวลาโกรธหรือไม่สบายใจ ฉันรับรู้ได้ว่าเกิดอะไรขึ้นกับฉัน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.2 ฉันบอกไม่ได้ว่าอะไรทำให้ฉันรู้สึกโกรธ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.3 เมื่อถูกขัดใจ ฉันมักรู้สึกหงุดหงิดจนควบคุมอารมณ์ไม่ได้

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.4 ฉันสามารถคอยเพื่อให้บรรลุเป้าหมายที่พอใจ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.5 ฉันมักมีปฏิกิริยาโต้ตอบรุนแรงต่อปัญหาเพียงเล็กน้อย

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.6 เมื่อถูกบังคับให้ทำในสิ่งที่ไม่ชอบ ฉันจะอธิบายเหตุผลจนผู้อื่นยอมรับได้

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.7 ฉันสังเกตได้ เมื่อคนใกล้ชิดมีอารมณ์เปลี่ยนแปลง

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.8 ฉันไม่สนใจกับความทุกข์ของผู้อื่นที่ฉันไม่รู้จัก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.9 ฉันไม่ยอมรับในสิ่งที่ผู้อื่นทำต่างจากที่ฉันคิด

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.10 ฉันยอมรับได้ว่าผู้อื่นก็อาจมีเหตุผลที่จะไม่พอใจการกระทำของฉัน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.11 ฉันรู้สึกที่ผู้อื่นชอบเรียกร้องความสนใจมากเกินไป

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.12 แม้จะมีภาระที่ต้องทำ ฉันก็ยินดีรับฟังความทุกข์ของผู้อื่นที่ต้องการความช่วยเหลือ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.13 เป็นเรื่องธรรมดาที่จะเอาเปรียบผู้อื่นเมื่อมีโอกาส

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.14 ฉันเห็นคุณค่าในน้ำใจที่ผู้อื่นมีต่อฉัน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.15 เมื่อทำผิดฉันสามารถกล่าวคำ "ขอโทษ" ผู้อื่นได้

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.16 ฉันยอมรับข้อผิดพลาดของผู้อื่นได้ยาก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.17 ถึงแม้จะต้องเสียประโยชน์ส่วนตัวไปบ้าง ฉันก็ยินดีที่จะทำเพื่อส่วนรวม

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.18 ฉันรู้สึกลำบากใจในการทำสิ่งใดสิ่งหนึ่งเพื่อผู้อื่น

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.19 ฉันไม่รู้ว่าคุณเก่งเรื่องอะไร

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.20 แม้จะเป็นงานยาก ฉันก็มั่นใจว่าสามารถทำได้

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.21 เมื่อทำสิ่งใดไม่สำเร็จ ฉันรู้สึกหมดกำลังใจ

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.22 ฉันรู้สึกมีคุณค่าเมื่อได้ทำสิ่งต่าง ๆ อย่างเต็มความสามารถ

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.23 เมื่อต้องเผชิญกับอุปสรรคและความผิดหวัง ฉันก็จะไม่ยอมแพ้

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.24 เมื่อเริ่มทำสิ่งหนึ่งสิ่งใด ฉันมักทำต่อไปไม่สำเร็จ

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.25 ฉันพยายามหาสาเหตุที่แท้จริงของปัญหาโดยไม่คิดเอาเองตามใจชอบ

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.26 บ่อยครั้งที่ฉันไม่รู้ว่าจะอะไรทำให้ฉันไม่มีความสุข

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.27 ฉันรู้สึกว่า การตัดสินใจแก้ปัญหาเป็นเรื่องยากสำหรับฉัน

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.28 เมื่อต้องทำอะไรหลายอย่างในเวลาเดียวกัน ฉันตัดสินใจได้ว่าทำอะไรก่อนหลัง

ไม่จริงเลย จริงมากที่สุด
 0 1 2 3 4 5 6 7 8 9 10

4.29 ฉันลำบากใจเมื่อต้องอยู่กับคนแปลกหน้าหรือคนที่ไม่คุ้นเคย

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.30 ฉันทนไม่ได้เมื่อต้องอยู่ในสังคมที่มีกฎระเบียบขัดกับความเคยชินของฉัน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.31 ฉันทำความรู้จักผู้อื่นได้ง่าย

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.32 ฉันมีเพื่อนสนิทหลายคนที่คบกันมานาน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.33 ฉันไม่กล้าบอกความต้องการของฉันให้ผู้อื่นรู้

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.34 ฉันทำในสิ่งที่ต้องการโดยไม่ทำให้ผู้อื่นเดือดร้อน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.35 เป็นการยากสำหรับฉันที่จะโต้แย้งกับผู้อื่น แม้จะมีเหตุผลเพียงพอ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.36 เมื่อไม่เห็นด้วยกับผู้อื่น ฉันสามารถอธิบายเหตุผลที่เขายอมรับได้

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.37 ฉันรู้สึกดีต่อกว่าผู้อื่น

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.38 ฉันทำหน้าที่ได้ดี ไม่ว่าจะอยู่ในบทบาทใด

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.39 ฉันสามารถทำงานที่ได้รับมอบหมายได้ดีที่สุด

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.40 ฉันไม่มั่นใจในการทำงานที่ยากลำบาก

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.41 แม้สถานการณ์จะเลวร้าย ฉันก็มีความหวังว่าจะดีขึ้น

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.42 ทุกปัญหามักมีทางออกเสมอ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.43 เมื่อมีเรื่องที่ทำให้เครียด ฉันมักปรับเปลี่ยนให้เป็นเรื่องผ่อนคลายหรือสนุกสนานได้

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.44 ฉันสนุกสนานทุกครั้งกับกิจกรรมในวันสุดสัปดาห์และวันหยุดพักผ่อน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.45 ฉันรู้สึกไม่พอใจที่ผู้อื่นได้รับสิ่งดี ๆ มากกว่าฉัน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.46 ฉันพอใจกับสิ่งที่ฉันเป็นอยู่

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.47 ฉันไม่รู้ว่าจะหาอะไรทำ เมื่อรู้สึกเบื่อหน่าย

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.48 เมื่อว่างเว้นจากภาระหน้าที่ ฉันจะทำในสิ่งที่ฉันชอบ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

4.49 เมื่อรู้สึกไม่สบายใจ ฉันมีวิธีผ่อนคลายอารมณ์ได้

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.50 ฉันสามารถผ่อนคลายตนเองได้ แม้จะเหน็ดเหนื่อยจากภาระหน้าที่

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.51 ฉันไม่สามารถทำใจให้มีความสุขได้จนกว่าจะได้ทุกสิ่งที่ต้องการ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

4.52 ฉันมักทุกข์ร้อนกับเรื่องเล็ก ๆ น้อย ๆ ที่เกิดขึ้นเสมอ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

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ส่วนที่ 5 แบบทดสอบทัศนคติ (Attitude)

คำชี้แจง จงกากบาท (X) ทับบนเส้นตามระดับทัศนคติของนักศึกษา

ตัวอย่าง

ฉันคิดว่าเทคนิคเกสซ์กรรมที่ได้เรียนสามารถนำไปช่วยเหลือคนได้จำนวนมาก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.1 เทคนิคเกสซ์กรรมเป็นศาสตร์ที่มีความสำคัญมาก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.2 ฉันเรียนหลักสูตรนี้เพียงเพื่อใช้ในการสอบเท่านั้น

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.3 เทคนิคเกสซ์กรรมเป็นศาสตร์ที่มีความท้าทายความสามารถของมนุษย์

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.4 ถ้าเพื่อนชวนไปงานสัมมนาที่เกี่ยวข้องกับหลักสูตรนี้ แม้จะไม่เสียเงิน ฉันก็จะไม่ไป

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.5 การเรียนหลักสูตรนี้ทำให้ฉันมีความขวนขวายใฝ่รู้ขึ้นมาจากเดิม

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.6 น่าจะลดเวลาในการเรียนหลักสูตรนี้ให้น้อยลงกว่านี้

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.7 ถ้าเพื่อนๆกำลังคุยกันเรื่องเกี่ยวกับหลักสูตรนี้ฉันจะเข้าร่วมวงด้วย

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.8 ฉันไม่ชอบเข้าร่วมกิจกรรมการตอบปัญหาวิชาการ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.9 หลักสูตรนี้เป็นศาสตร์ที่ฝึกให้คนสามารถได้ปฏิบัติที่หลากหลาย

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.10 หลักสูตรนี้เป็นศาสตร์ที่ไม่น่าสนใจเรียน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.11 ฉันชอบเวลาที่มีปัญหาใหม่ๆในการเรียนมาให้ลองแก้ปัญหา

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.12 ฉันไม่ชอบการทำเล็ป

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.13 ฉันจะสรุปกฎสูตรและหลักเกณฑ์ที่จำเป็นเพื่อใช้ในการสอบ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.14 ถ้ามีเวลาว่าง ฉันมักจะทำอย่างอื่นที่ไม่เกี่ยวกับการเรียน

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.15 เมื่อเรียนหลักสูตรนี้ ฉันรู้สึกเบื่อหน่าย อยากจะให้เรียนจบเร็วๆ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.16 ถ้าฉันสงสัยเกี่ยวกับเนื้อหา ฉันมักจะถามคำถามกับอาจารย์ในชั่วโมงเรียนเลย

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.17 ฉันมักจะส่งการบ้านไม่ทันตามเวลาที่อาจารย์กำหนด

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.18 หลักสูตรนี้ทำให้ผู้เรียนรู้จักแก้ปัญหาอย่างเป็นระบบ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.19 หลักสูตรนี้ทำให้ผู้เรียนหมดกำลังใจในการเรียน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.20 ฉันชอบทำกิจกรรมต่างๆทางวิชาการทางด้านเทคนิคเกสัขกรรมมาก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.21 วันใดที่ต้องเรียน ฉันรู้สึกเหมือนถูกบังคับให้เรียน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.22 ฉันมักจะหาความรู้ทางวิชาการเพิ่มเติมนอกเหนือไปจากที่กำลังเรียนอยู่

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.23 ถ้าฉันเจอคำถามยากๆทางวิชาการเกี่ยวกับที่เรียนมา ฉันมักจะไม่สนใจไปค้นคว้าต่อหรือไม่นำไปปรึกษาอาจารย์หรือเพื่อน

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.24 รายการวิชาการที่เกี่ยวกับหลักสูตรนี้ทางทีวีเป็นรายการที่น่าเบื่อ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.25 แม้อาจารย์จะไม่สั่งการบ้าน ฉันก็จะไปค้นคว้าหาความรู้เพิ่มเติม

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.26 ฉันรู้สึกว่าการทำแล็บยิ่งเรียนยิ่งน่าเบื่อ

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.27 ถ้าฉันได้รับคำชมเมื่อตอบคำถามทางวิชาการที่เรียนมาได้ ฉันจะภูมิใจมาก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.28 ถ้าวิทยาลัยจัดกิจกรรมทางวิชาการ ฉันจะไม่สมัครเข้าเป็นสมาชิก

ไม่จริงเลย											จริงมากที่สุด
0	1	2	3	4	5	6	7	8	9	10	

5.29 ถ้ามีเวลานั้นจะรวบรวมคำถามทางวิชาการที่สงสัยแล้วค้นคว้าหาคำตอบ

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10

5.30 ถ้าฉันได้มีโอกาสศึกษาต่อ ฉันจะไม่เลือกเรียนสาขาที่ต่อเนื่องกับหลักสูตรนี้

ไม่จริงเลย จริงมากที่สุด

0 1 2 3 4 5 6 7 8 9 10



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

APPENDIX B

Code book

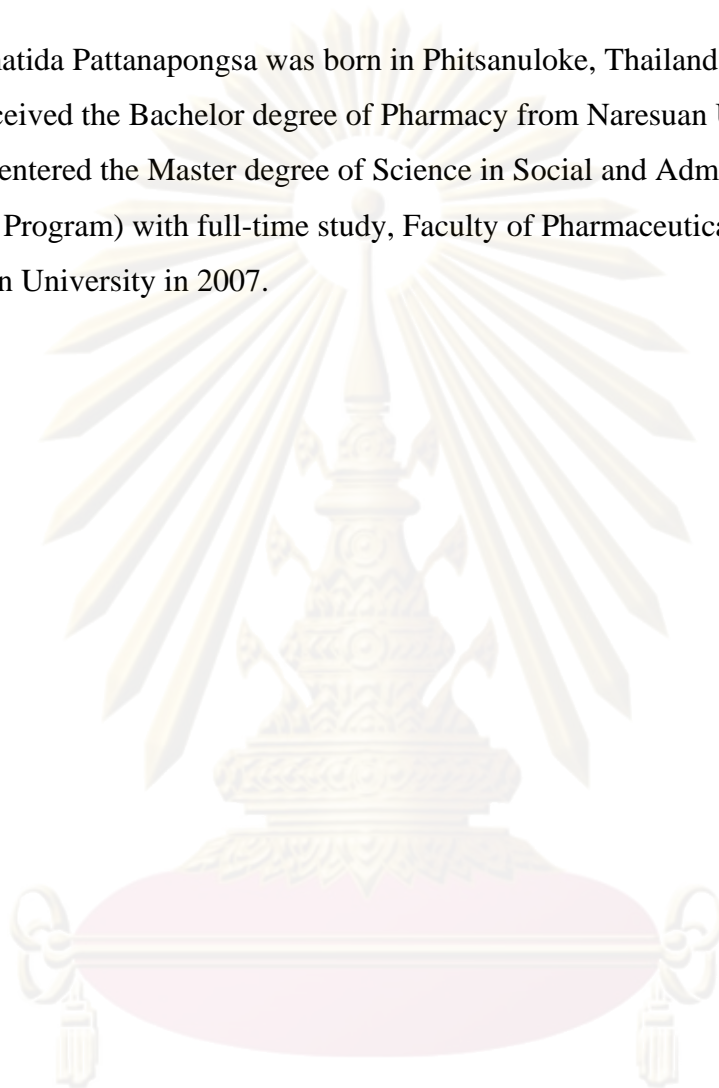
The operationalization of the variables

Variables	Attributes
Gender	0 = Female 1 = Male 99 = missing data
Parent's income	0 = Less than 15,001 Baht 1 = 15,001 - 20,000 Baht 2 = 20,001 - 25,000 Baht 3 = 25,001 - 30,000 Baht 4 = 30,001 - 35,000 Baht 5 = 40,001 - 45,000 Baht 6 = 45,001 - 50,000 Baht 7 = 50,001 - 55,000 Baht 8 = 55,001 - 60,000 Baht 8 = More than 60,000 Baht 99 = missing data
Activity	0 - 10
IQ	0 - 180
EQ	0 - 10
Self-efficacy	0 - 10
Attitude	0 - 10
GPA	0.00 - 4.00

ศูนย์วิทยทรัพยากร
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BIOGRAPHY

Tummatida Pattanapongsa was born in Phitsanuloke, Thailand, on September 22, 1979. She received the Bachelor degree of Pharmacy from Naresuan University in October 2003 and she entered the Master degree of Science in Social and Administrative Pharmacy (International Program) with full-time study, Faculty of Pharmaceutical Science at Chulalongkorn University in 2007.



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