



## CHAPTER II LITERATURE REVIEW

This research intends to develop a HybridNTELL model for English as a foreign language (EFL) education in the 21<sup>st</sup> century and evaluate its effectiveness through an experiment with a group of university students. The purpose of this chapter is to review related literature to the design, development and evaluation of the model. First, the review develops understanding of the current situation in foreign language education in Thailand. Second, it explores social constructivist approach to foreign language learning that provides basis for the HybridNTELL model research and development. Third, it identifies current concepts of language learner autonomy, as well as ways to foster and develop learner autonomy. Fourth, it summarizes findings and current thinking on uses of network technology for teaching English that helps improving English proficiency and learner autonomy. Finally, the main ideas for HybridNTELL model research and development is discussed.

### **2.1 The current foreign language education in universities in Thailand**

Kachru and Nelson (1996) indicate that English is taught to nonnative speakers by nonnative speakers in most cases outside English-speaking countries. EFL has been taught in every level of educational settings mostly by local instructors in Thailand. All Thai students entering college take a required national English entrance examination, and it includes the sections of reading comprehension, grammar and vocabulary use. Speaking and writing skills are tested through paper-based multiple choices. The test takers are asked to identify the correct response to a speaking or writing situations.

In order to perform well in the required English exam, high school students only need to work on their reading and writing skills in English. Few courses spend much study time in developing listening and speaking skills in English. When they enter universities, Non-English major university students are usually required to take three to four credit hours of EFL courses each semester of their first year.

The content of EFL courses has been defined by making a selection of items of vocabulary, grammar, reading, writing, conversation, listening comprehension, and speech practice. Various TEFL methods and approaches ranging from traditional (e.g., Grammar-Translation Method, Audiolingual Method) to more communicative (e.g.,

Direct Method, Communicative Language Teaching Approach) have been proposed to help EFL instructors design, develop, and teach their courses and lessons.

Two major methods and one approach to teaching English as a foreign language reviewed for this study have been adopted and practiced to greater or lesser degrees of success in Thailand up until now.

### **2.1.1 Grammar-Translation Method**

Grammar-Translation Method was originally used in teaching Latin and Greek and then was applied to the teaching of foreign languages in the late nineteenth and early twentieth centuries (Omaggio-Hadley, 2001). It was first known in the U.S. as the “Prussian Method” (Richards & Rodgers, 1986). This method focuses on teaching the grammar of the target language. The main purposes of this method are to help students access and appreciate great literature, as well as to help them develop the ability to translate texts from and into the target language through the analysis of grammar of the target language (Omaggio-Hadley, 2001; Richards & Rodgers, 1986; Stern, 1983).

According to Richards and Rodgers (1986), the major characteristics of this method include:

1. The mother tongue is used and maintained as a reference language when studying the target language, and is the medium of instruction used to explain new content as well as allow comparisons between the native language and the target language.
2. Students are asked to emphasize accuracy when translating texts.
3. Students are asked to focus on reading and writing, with little emphasis on speaking or listening.

This method is good for students to learn how to translate between the native language and the target language. However, this method has very few elements contributing to the development of proficiency that is acquired only when students create with the target language (Omaggio-Hadley, 2001).

### **2.1.2 Audiolingual method**

Due to the increased attention paid to the field of foreign language teaching in the U.S. in the 1950s, audiolingual method was developed by linguists at several universities (e.g., Michigan, Georgetown, American university) and became popular in the 1950s and 1960s (Richards & Rodgers, 1986).

The Audiolingual method, which is considered a scientific approach to foreign language teaching (Omaggio-Hadley, 2001; Richards & Rodgers, 1986; Stern, 1983), is also known variously as the Oral approach, the Aural-Oral approach, and the Structural Approach (Richards & Rodgers, 1986), as well as the Functional Skills approach, the New Key, or the American method of language teaching (Benseler & Schulz, 1980). Several academic areas influenced the development of this method, including structural linguistic theory, contrastive analysis, aural-oral procedures, and behaviorist psychology (Omaggio-Hadley, 2001; Richards & Rodgers, 1986). The goal of this method is to help students develop the same kind of ability that native speakers possess; therefore, students should eventually handle the target language at an unconscious level (Chastain, 1976).

According to Stern (1983) and Chastain (1976), this method has the following characteristics:

1. The four language skills are separated for teaching; students are required to master listening and speaking skills before they develop reading and writing skills (Stern, 1983).
2. The native language is never used to help teach the target language in the classroom or language laboratory (Chastain, 1976). Thus, the target language is presented to the student mainly in the form of dialogues (Stern, 1983).
3. The teacher uses certain techniques for students to memorize dialogues through pattern drills (Stern, 1983). Students learn the target language by means of stimulus-response situations, and learn to speak it without attention to how the language is organized (Chastain, 1976).
4. The teacher uses language laboratory for students' language development (Stern, 1983) because ultimate unconscious use of the target language develops a result of making students memorize commonly used dialogues and through frequent practices of language patterns (Chastain, 1976).
5. The instructional skills and techniques in this method are developed on the basis of linguistic and psychological (behaviorist) theory (Stern, 1983).

Students can give quick and structured responses when they are asked everyday-situation questions because this method focuses on the development of oral skills, such as correct pronunciation and conversation. In addition, a feature of this method, "colloquial and sociolinguistically appropriate language in the dialogues and recombination narratives" (Omaggio-Hadley, 2001: 112), provides a cultural insight

that older TEFL methods (e.g., the Grammar- Translation Method) lack. However, some have cited several drawbacks in this method, including (1) not considering “the variety of learning styles and preferences of students” (Omaggio-Hadley, 2001, p 112), (2) ignoring the needs of some learners who would like to learn the grammar of the target language in order to better understand the language, and (3) failing to achieve the goal of helping students become “bilingual speakers at the end of instruction” (p. 112).

### **2.1.3 Communicative Language Teaching Approach**

The Communicative Language Teaching (CLT) Approach is the latest language paradigm that dominates foreign language teaching and education programs in the world today (Akindjo, 2000). Because “practitioners from different educational traditions can identify with [CLT], and consequently interpret it in different ways” (Richards & Rodgers, 1986: 681), throughout the 1970s and 1980s researchers have contributed to the development of the theory and practice of the Communicative Language Teaching Approach or Communicative Approach. The underlying assumptions of CLT are “communicative competence” (Hymes, 1972), and “language learning” as well as “language acquisition” (Krashen, 1982). “Communicative competence” means that learners are capable of communicating with other people using any form of a language appropriate to the demand of social contexts (Hymes, 1972).

Since the coining of the concept of communicative competence (Campbell & Wales, 1970; Hymes, 1972) and the emergence of communicative approaches to foreign language teaching, the process of learning a foreign language in the classroom has been expanded far beyond the practice and memorization of grammar rules. Many practitioners and researchers now view the classroom not only as a linguistic, but also a social environment: “As in learning a native language, learning a foreign language is also a tacit process of socialization that comes about through social interaction” (Brooks, 1990: 166). Current teaching methodologies incorporate practices aimed at the acquisition of communication skills in addition to grammatical knowledge.

In communicative classrooms, therefore, learners are often engaged in meaningful discourse with the teacher and other learners. The role of interaction in foreign language acquisition has been of great interest to researchers and practitioners. Learner-teacher and learner-learner interaction have been analyzed extensively in order to uncover the underlying psycholinguistic processes of foreign language

acquisition. Much of this research has been carried out within the interactionist framework (Long, 1980, 1981, 1985). According to the interactionist view of foreign language acquisition, language is acquired by means of receiving messages from an interlocutor, decoding such messages for meaning, and sending messages in response. The received messages are referred to as language input, and the sent messages are referred to as output.

The interactionist framework focuses heavily on the linguistic content of input and output, striving to link the two in a comprehensive psycholinguistic model of second (or foreign) language acquisition (Gass, 1997). An important intermediate step that is believed to lead to acquisition during interaction is the negotiation of meaning, which, according to Long and his colleagues, is what makes input comprehensible to the learner. This was an important addition to Krashen's model, which placed a great deal of emphasis on comprehensible input, but paid no attention to interaction or output (Krashen, 1981).

In the 1980s some researchers in second and foreign language acquisition began to incorporate the ideas of the Russian developmental psychologist and semiotician Lev S. Vygotsky (1896-1934) into their research agendas. The recently developed language acquisition research approach is the Vygotsky-inspired social constructivist theory (SCT) paradigm. This paradigm differs from other mainstream second or foreign language acquisition research in its emphasis on the social over the individual aspect of cognitive and language development.

## **2.2 Social constructivist approach to foreign language acquisition**

Much of Vygotsky-inspired social constructivist theory speaks of the individual's cognitive development as mediated by psychological tools (Vygotsky, 1962). This new paradigm of research on foreign language acquisition contrasts with the currently prominent interactionist paradigm, in that social constructivist theory places emphasis on the social, rather than the linguistic variables of human interaction. Whereas the interactionist view puts forth that language is a system of rules in the brain, for the social constructivist theorist language is a symbolic system originating outside of the individual's mind, i.e., in social interaction. Interaction is interesting to the interactionist researcher in terms of the linguistic characteristics of input directed toward a language learner, the linguistic characteristics of the output generated by the learner, and the steps in between, during which linguistic rules are acquired by the

learner. Social constructivist theory also speaks of interaction, but in a different way. Social constructivist theorists view interaction as a mediator of language learning, primarily as a byproduct of the socialization between two or more individuals as they co-construct meaning using *language*. Social constructivist theory operates on the assumption that human development is highly dependent upon the social context within which it takes place. Development occurs as the result of meaningful verbal interaction between novices and experts in the environment, be they parents, older peers, or teachers (Vygotsky, 1962, 1978).

Social constructivist theory distinguishes itself from other approaches to foreign language acquisition in its particular emphasis on a strong relationship between social and linguistic aspects of language development rather than the linguistic aspect alone. The theory emphasizes that the locus of learning is not exclusively within the individual's mind but rather extends outside of the learner, specifically within social interaction with other individuals. Vygotsky was primarily interested in the development of *language in its relation to thought* (Vygotsky, 1972, 1978) which can be used to support the current thinking on such foreign language pedagogy as theme-based learning, content-based learning, task-based learning, project-based learning, and the likes.

Vygotsky also distinguished between lower mental functions, such as elementary perception, memory, attention, and will, and the higher, or cultural functions, such as logical memory, voluntary attention, conceptual thought, planning, and problem solving. Vygotsky explains that higher mental functions appear as a result of transformations of the lower functions (Vygotsky, 1962, 1978). To explain how higher mental functions evolved from lower mental functions, Vygotsky invoked the constructs of *mediation* and *tools*.

This section will outline the fundamental tenets of social constructivist theory and will show why the theory is an appropriate framework to employ in the design and development of HybridNTELL model.

### **2.2.1 Language and Thought**

In the broadest sense the most cited work of Vygotsky, *Language and Thought*, is a good source of understanding how language should be taught and learned. His classic psychological view that we do not speak without thinking and vice versa influence the movements of language education no matter whether it be first, second or foreign language.

### 2.2.1.1 *Content-based or whole language learning approaches*

Content-based language learning or whole language learning approaches reflect the application of the concept of language and thought in language education settings which emphasize on language in use in meaningful communication context rather than in isolation.

Viewing from the perspective of a child educational psychologist, Vygotsky (1978: 118) expresses his belief that both spoken and written language develops in the context of its use as follows:

The best method [for teaching reading and writing] is one in which children do not learn to read and write but in which both these skills are found in play situations. ... In the same way as children learn to speak, they should be able to learn to read and write (Goodman & Goodman, 1990: 223)

The expression indicates his holistic inclinations and his awareness of the need for learners to be immersed in language for literacy learning to be easy. In words, language is learned best in the context of use. When language is whole, relevant, and functional, learner has real purposes for using language, and through their language use they develop control over the processes of language. In whole language, each learner builds on his or her own culture, values, and interest. Each builds on his or her own strengths.

The transactional view of learners in whole-language classrooms owes much to Dewey's (1902) views of education. He recognized the importance of integrating language and thought, and content in the thematic solving of everyday problems. Such experiences are authentic for learners. Learning by doing means that we learn to read by reading and to write by writing as we are using literacy for purposes that are important to ourselves. Dewey argued that skills cannot be isolated from their use, in fact, they develop most easily in the context of their use.

Dewey (1902) provided considerable insight into the relationship between learning in school and learning outside of school. It becomes important then that students are involved in functional authentic activities in school. School is thus not preparation for life; it is *life*. Students can learn much more easily, therefore, when the knowledge is immediately useful; learning is more difficult if it has a more distant purpose.

### *2.2.1.2 Content-based or whole language learning approaches in foreign language learning contexts*

Some might argue that this concept is applicable to first language learning only. However, Vygotsky's explanation highlighted by whole-language educators offers a principle from which foreign language educators can make use of. Vygotsky (1986) explained that to learn a foreign language at school and to develop one's native language involve two entirely different processes. While learning a foreign language, we use word meanings that are already well developed in the native language and only translate them. Thus, "the advanced knowledge of one's own language also plays an important role in the study of the foreign one, as well as those inner and outer relations that are characteristic only in the study of a foreign language" (Vygotsky, 1986: 161).

Foreign language learning is indeed facilitated by the advanced knowledge of the first language, but the process of learning is no different. This is supported by a study of language development by Halliday (1975). He uses the phrase "learning how to mean" to describe the development of a range of personal/social functions which then stimulate the development of the forms of language. As learners experience the wide variety of functions and forms of language, they internalize the way their society uses language to represent meaning. So they are learning language at the same time they are using language to learn. They also are learning about language (e.g. grammar, genre, functions, etc.). But Halliday (1980) suggested that all three kinds of language learning: form, function and use must be simultaneous. Thinking that we can teach the forms of language as prerequisites to their use is a mistake schools often make.

Halliday, like Vygotsky, has a social theory of language. In his systematic functional view, the very form that language takes derives from the fact that it is used socially and that, through its use, language users, and learners create and learn the language conventions or social rules of language to make communication easy and effective. One manifestation of the overall trend toward communicative approaches to L2 instruction has been the growing use of content- and theme-based language teaching, in which the goal is to learn both the language and content.

Content-based instruction is "...the integration of particular content with language teaching aims...the concurrent teaching of academic subject matter and second language skills" (Brinton et al., 1989: 2). Content-based instruction approaches "...view the target language largely as the vehicle through which subject



matter content is learned rather than as the immediate object of study" (Brinton et al., 1989: 5). Content-based instruction is aimed at 'the development of use-oriented second and foreign language skills' and is 'distinguished by the concurrent learning of a specific content and related language use skills' (Wesche, 1993). Content-based instruction is "...an approach to language instruction that integrates the presentation of topics or tasks from subject matter classes (e.g., math, social studies) within the context of teaching a second or foreign language" (Crandall & Tucker, 1990: 187).

The idea of language and thought influencing content-based instruction serves as the primary key to the design of HybridNTELL model. With an extensive capability of information and communication technology (ICT) integrated learning environment, content-based instruction allows the students to learn language through multiple sources of content, media and meaningful communication. The application of Content-based instruction in HybridNTELL model provides opportunities for negotiation in the Zone of Proximal Development, the use of "private speech" (internally directed speech for problem-solving and rehearsal), and student appropriation or internalization of learning tasks (e.g., Lantolf, 1994; Lantolf & Appel, 1994). This first key concept links to other significant concepts in social constructivist theory to be addressed.

### **2.2.2 Zone of proximal development (ZPD)**

In his work on developmental psychology, Vygotsky assumed that learning begins from the starting point of the child's existing knowledge and experience and develops through social interaction or some means of mediation, for example, tasks, resource, technology, etc. This assumption was made explicit in his idea of the zone of proximal development (ZPD), which he defined as the distance between what learners can achieve by themselves and what they can achieve with assistance from others. The skills that the individual has already mastered constitute his or her actual level. The skills that the individual can perform when assisted by a more capable person or some other means of mediation constitute the potential level. Thus, learnt skills provide a basis for the performance of new skills. When these skills in turn become autonomous and stable, a new zone can be created to make possible the acquisition of still further skills.

Vygotsky addresses this idea in the often-cited statement that "any function in the child's cultural development appears, twice, or on two planes, first it appears on the social plane, and then on the psychological plane, ~~that~~ it appears between people as

first

an inter-psychological category, and then within the child as an intra-psychological category” (Vygotsky, 1981: 163).

Higher psychological functions, according to Vygotsky, originate outside the individual, in interpersonal communication, and are symbolically mediated by *language*. At some point this external, social constructivist activity is transformed into internal, mental functioning. The process of transforming lower mental functions into higher mental functions is referred to by Vygotsky as regulation.

### ***2.2.2.1 The concept of regulation in the ZPD***

In working within the ZPD, the adult helps the child move from a state of being object-regulated to eventually becoming self-regulated. When children are object-regulated, they can engage in actions directed toward a decontextualized goal only if their mental processes are mediated by an adult.

At the next stage of development, children are able to carry out certain tasks, but only within linguistically mediated assistance from a parent, or older or more capable peer. At this stage the metacognition of the child is controlled by a surrogate who has the ability to perform the task. This stage is called other-regulation. Eventually, the child achieves self-regulation by taking over more responsibility for strategic functions. When a learner has reached self-regulation, he or she is able to carry out cognitive tasks on his or her own, with very little, if any assistance from a more capable peer.

In attempting to work within the ZPD, the adult provides assistance to the child to help her or him to move from object-regulation to self-regulation. Such assistance is commonly referred to in the literature as *scaffolding* (Wood, Bruner, & Ross, 1976).

### ***2.2.2.2 Regulation and scaffolding in foreign language classroom***

The regulation and ZPD metaphors have enabled researchers in foreign language acquisition to expand social constructivist theory to both child and adult foreign language learning. In Vygotskian terms, learning is brought about through language use in collaborative discourse. More knowledgeable peers deter the ZPD of less knowledgeable peers in a given task and scaffold the less knowledgeable peer until she or he is able to complete the task with gradually less assistance. Wood, Bruner, and Ross (1976) operationalized the scaffolding in terms of six specific functions:

- 1) Recruitment: drawing the novice's attention to the task and its requirements.
- 2) Reduction in degrees of freedom: simplifying the task into sub-tasks that still allow the novice to reach a solution
- 3) Direction maintenance: helping to keep the novice motivated and working toward the overall task goal.
- 4) Marking critical features: calling the novice's attention to important aspects of the overall task, in particular when a mismatch between the novice's work and the expert's preferred solution exists.
- 5) Frustration control: decreasing the stress on the novice without encouraging the novice's dependency on the expert
- 6) Demonstration: modeling the ideal procedure to achieve the goal of the task. (Wood, Bruner, & Ross, 1976: 98; quoted in McCormick, 1995).

In the literature on foreign language acquisition, the scaffolding metaphor is most often applied to teacher-student interaction in the classroom.

Donato (1994), however, showed that learners engaged in collaborative discursive activity are capable of scaffolding each other in order to jointly complete an activity that they may not have been able to complete individually. In the literature on computer-assisted language learning, Johnston and Milne (1995) extended the scaffolding construct beyond the classroom discourse context in a research study that utilized video recordings of native French speakers on a laser disk. The recordings were accompanied by additional grammatical, lexical and pronunciation support on learner demand by remote control. They found a significant increase in communicative discourse (39%) in their first-semester learners and 55% increase in second semester French learners over classes where this type of scaffolding was not supplied. For another study framed within the ZPD, Adair-Hauck and Donato demonstrated how grammar instruction aimed at the learners' ZPD gradually enabled learners to solve grammatical problems on their own (Adair-Hauck & Donato, 1994). In another study, Donato's learners working in small groups collectively scaffolded each other and succeeded in a communicative task that they may not have been able to accomplish individually (Donato, 1994).

### ***2.2.2.3 Effects of regulation on foreign language learner development***

Scaffolding is considered in social constructivist theory to be an important discursive

function in that it facilitates the advancement of the learner along her or his ZPD such as the development of problem solving skills and learner autonomy.

**a) Problem solving.** Guerrem and Villamil (1994), for example, found that peer revision of writing assignments was greatly affected by the state of regulation of the individual learners (Guerrero & Viamil, 1994). Analyzing dyads of English as a second language learners engaged in a composition revision task, these researchers were able to identify the regulated state of learners according to their ability to handle the revision task. For example, learners who were not able to understand the purpose of the revision task, or did not possess the necessary language skills to carry out the task were considered to be object-regulated for this task. Other-regulated learners for this same task were able to undertake the revision process with the guidance of their peers, by accepting peers' suggestions and recognizing, to some extent, trouble sources in their own writing. Finally, self-regulated learners had internalized the task requirements and were capable of independent problem-solving. Guerrero and Villamil determined that asymmetrical dyads consisting of one self-regulated learner and one other-regulated learner were most productive in their revisions, whereas symmetrical interactions between two object-regulated or other-regulated learners were comparatively ineffective. Such research findings support the robustness of the social constructivist constructs in illuminating the discursive, social nature of foreign language learning.

**b) Autonomy development.** Van Lier links Vygotsky's (1978) concept of self-regulation with learner autonomy, the idea that students should develop into life-long learners by enhancing their abilities and their inclinations to plan, control, and evaluate their own learning (Wenden, 1991). Learner autonomy does not necessarily mean that each student learns alone or without a teacher (Little, 1990; Reid, 1993). Rather, the collaboration that occurs in cooperative learning groups fits well with notions of learner autonomy as students are given a large role in controlling their own learning process (Macaro, 1997). Also Freeman and Freeman (1994) argue that in groups, students are more likely to take responsibility for their own learning.

#### **2.2.2.4 The concept of mediation in language classroom**

An underlying assumption of the mediation construct is that humans have access to the world only indirectly, or mediately, rather than directly, or immediately (Wertsch, del Rio, & Alvarez, 1995: 21). This applies to how humans obtain information about the world, as well as how they act on the obtained information.

Mediation is an active process that involves the potential of cultural tools to shape human action, as well as the unique use of such tools.

Donato and McCormick argue the importance of mediation in foreign language learning: “initially unfocused learning actions may become adjusted and modified based on how the learning of the language is mediated. Mediation is, thus, the instrument of cognitive change” (Donato & McCormick, 1994: 456). Donato and McCormick suggest several examples of potential mediators (or tools) in foreign language learning, including textbooks, visual material, technology, classroom discourse patterns, opportunities for target language interaction, types of direct instruction, and various kinds of teacher assistance.

***a) The potential mediators in classroom context***

**Teacher.** Vygotsky’s (1978) concept of mediation is a useful way to view teacher as a major component of learning environment. The learner is in a situational context in which problems need to be solved or experiences understood. The teacher is present as a learning transaction takes place but in the role of mediator who supports the learning transactions but neither directly causes them to happen nor controlling the learning.

The role of teacher as a mediator means that the teachers do not abdicate their authority. But they lead by virtue of their greater experience, their knowledge, and their respect for their students. They know their students, monitor their learning, and provide support and resources, as they are needed. They recognize that there must be collaboration between themselves and their students. The students must feel sense of purpose, of choice, of utility, of participation, and of shared ownership in their classrooms.

Language teachers who take into account whole-language education or content-based EFL learning must recognize the power of classroom transactions and plan for them. They understand that *less can be more*. They realize that helping learners to solve a problem is better than giving them a solution. From Vygotsky’s perspective, teachers mediate learning by asking a question, offering a useful hint, directing attention at an anomaly, calling attention to overlooked information, and supporting learners as they synthesize what they are learning into new concepts and schemas.

The study by Aljaafreh and Lantolf (1994) is a good example of empirical-based model of language teacher as a mediator for learners’ writing development.

They show different levels of teachers' as a mediator to internalization from interpsychological to intrapsychological functioning. Their work shows a reasonable transitions of teachers' mediated action to learner autonomy.

Aljaafreh and Lantolf's study supports Moll's (1990) suggestion that teacher should provide just enough support to help the learner make the most of his or her *zone of proximal development*. Similarly, Ohta (2000) argued development cannot occur if too much assistance is provided.

**Peer.** Recent work has demonstrated the gains produced through a collaborative process called scaffolding (Bruner, 1975), through which assistance is provided from person to person such that an interlocutor is enabled to do something she or he might not have been able to do it otherwise. Research on scaffolding or mediation by peers in language learning has shown how learners working together reach a higher level of performance by providing assistance to one another (Brooks, 1992; Donato, 1994; Ohta, 1995; DiCamilla, 1998). While Vygotsky may have emphasized the role of more expert others in co-constructing ZPDs, more recently attention has turned to how students at a similar level of shared understanding can help one another. For instance, Koschmann (1996) states that the interaction patterns of scholars working to create new knowledge in their field shows how people's ideas can converge to mutually construct knowledge. The notion that peers can help each other is very much in line with student-centered perspectives on education, and it also fits with what Johnson et al. (2002) say about positive interdependence. This notion can be further elucidated by the concept of community of practice.

**b) The community of practice** approach to learning derives from a social constructivist perspective and emphasizes the relationships between human action and the social context in which the action occurs (Lave & Wenger, 1991). Within this framework, the potential for learning in educational contexts is broadly seen as a set of social practices as situated within specific classrooms. One of the essential premises of the community of practice approach is the notion of legitimate peripheral participation (Jacob, McCafferty, & Iddings, 2006), which holds that learning occurs as newcomers fulfill various peripheral roles alongside more experienced or competent members of the community as they gradually become able to fully participate. This is based on an apprenticeship model. Lave and Wenger (1991: 92) argue that "the social structure of a community of practice, its power relations, and its conditions for legitimacy define possibilities for learning."

*c) Collaborative learning.* Vygotsky's strategy in creating cooperative learning (cited from Newman & Holtzman, 1993: 77) is that he created heterogeneous groups of children. He called them a collective and provide them not only with the opportunity but the need for cooperation and joint activity by giving them tasks that were beyond the developmental level of some, if not all, of them. Under these circumstances, children could create a ZPD for each other, something not possible if one takes developmental level as the basis for learning. As applied to foreign language students, this passage indicates that students at the same proficiency level can help each other. Coughlan and Duff (1994) made the valuable but often overlooked point that a task that teachers or researchers ask students to carry out cannot be seen as fixed. Instead, students construct their own versions of the task based on their orientation toward it in conjunction with others. In their study, Coughlan and Duff gave each foreign language learner the same task instructions: Describe a picture to an interviewer. Yet each person interpreted the task differently and in relation to what they thought the interviewer meant or wanted them to do. For instance, one tried to name as many things in the picture as possible, while another focused on relating events in the picture to her own personal experiences. In addition, the same participants when asked to do the same tasks at a much later date, did not simply repeat what they had done previously.

Also, Platt and Brooks (1994) remarked on how the orientation of students engaged in pair and group work can differ from teacher expectations noting that sometimes the foreign language students in the study simply conformed to their assigned roles with little engagement, or in some cases much of what they said was in fact directed to themselves (private speech) in their efforts to both come to understand and carry out a group activity despite the presence of others. Platt and Brooks also address intersubjectivity (creating a temporarily shared social world) and how this can be a key element in determining joint orientation in activity.

Therefore in regard to foreign language classrooms and cooperative learning, social constructivist theory emphasizes the social nature of learning, that symbolic, physical, and mental space are mediated through interaction in cultural-historical contexts. Students utilize themselves (their own histories), each other (as in groups), artifacts (especially language and other forms of communication), and the environment in their efforts to make meaning of and in the target language.

Moll (1990) suggested that one key to teachers' success in building an atmosphere of mutual respect in their classrooms. The classes become social communities where teachers value each learner help the learners to value themselves and each other, and win the respect of their students.

**d) Pedagogical tools.** In order for transformations from lower to higher mental functions to occur, the individual makes use of psychological tools, such as mnemonic techniques, algebraic symbols, diagrams, schemes, and, perhaps most importantly, *language*. These psychological tools function as mediators, or instruments that stand between the individual and the goal toward which the individual's action is directed. Vygotsky's claim was that just as individuals employ technical tools to manipulate their environment, they use psychological tools to direct and control their physical and mental behavior. Higher mental functions, then, must be viewed as products of mediated activity, of which language is one of the principle tools or mediators.

Kuuti (1996) argued that tools and artifacts take part in the transformation of learning. They mediate the relationship between the learner and learning outcome, thus transforming them, and empower the learner, whose actions can be enabled and enhanced by their use of tools.

Goodman & Gollasch (1982) concluded from their study on reader's use of existing schemas in attempting to comprehend texts, that the text itself mediates learning. Language teachers recognize that if the learners are involved in authentic experiences the speech acts and literacy events will largely be self-mediating.

Moll (1990) gave an example of text as a mediator that in the act of composing, the writing of text mediates writing development as the language user seeks actively to make sense through the text being created. However, for this self-development to take place, the written text must be authentic. That is, it must be whole with all the characteristics of real written texts created for real purposes in real contexts. Halliday and Hasan's (1976) argument also supported this idea in that they define text as "a unity of meaning in context." Vygotsky recognized writing as "a complex cultural activity." Vygotsky (1978) says there is a "requirement that writing be taught naturally, relevant to life, meaningful for learners."

In a content-based foreign language learning environment, tools such as text, language and technology can be considered as mediation. The concept of text as mediator encourages teachers to organize the classroom environment so that learners will have many opportunities to realize the extent to which they know and control



language, the way in which language controls them, and the significance to language to their lives. The intuitive knowledge learners have developed about language can thus become more explicit as students examine the real things that they do with language as they use it. They are helped to view their errors in reading and writing as an important part of their learning and as part of the multiple interpretations that all readers and writers develop as they compose and comprehend texts. Students and teachers or students and peers learn with each other and from each other as they explore each other's responses to literature and each other's attempts at composition.

It is worth pointing out that the introduction of new cultural tools (such as computers) transforms the mediation process, rather than simply facilitating forms of action that would otherwise occur (Wertsch et al., 1995). As Vygotsky stated: "By being included in the process of behavior, the psychological tool alters the entire flow and structure of mental functions. It does this by determining the structure of a new instrumental act, just as a technical tool alters the process of a natural adaptation by determining the form of labor operations" (Vygotsky, 1981: 137).

Researchers in computer-assisted language learning (CALL) would add the computer as a mediator in classroom. Meskill considers the computer to be a complex artifact that, "like all contextual artifacts, especially tools used by members of a particular community...bring about major change in the structure and dynamics of discourse and activity" (Meskill, 1999: 154).

Wertsch suggests that mediational means be viewed in terms of items that make up a tool kit, rather than being viewed as a single, undifferentiated whole (Wertsch, 1991). All kinds of mediational means play an important part in learners' zone of proximal development that leads to internalization of knowledge.

#### ***2.2.2.5 The concept of internalization***

Vygotsky addresses internalization in the often-cited statement that every psychological function appears twice, first between people on the interpsychological plane then intrapsychological plane. However, the concept of internalization goes a long way toward explaining the continuity across time and space experienced by individuals. Wineger's (1997: 31) definition of process:

Internalization is a negotiated process of development that is co-constructed both intra- and interpersonally. As such, it is a process of reorganization of the person-environment relationship that itself emerges with person-environment relationships. Through this process, immediate person-environment relationships are reorganized, and some aspects of this reorganization may carry forward to contribute to future reorganization. At least for humans, this process always is socially mediated whether or not other persons are physically present. Some patterns of previous and later person-environment relationships we experience as continuity.

Thus, internalization, although it is considered intrapsychological, does not occur in isolation from the society. The process is within the society and spontaneously within the person. For this reason, language skills cannot be internalized from memorizing bits and pieces from grammar books without communication. However, according to Wineger (1997) the process of internalization can be socially mediated without other persons physically present. This explanation matches with today's society where online and printed media are communicating with people. We then also learn language from this type of communication.

Wineger's definition support an argument of Vygotsky's concept of internalization, interpreted differently especially by social constructionists that the process is not the transmission of pieces of knowledge but instead, a transformative and reciprocal process whereby the person transforms what is internalized and through externalization potentially impacts the self and the community.

From the social constructivist perspective, internalization is not an *individual acting alone*, as many people seem to think. Matusov (1998) argued that even when a person appears to engage in solo activity, there is still an element of joint activity mediated by special semiotic means involved. From Matusov's view, individual activity is thus always and everywhere social, and furthermore, there is nothing about internalization as described by Vygotsky and others that would suggest independent cognitive activity is asocial.

Lantolf and Thorn (2006) sums the whole point of internalization and states that through the idealization of social material activity, the person progressively gains independence from specific concrete circumstances. But the person continues to rely on the mediational means made available in concrete social circumstances. From this perspective, individuals never engage in solo performances, even when they are alone, because psychological tools are genetically derived from social constructivist-basedly organized concepts, artifacts, and activities. Thus, our performances are always in constant exchange of processes between ourselves and the environments. Valsiner

(1997) argued that human without social exchange becomes isolated and is thus closed off from any opportunity for development.

In other words, internalization then necessarily includes a reverse process of externalization. Lawrence and Heinze (1997) described that interpretive activities (operations) on socially generated input, personal sense is given to the ideas, messages, roles, and relationships that pertain in the person's culture.

There are limited number of extensive studies in second language acquisition of adult learners and internalization. Two among a few was conducted by Ohta (2001) on L2 Japanese and Centeno-Cortes (2003) on L2 Spanish. Ohta (2001) research illustrates her important observation that private speech reveals how learners may find corrective feedback in unexpected places. Ohta's research of language tutoring also contributed a great deal to investigating the learners' ZPD. Lantolf and Yanez (2003) investigated a Spanish learner's private speech and also found that the learner seems to have their own learning agenda, which is often different from the teacher's instructional agenda. Centeno-Cortes (2003) also investigated the private speech of three advanced learners of L2 Spanish and found that the most frequent functions of their private speech was internalization. Centeno-Cortes (2003) reported that the participants focused primarily on such language features as phonology, vocabulary, and fixed phrase while the instructor intended them to work on morphosyntax for advanced learners. They, in contrast, noticed distinctive dialectical features of their instructor's speech, which they imitated in their private speech.

The results from studies on internalization and the concept constitute an important trigger in the development of HybridNTELL model. Realizing this concept together with content-based learning approach, zone of proximal development and the role of mediation, it is concluded in HybridNTELL model that language instruction should be in socially communicative environment where meaningful communication is the focus. Moreover, goal-directed (learner-directed) communication must be included as the learners learn differently from each other and from what the instructor expected.

### **2.2.3 The modern Activity theory and classroom organization**

Social constructivist theory is a multidisciplinary field. It has been researched on and interpreted by many scholars. Until recently, Engestrom's (1987) visual schema of activity system has summarized and extended Vygotsky's (1978) concepts

of mediation in ZPD and Leontiev's (1978) model of activity theory to graphically represent a collective activity system (Figure 2.1).

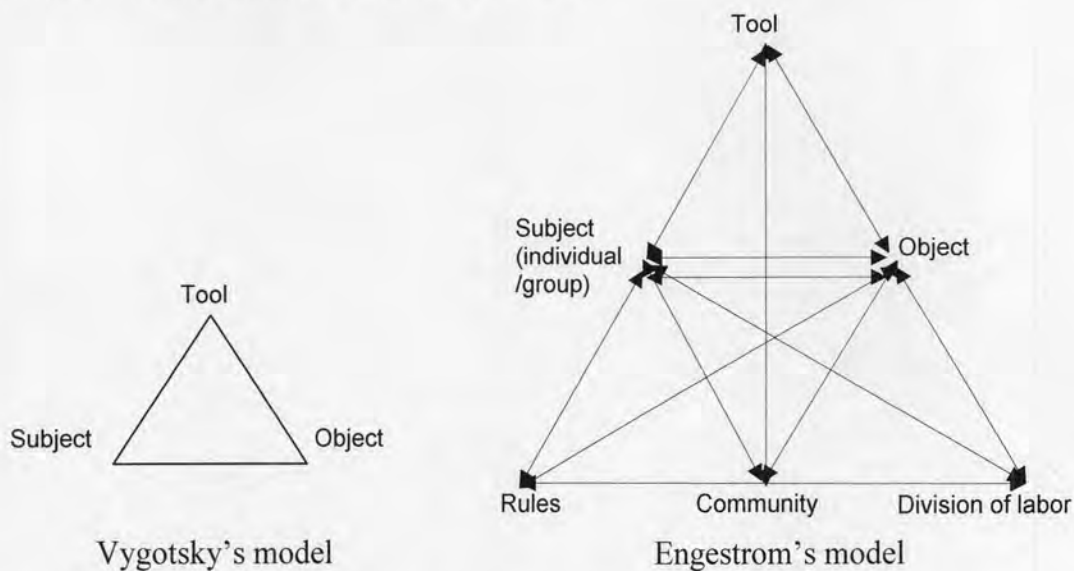


Figure 2.1 Vygotsky's and Lientiev's activity theory versus Engenstrom's activity system

The framework was proved a productive for mapping and transforming the complexities of social practice in a wide array of life settings. Based on Vygotsky's triadic model and Lientiev's activity theory, Engeström defines it in a number of publications (e.g. 1987, 1993, 1999, 2001) that *subject* is an individual or group carries out a number of actions, (or a chain of actions), that are directed towards an *object* (goal or motive). The important characteristic of group or individual actions is that they are goal-oriented: "actions are purposeful, and importantly, not automatic" (McCafferty et al., 2001: 289). The collective activity is determined by its object or motive: similar actions can serve different activities if they are directed towards different goals. Actions become routinized and automatized, and thus become operations, when they cease to be goal-directed.

In carrying out an action, the subject is assisted by a set of tools (or mediating artifacts), which mediate the relationship between subject and object. Tools can be technical or psychological. They are culturally constructed and transmitted: artefacts embody the culture that created them and are the expression of cognitive forms developed within that culture (see for instance, the different functions embodied in scientific calculators used in different cultures), thus "carrying with [them] the history of the relationship" (Kuutti, 1996: 27). Tools and artifacts take part in the transformation of the object into an outcome, which can be desired or unexpected. They mediate the relationship between the subject (individual or team) and the object

of the activity, thus transforming them, and empower the subject, whose actions can be enabled and enhanced by their use.

However, they can also be limiting by obscuring some aspects of the object of the activity: a tool or artifact may restrict the interaction between subject and object “from the perspective of that particular tool or instrument only” (Kuutti, 1996: 27). Engeström (1987) expanded Leontiev’s model and defines the basic structure of an activity system in term of six constituents – object, subject, tools and artifacts, community, rules and division of labor – operating on the three levels identified by Leontiev (1978). The subject is not acting in isolation but is a part of a community, which comprises those participants sharing the same object. The relationship between the subject and the object is mediated not only by tools and artifacts but also by explicit and implicit rules and conventions. The relationship between the community and the object of the activity is in turn mediated by a division of labor, which encapsulates both the horizontal distribution of tasks between peers and the vertical distribution of power between participants. An activity is a systemic formation and mutual relationships exist between all its constituents, even though the triangular relationship subject – object – community forms the basis of any activity system (Kuutti, 1996: 27). Following Engeström (1987), activity systems are conventionally represented by ‘triangles’.

Engeström’s model goes beyond a mere description of the relationships between the different constituents of an activity system. Activity systems are multivoiced formations where different subjects, whether individual or team, bring their own histories and construct the object in different ways, through their status in the division of labor and their level of familiarity with the mediating tools available (Engeström, 1999). These different constructions of the object may be converging or conflicting and subjects may not be aware of the object of the activity until it has been transformed into an outcome. The awareness of the actual object of the collective activity is often gained through a retrospective analysis of the subject’s own practice (Centre for CHAT & DWR).

Consequently, the object is constantly in transition and under construction. The object can manifest itself in different forms for different participants at different times. Tools and objects are interchangeable during the activity: the participants’ unfamiliarity with a tool results in a shift from tool to object and vice-versa (Hasu & Engeström, 2000).

In the activity system, the subject interacts with others and evolves over a long period of time. They do not exist in isolation and the interaction between activity systems results in the internalization, at the collective or individual levels, of external components or influences. This internalization of external components creates disruptions and imbalances within the activity system. Breakdowns, tensions and internal contradictions are seen as source of development as the activity system as a whole works through these contradictions.

Mediation arises fundamentally from practical activity within the world of objects (Kuzulin, 1990: 245, cited in Lantolf and Appel, 1994: 16). This idea, explicated mainly by A. N. Leont'ev, gave birth to a post-Vygotskian theory known as activity theory (Leont'ev, 1981). According to Wertsch (1985, cited in Lantolf and Appel, 1994a. p. 17), activity theory seeks to answer the question, "What is the individual or group doing in a particular setting?" Leont'ev elaborated a response to this question within a framework consisting of three levels of analysis: activity, action and operation.

Activity, the highest level of analysis, is defined as "the social institutionally determined setting or context based on the set of assumptions about the appropriate roles, goals, and means to be used by the participants in that setting" (Lantolf & Appel, 1994a p. 17). Examples of activity include play, work, education, and worship (Lantolf & Appel, 1994: 17). In the classroom setting, Wells states that activity characterizes curricular events from the teacher's (implicit) theory of education (Wells, 1999: 17 1). Leont'ev stated the importance of motive in activity, believing that without a motive, there could be no activity (Leont'ev, 1981).

The second level of activity theory is action. Actions can be embedded in different activities, which are regulated by goals. Activity, then, is best seen as goal-directed action. Goals can in turn be divided into sub-goals. Once goals are formed, they are not necessarily stable. That is, an individual can modify, postpone, or even abandon goals altogether (Lantolf & Appel, 1994: 19). In the educational setting, action characterizes classroom events in terms of their immediate goals and the sequence of sub-actions needed to perform them (Wells, 1999: 171). Wells also highlights the idea that spoken discourse is an important semiotic tool that participants use to achieve the goal of action (Wells. 1999: 172).

The final level of activity is operations, which determine the physical or mental means by which an action is carried out. There may be several operational

means available to achieve any given goal, depending on the actual circumstances and conditions under which a goal is realized. Operations, once carried out several times, usually become automatized procedures. Classroom operations, according to Wells, are the actual unfolding of classroom events, "with particular emphasis on the interaction that occurs, both among the participants and between the participants and the various artifacts that are involved in performing the actions(s)" (Wells, 1999: 171).

In summary of the three levels of activity theory, the motive answers why something is done; the goal answers what is done; and the operations answer how it is done. Activity theory is a useful construct to apply in the study of foreign language acquisition, particularly since "task" has been an area of great importance in SLA research for well over a decade. In an article titled "Same task, different activities: Analysis of language acquisition tasks from an activity theory perspective", Coughlan and Duff (1994) make the important point that in research on foreign language acquisition it cannot be assumed that research (and pedagogical) task are constant. That is, when L2 learners are given an experimental task to perform, they will not necessarily perform the task in the same way as other learners, due to the divergent motives, goals and operations that each learner brings to the given task.

When individuals engage in a task, they are also engaging in the "larger, multi-level segment of human activity" that Leontiev pointed out (Coughlan & Duff, 1994: 174). In their study, they used a picture description task of the type that is commonly used in studies on language acquisition to elicit certain language structures or lexical items. In their analysis of different subjects performing the same picture description, they make the following enlightening observation. Even with a relatively controlled task, a range of discourse types may result from subjects' multiple interpretations of that task, their desire (as well as that of the researcher) to establish interpersonal bonds with their interlocutor, their attempt to make the picture description task a more interesting one by evaluating events, making comparisons to personal experience, playing language games, and so on (Coughlan & Duff, 1994: 185).

The important lesson to be learned here is that the outcome of a task cannot necessarily be predetermined, since the activity that evolves from a given task comprises the behavior produced by individuals with their own set of objectives and in their own social constructivist context.

This is in contrast to current interactionist views of language tasks, which view the task as a vehicle for presenting specific linguistic information and eliciting specific linguistic information in turn (e.g., Crookes, 1993; Lee, 1999; Lee & VanPatten, 1995).

In sum, researchers on language acquisition in the Vygotskian social constructivist tradition believe that social constructivist theory enables researchers to illuminate the process of learning a foreign language in a way that other research on foreign language acquisition paradigms are unable to do. As Donato and McCormick put it, “we believe that this perspective goes beyond current cognitive and social psychological conceptions of strategic language learning .... The social constructivist perspective, on the other hand, views language learning tasks and contexts as situated activities that are currently under development and that are influential upon individuals’ strategic orientations to classroom learning” (Donato & McCormick, 1994: 453).

#### **2.2.4 Social constructivist perspectives on investigating learning**

Vygotsky (Wertsch, 1985) noted that “instruction is good only when it proceeds ahead of development. Then it awakens the rouses to life and entire set of functions which are in the stage of maturing, which lie in the zone of proximal development” (p. 71). The notion of studying classroom interaction by analyzing classroom discourse would be a logical extension of the work started by Vygotsky, especially because he was interested in the dynamic changes experienced by children in the learning process. However, Moll (1990) voices an important cautionary noted that not all assisted learning (e.g. rote drill and practice, work sheets, and skills-based practice) represents this notion.

The zone of proximal development then becomes another case of the individuals’ learning and developing within and through their social connections with the collective. In Vygotsky’s view, it was relying on the spontaneous concepts alone to gauge the child’s progress that led to the view of development leading instruction. Vygotsky theorized that assessment should focus on what the child is able to do with the assistance of an adult.

He took up this work as a way of studying the formation of processes by analyzing the subjects engaging in activities (Moll & Greenberg, 1990) by observing participants who were given tasks to complete that were beyond their present capabilities. By observing what children would do when offered objects to mediate,



tasks that were initially beyond their present capabilities, Vygotsky emphasized “the child’s construction of new means that can help to solve the problem and that restructure the whole task situation” (Valsiner, 1988: 137). He could look at the process of the subject’s interacting with the environment and the use of tools to mediate the completion of task.

Moll (1990) further recognized the importance of this work: “the concept of the zone of proximal development integrated social activity into the (previously conceptualized) theory while retaining the significance of sign and tool mediation in understanding human learning and development” (p. 5).

Most research has addressed the concept of *Zone of Proximal Development* and its relation to organizing a foreign language learning environment or tasks in classroom settings. The *zone* has been variedly arranged. As well, the *development* has been observed by different measures after an intervention. However, what is left to be investigated is *proximal*. We hardly find classroom-based research that rigorously defined where proximal is in the development of students. Thus, the complete picture of ZPD in foreign language classrooms has yet been widely created. This section describes a clearer picture of ZPD means from the perspective of assessment and provides a basis on which the students are assessed in HybridNTELL model.

The only reason why proximal are difficult to define in classroom learning is that it is in the future and occurs in reciprocity between learner/mediator interaction. Most language classrooms filled with more than 20 students offer only limited opportunities for making the reciprocity to happen.

An attempt to search for ways to look at proximal is anchored from Vygotsky’s notion of ZPD in reference to two educational problems: how children are assessed and the evaluation of instructional practices (Wertsch, 1985). His concern was that, if we only assess the matured functions, what has been learned, we would miss the possibilities that lie just ahead, in the very next level of performance.

Vygotsky proposed that ‘determining the actual level of development not only does not cover the whole picture of development, but very frequently encompasses only an *insignificant* part of it (1998: 200; cited from Lantolf & Thorne, 2006). He insisted that responsiveness to assistance is an indispensable feature for understanding cognitive ability because it provides an insight into the person’s future development. Moreover, Vygotsky showed that potential development varies independently of

actual development. This means the actual development cannot be used to predict the former. He gave an explicit example that can make this point forcefully. I summarized the extended quote from Wertsch (1985: 68) as follows. Imagine that we have examined two children whose determined mental age is seven. Both children carried out a test above their level with the help of leading questions, examples, and demonstrations. One of them might easily solve the test items taken from two years above his level while the other could solve the items that are only a half-year above. Vygotsky concluded that from the point of view of their independent activity they are equivalent, but from the point of view of their immediate potential development they are sharply different. That which the child turns out to be able to do with the help of an adult points us toward the zone of the child's proximal development.

Grounded in Vygotsky's important insight that in the ZPD instruction leads development, Dynamic Assessment (Lidz, 1991; Lantolf and Thorne, 2006) was introduced. Lidz remarks that DA focuses on "modifiability and on producing suggestions for interventions that appear successful in facilitating improved learner performance" (p. 6).

Valsiner (2001) outlines three ways the future has been construed in developmental psychology. In the first, human is mature rather than develops. This is the way Innatist theories are posited. In the second, 'the role of past life history of the organism in leading to its present state of functioning' is acknowledged as past-to-present model. The future is predicted when it already has become present. This is the way Freud's theory of emotional development, Piaget's theory of cognitive development, and, in second language acquisition, Krashen's morpheme-order hypothesis, and Pienemann's (1998) processability hypothesis are all examples. The third way of conceptualizing the future has been through present-to-future models, where focus is on the *emergence of novelty*. This is the way Hopper based on the concept of 'emergent grammar' and Selinker on 'interlanguage' look at learners development. Lantolf and Thorne (2006) argued that not only do these models allow researchers and educators to chart out development before it happens, 'through their study while they are emerging' (this is what proximal means in ZPD), they also compel researchers and educators to participate actively in the developmental process itself.

The last method informs us that assessment and instruction are dialectically integrated as the means to move toward an always emergent and dynamic future

rather than a fixed end-point. In words, learning should be assessed while it is mediated. This method provides a clearer picture of how EFL students' Z, P, and D can be assessed from social constructivist perspective.

### **2.3 Uses of technology for foreign language education**

In the literature on computer-assisted language learning (CALL), Kern asserts that Vygotsky's and Bakhtin's theories, with their emphasis on social interaction in understanding and learning, "can help us to reconceptualize the role of computers in language teaching" (Kern, 1996: 107). An important branch of research on foreign or second language acquisition in the last few years has been that of the use of the computer as a language learning tool. In CALL research, scholars and teachers explore the theoretical and pedagogical possibilities that the computer has to offer foreign language learners. The current study aims to further such insights into the intersection of social constructivist theory and computer-mediated foreign language learning. However, past studies on how computer has been used in language learning were primarily investigated.

#### **2.3.1 Computer-Assisted Language Learning: Description and History**

The following account of the history of CALL will serve to orient the reader to the use of computers in teaching foreign languages. CALL encompasses a wide range of language teaching and learning issues beyond those related to Hybrid Network Technology-Enhanced Language Learning (HybridNTELL) or Computer-Mediated Communication (CMC), but it is from this branch of research that HybridNTELL and CMC originated. It will therefore serve the reader to have a well-versed background in CALL issues.

The CALL research tradition is highly interdisciplinary in nature, drawing on the fields of applied linguistics and foreign language teaching methodology, foreign language acquisition, computer-assisted instruction, and instructional design (Levy, 1997). Since CALL investigates the role of computers in language learning, and foreign language acquisition investigates the cognitive processes involving in language learning, CALL research can be considered to be a subset of research on foreign language acquisition. That is, the HybridNTELL or CMC environment is one of many environments in which to research the learning of second/foreign languages. Research on foreign language acquisition is a multifaceted area of academic inquiry. At least forty distinct theories or perspectives on foreign language acquisition can be

found in the scholarly literature (Larsen-Freeman & Long, 1991). Likewise, CALL research is multifaceted. Levy informs us that CALL does not represent one homogeneous type of activity that can be described in terms of a stable, invariant framework relating computer, learner and task (Levy, 1997).

To understand the present state of CALL, research, it is helpful to take a brief look at its past. The history of CALL goes back at least as far as the history of the use of the computer (see Levy, 1997, for a thorough review). As Hawisher (1994) notes, the integration of technology in classrooms over the last 20 years has mirrored the current technological developments available, and more importantly, theories of learning and instruction that have evolved from the scholarly literature (Hawisher, 1994). The recent introduction of networked technologies in education coincided with a shift in interest in cognitive and developmental theories of learning to a social and collaborative view of learning (Hawisher, 1994). Levy (1997) points out that the use of CALL has evolved basically along the same lines as successive theories of foreign language acquisition, from behaviorism to communicative language teaching. In the days of audiolingual method the computer mainly provided mechanical drills. In accordance with current communicative methodologies, the computer is now called upon to provide learners with opportunities for interaction.

### ***2.3.1.1 Behavioristic CALL and Audiolingual method***

From the late 1950s until the early 1970s, second/foreign language teaching in the United States followed a methodology known as the "audiolingual method", with its roots in the habit-forming tenets of behavioristic psychology. When computers entered the picture during this time period, they were viewed as an addition forum, beyond that of the classroom for providing learners with mechanical language drills.

Drill and practice courseware is based on the model of *computer as tutor* (Taylor, 1980). In other words the computer serves as a vehicle for delivering instructional materials to the student. The rationale behind drill and practice was not totally bogus, which explains in part the fact that CALL drills are still used today.

Briefly put, that rationale is as follows:

- a) Repeated exposure to the same material is beneficial or even essential to learning
- b) A computer is ideal for carrying out repeated drills, since the machine does not get bored with presenting the same material and since it can provide immediate non-judgmental feedback
- c) A computer can present such material on an individualized basis, allowing students to proceed at their own pace and freeing up class time for other activities

Based on these notions, a number of CALL tutoring systems were developed for the mainframe computers which were used at that time. One of the most sophisticated of these was the PLATO system, which ran on its own special PLATO hardware, including central computers and terminals. The PLATO system included vocabulary drills, brief grammar explanations and drills, and translations tests at various intervals (Ahmad, Corbett, Rogers, & Sussex 1985).

In the late 1970s and early 1980s, behavioristic CALL was undermined by two important factors. First, behavioristic approaches to language learning had been rejected at both the theoretical and the pedagogical level. Secondly, the introduction of the microcomputer allowed a whole new range of possibilities. The stage was set for a new phase of CALL.

In the current era of theory on foreign language acquisition and classroom practice, however, there is much more emphasis on communicative use of the target language, rather than mechanical practice. The use of computers in language learning has mirrored both the evolution of computer technology and the evolving theories of foreign language acquisition, thus computers are now expected to provide learners with communicative environments just as second/foreign language classrooms do. Whereas the computer as drill instructor does not make use of technology in any unique way, the computer as provider of communicative contexts does have the potential to deliver language instruction in ways that both complement and go beyond classroom delivered instruction.

#### ***2.3.1.2 Communicative CALL and Communicative Language Approach***

CALL based on the communicative approach to teaching became prominent in the 1970s and 80s. Proponents of this approach felt that the drill and practice programs of the previous decade did not allow enough authentic communication to be of much value.

One of the main advocates of this new approach was John Underwood, who in 1984 proposed a series of "Premises for Communicative CALL" (Underwood, 1984:52). According to Underwood, communicative CALL focuses more on using forms rather than on the forms themselves; teaches grammar implicitly rather than explicitly; allows and encourages students to generate original utterances rather than just manipulate prefabricated language; does not judge and evaluate everything the students nor reward them with congratulatory messages, lights, or bells; avoids telling students they are wrong and is flexible to a variety of student responses; uses the

target language exclusively and creates an environment in which using the target language feels natural, both on and off the screen; and will never try to do anything that a book can do just as well.

Several types of CALL programs were developed and used for communicative skills practice. First, there were programs to provide skill practice, but in a non-drill format. Examples of these types of programs include courseware for paced reading, text reconstruction, and language games (Healey & Johnson 1995b). In these programs, like the drill and practice programs mentioned above, the computer remains the "knower-of-the-right-answer" (Taylor & Perez 1989:3); thus this represents an extension of the computer as tutor model. However, in contrast to the drill and practice programs, the process of finding the right answer involves a fair amount of student choice, control, and interaction.

Another CALL model used for communicative activities involves the computer as stimulus (Taylor & Perez 1989:63). In this case, the purpose of the CALL activity is not so much to have students discover the right answer, but rather to stimulate students' discussion, writing, or critical thinking. Software used for these purposes include a wide variety of programs which may not have been specifically designed for language learners, programs such as SimCity, Sleuth, or Where in the World is San Diego? (Healey & Johnson, 1995b).

The third model of computers in communicative CALL involves the computer as tool (Brierley & Kemble 1991; Taylor 1980). In this role, the programs do not necessarily provide any language material at all, but rather empower the learner to use or understand language. Examples of *computer as tool* include word processors, spelling and grammar checkers, desk-top publishing programs, and concordancers.

The distinction between these models is not absolute. A skill practice program can be used as a conversational stimulus, as can a paragraph written by a student on a word processor. Likewise, there are a number of drill and practice programs which could be used in a more communicative fashion -- if, for example, students were assigned to work in pairs or small groups and then compare and discuss their answers (or, as Higgins, 1988, students can even discuss what inadequacies they found in the computer program). Warschauer (1996) argued that the dividing line between behavioristic and communicative CALL does involves not only *which* software is used, but also *how* the software is put to use by the teacher and students.

Although communicative CALL seems like a significant advance over behavioristic CALL, by the end of the 1980s, many educators felt that CALL was still failing to live up to its potential (Kenning & Kenning, 1990; Pusack & Otto, 1990; Rüschoff 1993). A number of educators were seeking ways to teach in a more integrative manner, for example using task- or project-based approaches. The challenge for advocates of CALL was to develop models which could help integrate the various aspects of the language learning process. Fortunately, advances in computer technology were providing the opportunities to do so.

### ***2.3.1.3 Integrative CALL: Multimedia and the Internet***

**a) *Multimedia.*** Integrative approaches to CALL are based on two important technological developments of the last decade: multimedia computers and the Internet. Multimedia technology, exemplified today by the CD-ROM, allows a variety of media (text, graphics, sound, animation, and video) to be accessed on a single machine. What makes multimedia even more powerful is that it also entails hypermedia. That means that the multimedia resources are all linked together and that learners can navigate their own path simply by pointing and clicking a mouse. (ICT4LT Editor's Note: See Module 2.2, Introduction to multimedia CALL.)

According to Warschauer (1996) hypermedia provides a number of advantages for language learning. First of all, a more authentic learning environment is created, since listening is combined with seeing, just like in the real world. Secondly, skills are easily integrated, since the variety of media make it natural to combine reading, writing, speaking and listening in a single activity. Third, students have great control over their learning, since they can not only go at their own pace but even on their own individual path, going forward and backwards to different parts of the program, honing in on particular aspects and skipping other aspects altogether. Finally, a major advantage of hypermedia is that it facilitates a principle focus on the content, without sacrificing a secondary focus on language form or learning strategies. For example, while the main lesson is in the foreground, students can have access to a variety of background links which will allow them rapid access to grammatical explanations or exercises, vocabulary glosses, pronunciation information, or questions or prompts which encourage them to adopt an appropriate learning strategy.

An example of how hypermedia can be used for language learning is the program *Dustin* which is being developed by the Institute for Learning Sciences at Northwestern University (Schank & Cleary 1995). The program is a simulation of a

student arriving at a U.S. airport. The student must go through customs, find transportation to the city, and check in at a hotel. The language learner using the program assumes the role of the arriving student by interacting with simulated people who appear in video clips and responding to what they say by typing in responses. If the responses are correct, the student is sent off to do other things, such as meeting a roommate. If the responses are incorrect, the program takes remedial action by showing examples or breaking down the task into smaller parts. At any time the student can control the situation by asking what to do, asking what to say, asking to hear again what was just said, requesting for a translation, or controlling the level of difficulty of the lesson.

Yet in spite of the apparent advantages of hypermedia for language learning, multimedia software has so far failed to make a major impact. Several major problems have surfaced in regarding to exploiting multimedia for language teaching. First, there is the question of quality of available programs. Second, today's computer programs are not yet intelligent enough to be truly interactive. A program like *Dustin* should ideally be able to understand a user's spoken input and evaluate it not just for correctness but also or appropriateness. It should be able to diagnose a student's problems with pronunciation, syntax, or usage and then intelligently decide among a range of options (e.g. repeating, paraphrasing, slowing down, correcting, or directing the student to background explanations). Computer programs with that degree of intelligence do not exist, and are not expected to exist for quite a long time. Artificial Intelligence (AI) of a more modest degree does exist, but few funds are available to apply AI research to the language classroom. Thus while Intelligent CALL (Underwood 1989) may be the next and ultimate usage of computers for language learning, that phase is clearly a long way down the road. (IC4LT Editor's Note: See Module 3.5, Human Language Technologies)

Multimedia technology as it currently exists thus only partially contributes to integrative CALL. Using multimedia may involve an integration of skills (e.g. listening with reading), but it too seldom involves a more important type of integration, integrating meaningful and authentic communication into all aspects of the language learning curriculum. Fortunately, though, another technological breakthrough is helping make that possible, electronic communication and the Internet.



*b) The Internet.* Linked to the development of information and communication technology (ICT), a new form of CALL has emerged. Computer-Mediated Communication (CMC) defined as any type of human-to-human communication mediated by a computer (Murray, 2000: 398) has come to light. The different forms of CMC have been characterized by their immediacy (Warschauer, 1995), with the most immediate being synchronous communication, such as real-time video conferencing and online chatting using Internet Relay Chat (IRC), chat rooms, MOOs (Multiple Users Domain Object Oriented), or LANs (Local Area Networks) where people are reading and writing at the same time. Delayed time or asynchronous forms are read after they are written and include e-mail, electronic bulletin boards, postings to e-mail lists, and the World Wide Web.

The push to incorporate technology in the foreign language classroom has been a dominant trend particularly in the latter half of the twentieth century. As a result, the foreign language classroom has witnessed tremendous evolution in the tools used to implement various methods of instruction. With each development, the potential of these instruments and their applications seem limitless. In particular, the evolution of computer technology appears to be especially revolutionary for the classroom.

For the first time, language learners have immediate and extensive access to information and interaction, and can communicate directly, inexpensively, and conveniently with other learners or speakers of the target language 24 hours a day, from school, work, or home. This communication can be asynchronous, which allows each participant to compose messages at their time and pace, or it can be synchronous, using programs such as MOOs, which allow people all around the world to have a simultaneous conversation by typing at their keyboards. It also allows not only one-to-one communication, but also one-to-many, allowing a teacher or student to share a message with a small group, the whole class, a partner class, or an international discussion list of hundreds or thousands of people.

As a result, there has been rapid movement to accommodate the growing interest in computer use in the second and foreign language classroom. The possible uses of computer technology in second language learning have been documented in studies on interactive and assistant software (Chavez, 1997; Masters-Wicks et al., 1996; Nagata, 1993), authoring software (Arneil & Holmes, 1999; Martinez-Lage, 1997), multimedia software (Borras & Lafayette, 1994; Hong, 1997; Lyman-Hager,

1995; Vignola et al., 1998), the Internet and the World Wide Web (Beaudoin, 1998; Charriere & Magnin, 1998; Lee, 1997; Oliva & Pollastrini, 1995; W a 1998), distance learning (Davis, 1988; Glisan et al., 1998; Moore & Thompson, 1997; Yi & Magima, 1993; Warriner-Burke, 1990), web pages and hyperlinks (Davis & Lyman-Hager, 1997; Feustle, 1997), electronic mail (Barson et al., 1993; Kern, 1 996; Liaw, 1998; Shelley, 1997; souzzo, 1995), and multiple-user domains, known as MOOS or MUDS (Pinto, 1996; Sanchez, 1996).

The use of CMC is also supported by a growing body of research that recognizes the importance of the negotiation of meaning (Hatch, 1978; Long, 1981; Varonis & Gass, 1985; Pica, Kanagy, & Falodun, 1993; Gass & Varonis, 1994; Gass, 1997; Long & Robinson, 1998) and computer-based interaction (Chun, 1994; Kern, 1995; Salaberry, 1996; Ortega, 1997; Warschauer, 1997; Beauvois, 1998; Chapelle, 1998; Pellettieri, 1999; Blake, 2000; Salaberry, 2000; Sotillo, 2000; Warschauer & Kern, 2000; Furstenberg, Levet, English, & Maillet, 2001; Payne & Whitney, 2002; Kötter, 2003; Smith 2003a, 2003b; Tudini, 2003; Lee, 2004) in the facilitation of the acquisition of a second language (SLA). Beauvois (1998) and Payne and Whitney (2002) have also noted the positive effects of written CMC on oral communication among second language learners

While these studies provide considerable information on the potential of technology in the second and foreign language classroom, many of them are descriptive in nature and do not always address the effectiveness of the technologies from an empirical perspective. Or, if they do address this issue, they tend to focus on outcomes alone (Fischer, 1988; LeMon, 1988) and not the entire process of use. The growth of these technologies has been so precipitous that it is often difficult to remain fully aware of the various developments, their ideal use, and their effectiveness.

### **2.3.2 Uses of network technology in foreign language learning**

#### ***2.3.2.1 New pedagogical tools***

Online applications can be used in a variety of ways in support of foreign language acquisition through the use of computer-mediated communication (CMC). The most widely used applications are as follows:

**a) *Email.*** Email is the most common form of CMC. Whether it is a web-based system like Microsoft's Hotmail, a proprietary system like AOL, or a system accessed with an email client such as Microsoft Outlook or Outlook Express, the central functionality is the same: asynchronous exchange of messages from one user to

another (one-to-one) or from one user to a group of people via an email distribution list (one-to-many). The messages may be text only, text with graphics, html messages (e.g., with various fonts, colors, and backgrounds), or they may have files included as attachments, consisting of word processing documents, pictures, or even sound files or video clips.

The use of attachments may be constrained by a few limitations. As a result of the security threat posed by malicious, virus-bearing attachments, some email systems block delivery of any potentially harmful files. If security is not an issue, the other possible problem with attachments is file size, which is limited by some email systems in order to not overtax email box storage quotas. These problems are avoided by using a course management system's file sharing and delivery mechanisms, such as Blackboard's digital drop box, which allows easy transfer of large files containing graphics, audio, or video.

**b) Threaded Discussion Boards.** The threaded discussion board is a mainstay of CMC in L2 acquisition activities. It is an asynchronous tool which allows someone in authority to post a topic to start a discussion among classmates in the target language. Then the students are bidden to research the issue on the Internet or anywhere and post a reply before the next class period. This type of threaded discussion more readily offers a shared communicative experience than one-to-one email, which can get quite cumbersome when everyone is included through "reply to all" email messages. Most online course environments such as Blackboard, Moodle and WebCT have some form of threaded discussion tool available, either for whole classes or small groups designated by the instructor.

There are also some other types of commercial, advertising-supported environment for facilitating group communication such as the Yahoo! Groups application. Its prime function is the threaded discussion board, but the application also provides sections to transfer files, photos, links, database info, calendar information, and an area to post polls among the membership.

The discussion board has a useful mode in that it can distribute all posts to the members via individual email messages or by a daily digest of all the posts once a day, cutting down on the email volume.

**c) Wikis and Blogs.** Wikis and blogs (short for weblogs) are two other asynchronous modes of CMC which can be employed in the L2 classroom. The Center for Advanced Level Proficiency Education and Research (CALPER) at The

Pennsylvania State University (see <http://calper.la.psu.edu>) has been exploring and supporting the role of wikis and blogs (as well as discussion boards and chats) in the language learning context. Wikis are collaborative web pages that can be edited by anyone visiting the page using basic, simple text editing. On the other hand, blogs are web pages where an individual (or a group) posts messages and invites comments; it is a form of threaded discussion, but less structured, and its themes are often personal (e.g., travelogues from family trips). CALPER also hosts blogs for language learning (see <http://calper.la.psu.edu/blog>). Some cell phone companies facilitate photo blogs with the MMS services. T-Mobile, for example, provides 25 MB of web space for a "My Album/My Journal" web page. Subscribers simply send photos from the camera phone directly to the Album/Journal page; they may also upload videos, audio files, and other pictures using a computer and a web interface. Subscribers then invite visitors to the site with the URL and a password so the visitors can post comments. Wikis and blogs strongly support collaboration, but it is sometimes difficult to keep spammers out of the collaborative interactions. While it is possible to restrict editing access to invited guests in protected areas, implementing such a restriction runs counter to the spirit of the tools. Pending more effective antispam efforts, however, the advantages of public access may be outweighed by the disadvantages.

*d) Instant Messaging.* Instant messaging (IM) is a close relative of email, though occurring within a synchronous time frame that requires both sender and receiver to be online at the same time. Online in this case means on the Internet with either a hard-wired or a wireless connection; the connection can be on the computer (desktop, laptop, or hand-held device) or an IM-capable cell phone. Each person must have an account or "screen name" on the system and must be logged into the IM system as "available." All participants must use the same IM software (or a multi-network client such as Cerulean Studios' Trillian software, which allows users to be logged into multiple IM networks in one application). Some systems support the use of web cams (usually low resolution, inexpensive digital video cameras) to add a live picture to the communication medium, and some also support audio interaction.

In general, to use instant messaging, users create a contact list of IM contacts (AOL calls their contact list a Buddy List) with the screen name or account number of the people with whom they wish to communicate. In order to complete the communication link, the other people on the contact list also need to add the original interlocutor to their contact lists. Then when individual users go online, they each log

into the IM server as available. The server checks everyone's respective contact list and reports back to each list, stating who from each list is currently online and highlighting the names of the online contacts. Thus, user A selects the name of an online contact, opens a text window, types a message, and sends it. User B receives A's message, clicks a button to reply, and sends back another message, and so on. These messages may be displayed one by one in sequence or in a single window as a progressive real-time transcript, sometimes called a "chat," depending on the IM client and the specific option chosen.

The major IM systems are AOL's Instant Messenger, ICQ, MSN Messenger, and Yahoo! Messenger. AOL's Instant Messenger started out as a closed messaging system available only to those using (and paying for) AOL's services (technically, a private dial-up network not on the Internet). In order to increase the user base for its IM function, AOL opened it up to non-AOL members on the Internet and distributed a free client application called AIM, which runs on desktops and (presumably wireless) hand-held PCs. This move extended the domain of AOL's IM beyond the AOL membership to Internet users at large. Indeed, many non-AOL members use AIM to communicate with other non-AOL members. Now owned by AOL, ICQ (an acronym to evoke the idea "I Seek You")—the first widely used IM system outside the closed world of AOL—began in 1996. AOL now operates ICQ in parallel with its Instant Messenger system and has made it possible to put AIM screen names in the ICQ contact list, thereby providing a rare case of interoperability. Along the way, Microsoft and Yahoo! both developed IM applications, leading to considerable competition among all the IM platforms to offer the best, most engaging bells and whistles in order to attract users who will then see the advertising that supports the free IM environments.

Among the more noteworthy attractions, Yahoo! Messenger and MSN Messenger have photo-sharing capabilities and theme-based contexts for their IM clients. Yahoo! has animated avatars to represent interlocutors and an integrated streaming radio application (LaunchCast) that allows the Yahoo! Messenger partners to share and discuss streaming audio (music) files and video clips that they are individually watching. Users can even view popular videos in foreign languages, which, if chosen carefully, can serve as launching points for serious cultural discussions. At the time of this writing, Yahoo! had, in addition to three English language Launch music pages, LaunchCast web pages for France, Germany, Italy,

Spain, and American Spanish. It seems that English language artists dominate the offerings, but L2 artists are also available. Finally, there are often L2 advertisements preceding the videos that can be used for L2 learning activities.

While IM software offers great potential, it may be difficult to control the IM environment in a lab setting. For example, while being directed to do a learning activity in the lab, students can use their own IM account to communicate with others outside the lab on matters completely unrelated to the learning activity at hand. This situation could be avoided by assigning lab-specific IM accounts to lab machines, so that students would be addressing “labmachine01” logged in as user “labmachine01,” and so forth. Students using IM systems from home could be instructed to sign in with a class-specific IM account since most IM systems offer free accounts. However, even here, students can circumvent these restrictions by maintaining multiple IM sessions. Nevertheless, if students are given a limited amount of time to accomplish a specific learning task, they will be more likely to stay on that task. The instructor and lab personnel would need to collaborate on the lab's set-up conditions and instructional strategies to best address each local situation.

*e) Chat Rooms.* It is important to differentiate among IM, multiuser chats (sometimes called conferences), and chat rooms. While IM and text chatting usually consist of one-to-one communication between known contacts and multiuser chats are peer-to-peer connections among multiple known contacts, the chat room is usually hosted on a server and may have dozens of participants at one time (though the creation of small-group chat rooms is possible). Chat rooms are an evolution of Internet relay chat (IRC), a text-based system in which users from around the world would log into a “room” on an IRC server and engage in a text-based conversation among the participants who happened to be in the same room. The text that chatters type scrolls by slowly or quickly according to the level of traffic; in an active room with dozens of native-speaker participants, the L2 learner is likely to be lost. In a more controlled environment, the chat room can be a useful exercise in communication in which L2 learners would interact either with nonnative speakers (NNSs) or native speakers (NSs) known to the instructor.

Chat rooms can provide a rich opportunity for real communication. The ability to log in from anywhere makes it possible to use chat either in a classroom/lab environment or in a distance learning environment with students logging in from home at a prearranged time. Participating in public chat rooms around the world is

also a valuable communicative activity, provided participants are adults who can make the right decision about room selection to advance their language skills.

Many of the chat applications allow the transcript of a chat session (from IM, ICQ, or other sources) to be saved and printed out, thus extending the reach of the benefits of CMC from the computing lab to the regular classroom by facilitating class analysis of the written language used in the chats. For instance, in the class following the chat interchange, the instructor can use a computer or overhead projector to project the image of a chat transcript and focus on linguistic features that occur in the chat interactions (e.g., pragmatically (in)appropriate speech, use of certain grammar points, or spelling/punctuation questions).

Security issues can be minimized by having students use the chat function in course management software (e.g., Blackboard or WebCT), which allows students to communicate within a closed system (one in which only students in the class are permitted to enter the chat rooms). To enable students from different classes to communicate with each other, students could use a local web-based chat that has been specially programmed to allow only students participating in this activity to send and receive chat messages.

#### ***2.3.2.2 New language use***

Computer-mediated communication (CMC) is a new mode of communication and possesses both oral and written attributes. It is called “the written language occurring in simultaneous terminal-to-terminal typed dialogues” (Brunner & Whittemore, 1991: 9) and “Hybrid communication of written and spoken (Absalom & Marden, 2004: 412)” Moreover, the recent studies in CMC suggest that CMC is “more than an aggregate of spoken and written features” (Crystal, 2001: 47-48, also cited in Weininger & Shield, 2003:329). The combination of unique features of CMC (e.g., the lack of non-verbal cues and the visual appearance, turn-taking system, text-based interaction, technology-mediated features such as editing and the retention of prior messages) indicates that CMC is not just a combination of oral and written communication, but also possesses some non-standard features of interactions which do not fit in any of the traditional interactional modes.

#### ***2.3.2.3 New way of learning***

As the accessibility of CMC has increased rapidly in the last decade, growing numbers of studies in CMC investigate the potential of CMC in foreign and second language learning as well as other educational contexts. Many studies suggest the

positive learning environments in integrating CMC in language class such as an increase in the quantity of interaction (e.g., Braine & Yorosu, 1998; Curtis & Roskhan, 1999; Davis & Thiede, 2000), student centeredness (Chun, 1994; Kern, 1995; Sullivan & Pratt, 1996; Warchauer, 1996a), equal opportunities for all learners (Warschauer, 1998), complexity of sentence structure (e.g., Beauvois, 1992; Kelm, 1992; Kern, 1995; Warschauer, 1996a), awareness of sociolinguistic aspects of language (Chapman, 1996; Chun, 1994), reflective interaction (Lamy & Goodfellow, 1999), morphosyntactic development (Salabery, 2000), and learner autonomy (e.g., Kotter, 2002, 2003, Schwienhorst, 2003).

Some other studies consider the advantage of CMC as opportunities of meaningful interaction and accessibilities of interactions with native speakers or higher proficiency level non-native speakers regardless of physical distance (e.g., Warschauer, 1997; Kitade, 2000; Kotter, 2002, 2003; Darhower, 2002). These studies incorporate two interactionist approaches (i.e., cognitive oriented approach and social constructivist perspective) suggested in face-to-face interaction in foreign language acquisition to investigate how the interaction and discourse features of CMC may facilitate language learning. One of the interactionist approaches is a cognitive-oriented approach (e.g., Gass & Varonis, 1985; Gass, 1997; Long, 1996; Pica, 1994) which perceives interactions as a context where learners are able to develop their individual interlanguage development through the fostering conditions such as negotiation, modified input, negative feedback, focus on form, and modified output. The other interactionist view is the social constructivist perspective (e.g., Lantolf, 2000; Lantolf & Appel, 1994) which emphasizes that learners are able to construct knowledge and develop their language competence through engagement in interaction with the assistance (scaffolding) provided by more competent members of the community.

Warschauer (1996) argues that computer learning networks do have the potential to empower students when they are used appropriately. The most recent and some believe revolutionary, application of the computer as an instrument for communication in the second-language classroom is the computer learning network. These networks take advantage of computer mediated communication (CMC) to bring together pairs and groups of students for collaborative learning projects in a single classroom or in various classrooms around the world.



So far the most popular forms of CMC for language teachers have been e-mail and asynchronous conferencing because these facilitate cross-cultural exchanges such as penpal writing, long-distance interviews, shared research projects, joint student publications and multi-class simulations. However, synchronous conferencing, which allows electronic discussion and collaborative writing among a whole class of students sitting together at the same time, is becoming equally popular with composition teachers and can be expected to become more common in the second language classroom as well.

Many teachers believe that the mechanics alone of computer-mediated communication provide students a much better opportunity for control and initiative in language learning. E-mail or electronic discussion board, for example, free students from time and distance limitation. They can initiate discussions with their teachers or with other students any time of day, and from a number of places, rather than only during class or office hours, resulting in greatly increased student-teacher and student-student interaction (Harasim, 1986; Philliops, Santoro & Kuehn, 1988; Hartman et al., 1991; McComb, 1993).

Furthermore, in contrast to classroom verbal discussion, a student using CMC does not need to wait for an instructor's permission to talk, giving students even more control over what topics to raise and when (Garrison & Baynton, 1987). They can also communicate their thoughts at their own pace, leading to further opportunities for self-expression (Kinkead, 1987).

The opportunity for students to communicate with each other, inside or outside of class, can create a new social dynamic, based on student-student collaboration, with the teacher as facilitator. For example, a dialogue journal between a student and teacher can easily be transformed into a collective class journal, with students sharing their thoughts, feelings, opinions and experiences with each other, and the teacher stepping in to facilitate discussion as appropriate. In this situation, student expression of ideas can take on a more natural and authentic communicative function, rather than just attempting to please the teacher (Cohen & Miyake, 1986).

Writing instructors are particularly enthusiastic about the potential of computer networks to facilitate new patterns of interaction in the classroom. They report that the use of computer conferencing can "prompt more discussion that is student-centered" (Selfe, 1990: 125), "foster a sense of community" (Eldred, 1991: 50), "encourage a sense of group knowledge" (Barker & Kemp, 1990: 15), and help

students “become active learners seeking solutions for their problems” (Boiarsky, 1990: 59).

### 2.3.3 Hybrid Network Technology-Enhanced Language Learning

Network-based Language Teaching (NBLT), Web-Enhanced Language Learning (WELL) or Technology-Enhanced Language Learning (TELL) is rooted from CALL and has become most mandatory in the contemporary foreign language education system especially in higher education. An integration of NBLT, WELL or TELL into classes in which instruction takes place in a traditional classroom setting augmented by computer-based or online activities which can replace classroom seat time is called *hybrid* courses or *blended* courses. Whether for pragmatic, financial, or pedagogic reasons, many institutions see blending as a solution to the practical problems of university teaching in the 21st century. For a variety of reasons, whether to increase access, student numbers, and the transferability of skills, or to give students a competitive edge in a global market, many language departments have incorporated online elements in their courses.

These types of courses are becoming more and more the norm in higher education (Farmer, 2003; Lindsay, 2004; Sauers & Walker, 2004; Shenoweth, Ushida, & Murday, 2006; Willet, 2002). Studies of the impact and effectiveness of hybrid courses on instruction and student learning indicated that those courses improved students’ grades, motivation and teacher-student interaction (Sauers & Walker, 2004; Epp, 2004; Killian & Willhite, 2003; Hofer, 2004; Lindsay, 2004).

There are many examples of studies found in CALICO journal 2006 that yielded positive results and can in themselves be seen as “good practice;” yet, in generating insights that are applicable well beyond the immediate context of their production, these articles go well beyond “case studies” or “good practice guides.”

In the first practitioner piece, Elena Polisca reports on how embedding a WebCT-based independent language-learning program (ILLP) into an existing curriculum for learners of Italian at the University of Manchester, UK, has influenced student motivation and the quality of the portfolios submitted for assessment. While proving a confidence booster for weaker students and helping them remain highly motivated throughout the course, the ILLP also allows stronger students to push themselves to the limits of their ability. As the author shows, a decisive element in a carefully planned ILLP is in-built reflection, not an obvious or immediate favorite with students but eminently useful in the longer term process of language learning.

Empowered to intervene actively in their course via the platform and encouraged to depart from suggested activities and move on to more self-directed work, learners at both ends of the capability spectrum manage successfully to become less dependent on their teacher(s). Their portfolio work tends to be more personalized, and they seem more creative in editing online material than those students who opt out of the program.

A similar case of blending and a study based on successful innovation born of necessity is presented by Emily Scida and Rachel Saury of the University of Virginia. They see their article as a contribution to the growing body of investigations focusing on how hybrid courses influence student learning and classroom practice. Their observations are based on a small-scale comparison of student performance in a hybrid program and in a traditional classroom. Following Littlewood (1990), who found that using language implies having constantly to create higher level plans in terms of ideas, meanings, and conversational strategies and that being able to execute these plans depends on the degree of automaticity at lower levels, they feel that such automaticity can be achieved by employing the computer as tutor. In accordance with Felix's call for pedagogy for the third millennium (Felix, 2005), the authors hypothesize that hybrid courses can offer the ideal language teaching and learning scenario where an initially conservative use of the computer for practicing vocabulary and structures allows students to carry out higher level functions such as communication and writing.

The third piece was written by American authors who stress the emerging importance of Spanish as the major second or foreign language in US higher education institutions, Emerita Bañados from the Universidad de Concepción, Chile, emphasizes the need for the large-scale learning of English for a global market and as a valuable commodity in the education market itself. Considerable investment is targeted towards making this resource available to more students at a high level, and the chosen way of achieving this is by means of blended courses. Bañados' article "A Blended-learning Pedagogical Model for Teaching and Learning EFL Successfully Through an Online Interactive Multimedia Environment" describes the implementation of a blended-learning program (English Online) at the Universidad de Concepción. She stresses the need for a multidisciplinary team of teachers, technicians, software developers, graphic experts, and video producers to find a "common language" (p. 541) and points out that this can require "hundreds of hours

of discussing possibilities, sharing ideas, and jointly planning lessons” (p. 539). Only on this basis can maximum benefit be drawn from the substantial talents at hand and the creative potential available for developing a language-learning environment that reflects the tutors' original vision. This article, written from a practitioner's perspective, sheds light on both the solutions devised at the Universidad de Concepción and the steps needed to arrive at them.

From the three articles above, we can see that there are many types of hybrid courses offered in higher education. Some use ready made Learning Management System (LMS) such as WebCT, Blackboard or Moodle to deliver the course, while the others developed some tutorial software to increase automaticity or to serve a larger number of students. However, the focuses of this study is on the first type, making use of LMS to manage and mediate online communication as a complement to classroom instruction.

Researchers in the area of instructional technology claim multiple benefits from the use of technology as a mediational tool. Fostering learners' control over their learning or *autonomy* is one among the benefits uses of technology hold.

#### **2.3.4 Hybrid Network Technology-Enhanced Language Learning based on social constructivist theory**

In social constructivist theory, foreign language learning is viewed as occurring discursively within social interaction. While the importance of interaction is undisputed in mainstream second or foreign language acquisition theories, social constructivist theory places particular emphasis on the features of social interaction that promote language learning, rather than on the mind-internal mechanisms. Whereas the computer is important to the interactionist in terms of the opportunities it can provide for provision of input, interaction and negotiation of meaning, to the social constructivist theorist the theoretical import of the computer in language acquisition is the role the computer can play in promoting the type of social interaction that promotes language acquisition. More concretely, the computer's ability to establish a zone of proximal development (ZPD) for learners, to scaffold learners appropriately, and to engage learners in cognitive activities that are carried out by means of language, are of primary interest to social constructivist theory.

At the present stage of development, computers are still unable to interact with humans in such a way that a learner's ZPD can be activated and determined, and that learner-specific scaffolding can be provided in real time. However, there are two

potential areas allowing the marriage of technology enhanced language learning and social constructivist theory can be robust. First, in viewing the computer as a learning tool, it can be equally productive to analyze learner interaction during a computer-mediated task as it can be to analyze learner computer interactions. To do such a learner-learner analysis would be completely within the realm of sociocultural theory, and would provide interesting insights into the social nature of learning that can be brought about by computers. Second, an investigation into the students who are engaged in discourse with each other through computer-mediated communication lends itself to social constructivist analysis of discourse features that promote language growth.

HybridNTELL model incorporate such asynchronous CMC tools as electronic forum, wiki and web-log into a social constructivist learning environment. Although there is a comprehensive body of research in CMC tools, systematic application in a learning environment throughout a semester with qualitative and quantitative investigation based on social constructivist theory has yet been found. Since social constructivist theory has been diversely interpreted, it is important to address the only concepts that inform the design framework of the model. In HybridNTELL environment, the concepts of language and thought, Zone of Proximal Development (ZPD), mediation, internalization and goal-directed learning based on the modern activity system are discussed.

#### **2.4 Foreign language learner autonomy**

Autonomy is not “a single, easily describable behavior” (Little 1990: 7). According to Benson (2001), autonomy is probably the most difficult question to answer in language learning because any answer is likely to be subjective. Pemberton (1996) argues that the problem with the terminology in discussions of autonomy is that different terms are often used to refer to the same thing whereas the same term can mean different things. In other words, autonomy is a very abstract and philosophical term using to define an attribute a learner possess. Researchers and practitioners have been trying to define in a concrete way what characteristics learners hold to become autonomous in their learning process so that they can draw a conclusion of learner’s demonstration of their autonomy development.

The aim of the development of HybridNTELL model is to foster foreign language learner autonomy. In order to develop the model, there is a need to

understand the concept of learner autonomy in the broadest sense. Then, an understanding of more specific working concepts for the model can be developed. Furthermore, the analysis and evaluation of HybridNTELL model requires a clear understanding of how learner autonomy is assessed. It is important that we attempt to describe autonomy before developing an assessment tool to measure degree of learner autonomy in particular.

This section reviews various thinking on learner autonomy and the key concepts of autonomy as well as ways to foster learner autonomy which lead to the scope of foreign language learner autonomy based on social constructivist theory in HybridNTELL model presented in the next section.

#### **2.4.1 Definitions and interpretations**

One of the earliest and most often cited definitions of autonomy is found in Holec's (1981) report to the Council of Europe, where autonomy is described as 'the ability to take charge of one's own learning.' Holec elaborates on learner autonomy as the ability to "take charge of one's own learning and to hold the responsibility for all the decisions concerning all aspects of the learning, i.e. determining the objectives; defining the contents and progressions; selecting methods and techniques to be used; monitoring the procedure of acquisition properly speaking (rhythm, time, place, etc); and evaluating what has been acquired" (p. 3).

Holec's definition adequately covers the main areas of the learning process in which one might expect the autonomous learner to exercise control. However, Benson (2001) argues that the definition is problematic in that it describes the decision-making abilities involved in autonomous learning in largely technical terms, leaving open the nature of the cognitive capacities underlying effective self-management of learning. Although it is clear that Holec is aware of cognitive factors involved in the development of autonomy (Holec, 1985), his definition does not make them explicit. Holec, in language learning context, describes the objective of autonomy-based teaching as that of helping learners to acquire the communicative and linguistic competencies they themselves define.

Apart from Benson, there is a wide variety of scholars' views in learning autonomy in terms of degree of control. It ranges from an extreme end of autonomy as a situation in which learners are completely responsible for their learning without any instructional help (Dickinson, 1987; Boud, 1988) to autonomy in the middle ground where instructional support is valued (Holec, 1981; Kenny, 1993; Pennycook, 1997;

Wenden, 1999; Sinclair, 1997, 2000; Benson, 2001) to the other end of autonomy with full support from social interaction (Ryan, 1981; Kohonen, 1992; Dam, 1995; Little, 1996, 2005; Kinoshita Thomson, 1996; Littlewood, 1996, 1999). It can be seen that recently scholars embrace the idea of interdependence because they realize that it is effective especially in the context of language learning where social interaction is the core.

All scholars agree that autonomy is used to describe a learner with an ability or capacity to take charge, be responsible or take control of their own learning. Sinclair (1997) and Littlewood (1996) place willingness as an important component together with ability or capacity that composes learner autonomy. The scholars directly suggest or imply that learners should be aware of the learning process and be self-directed in their learning. In words, they should know how to learn and take action. The learning process mentioned by the scholars mainly involve: planning, monitoring and evaluating their own learning. These are psychological aspects most scholars focus on.

A few of them such as Holec, Kenny and Littlewood, made attempt to include assumptions on ability to communicate in the target language in their discussions of learner autonomy. Holec (1981) describes the objective of autonomy-based teaching as that of helping learners to acquire the communicative and linguistic competencies they themselves define. Littlewood (1996, 1997) identifies three domains of foreign language learning in which communication is primary: 1) *autonomy as a communicator* or the ability to communicate more independently, 2) *autonomy as a learner* or the ability to learn more independently and 3) *autonomy as a person* or the ability to be more independent as individuals. He brings up the notion of autonomy as a communicator to help learners develop the ability to use language creatively and apply their personal learning strategies.

The definitions and interpretations of learner autonomy described above can emphasize the fact that autonomy is a multidimensional concept describing a learner who can direct their own learning process effectively. Nunan (1997: 92) suggests that autonomy is not an all-or-nothing concept but a matter of degree, and throughout the literature on autonomy we find writers referring to the fact that the more autonomous learners become, the better learning outcome they achieve.

## 2.4.2 Ways to foster foreign language learning autonomy

Among the scholars, ways to foster learning autonomy are made explicit by two scholars, Littlewood and Benson. Littlewood suggested six areas of developing foreign language learning autonomy involving metacognitive and cognitive strategies. On the other hand, Benson suggested a different set of six approaches to foster foreign language learning autonomy. From the perspective of social constructivism, his six approaches can be viewed as mediation. In this section, suggested ways to foster foreign language learning autonomy by two scholars are described.

### 2.4.2.1 Littlewood's framework for developing autonomy in foreign language learning

To have a clearer understanding of the six areas of developing foreign language learning autonomy suggested by Littlewood (1996), a summary of the main components and domains of autonomy in foreign language learning is described in Figure 2.2 below.

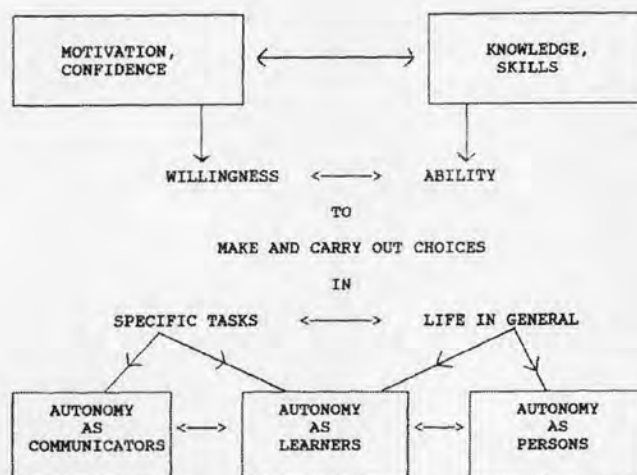


Figure 2.2 Littlewood's (1996) components and domains of autonomy in foreign language learning

The boxes at the top of the diagram show the more specific elements that make up "willingness" (= motivation and confidence) and "ability" (= knowledge and skills). The boxes at the bottom show the three domains in which we aim to develop autonomy in and through foreign language learning, with varying emphasis depending on our situation: communication, learning and (by transfer) other domains of life. The arrows linking the boxes indicate the high degree of interdependence between the domains. The feature of autonomy that the diagram does not illustrate is that the choices that constitute it can be made at different levels and that, consequently, there are different levels of autonomy within each domain. Littlewood emphasizes that one of language educators' tasks is to develop strategies for helping learners to make



choices at ever higher levels in the domains of communication, learning and personal life.

The idea leads to his proposal of a framework for developing autonomy in and through foreign language learning. He puts a like between the three broad domains of autonomy in the framework and includes the more specific areas within the same circle by placing each one next to the domain with which it is most closely associated. At the center of the circle he places the four main components of autonomy.

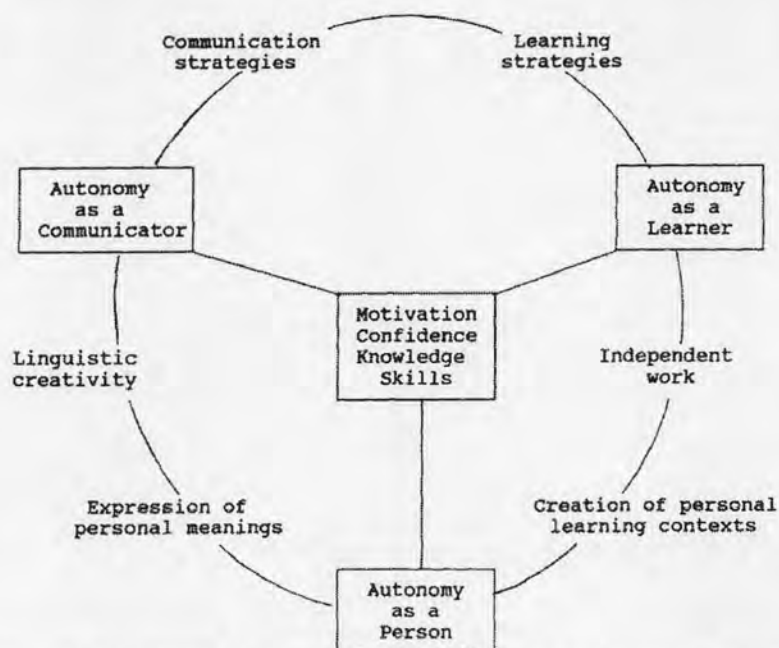


Figure 2.3 Littlewood's framework for developing autonomy in foreign language learning

According to Littlewood, *autonomy as a communicator* depends on (a) the ability to use the language creatively; and (b) the ability to use appropriate strategies for communicating meanings in specific situations; *autonomy as a learner* depends on (a) the ability to engage in independent work (e.g. self-directed learning); and (b) the ability to use appropriate learning strategies, both inside and outside the classroom; and *autonomy as a person* depends (in the foreign language learning context) on (a) the ability to express personal meanings; and (b) the ability to create personal learning contexts, e.g through interacting outside the classroom.

The circular layout of Figure 2 also illustrates how the domains and areas of autonomy overlap. *Linguistic creativity* is most obviously associated with a person's autonomy as a communicator. However, since it facilitates the expression of personal meanings, it also contributes directly to his or her autonomy as a person; *communication strategies*, too, are most obviously associated with a person's

autonomy as a communicator. However, since they enable a student to deal more independently with texts and social situations, they also contribute to his or her autonomy as a learner; *learning strategies* are most obviously associated with a person's autonomy as a learner. However, since they enable learners to extend their communicative repertoire, they also contribute to their autonomy as communicators; and *independent work* includes the creation of personal learning contexts, e.g. obtaining foreign newspapers or joining groups of native-speakers, and thus contributes to a student's autonomy as a person.

Furthermore, Littlewood (1999) in 'Defining and developing autonomy in East Asian contexts' places autonomy within another conceptual framework which sets it by the side of 'relatedness' (Cited from Ryan, 1991) as a human aspiration, in which he made a distinction between 'reactive' and 'proactive' autonomy.

Based on the idea of supportive relationship between autonomy (self-regulation) and relatedness, Littlewood proposed a two distinction between two levels of self-regulation: reactive autonomy and proactive autonomy. *Reactive autonomy* is the kind of autonomy which 'does not create its own directions but, once a direction has been initiated, enables learners to organize their resources autonomously in order to reach their goal' (p. 75). It is a form of autonomy that stimulates learners to learn vocabulary without being pushed, to pass examination papers on their own initiative, or to organize themselves into groups in order to cover the reading for an assignment. This kind of autonomy is believed to be either a preliminary step towards proactive autonomy or a goal in its own right. *Proactive autonomy* is the form of autonomy we find when learners are able to take charge of their own learning, determine their objectives, select methods and techniques and evaluate what they have learned (Holec 1981; cited from Littlewood, 1999: 75). In this way they establish a personal agenda for learning (Little, 1994: 431) which affirms their individuality and sets up directions in a world which they themselves have partially created.

#### ***2.4.2.2 Benson's six approaches to the development of autonomy in language learning***

Benson's (2001) classified six broad approaches associated with practices of autonomy development: resource-based, technology-based, learner-based, classroom-based, curriculum-based and teacher-based approaches. First, resource-based approaches emphasize independent interaction with learning materials. Second, technology-based approaches emphasize independent interaction with educational

technologies. Third, learner-based approaches emphasize the direct production of behavioral and psychological changes in learner. Fourth, classroom-based approaches emphasize learner control over the planning and evaluation of classroom learning. Fifth, curriculum-based approaches extend the idea of learner control to the curriculum as a whole. Finally, teacher-based approaches emphasize the role of teacher and teacher education in the practice of fostering autonomy among learners.

The distinction made in this classification is largely a matter of focus. In practice, approaches are often combined, sometimes in eclectic ways. Although claims are often made for the particular effectiveness of one approach over others, most researchers and practitioners would accept that they are interdependent.

Two proposal of ways to foster autonomy provides potential guidelines that teachers or educators can make use of. However, before an adoption of any approach, it is important to consider limitations or advantages a particular setting holds. In the context of HybridNTELL environment, learner autonomy is fostered through an integration of network technology into a foreign language classroom grounded upon social constructivist theoretical framework. The following section summarizes how thinking on HybridNTELL integratively developed based on the above thinking.

## **2.5 A summary of the main ideas for HybridNTELL model research and development**

\* HybridNTELL model has drawn upon three major areas of research: social constructivist theory of learning, uses of technology in learning and learner autonomy. The combination of the ideas from the three research areas aims to create a model to promote foreign language learner autonomy. This section summarizes the ideas into two parts: ideas for HybridNTELL model design and research.

### **2.5.1 Ideas for HybridNTELL model design**

#### ***2.5.1.1 Social constructivist theory in HybridNTELL model***

In social constructivist theory, foreign language learning is viewed as occurring discursively within social interaction. While the importance of interaction is undisputed in mainstream theories on foreign language acquisition, social constructivist theory places particular emphasis on the features of social interaction that promote language learning, rather than on the mind-internal mechanisms. Whereas the computer is important to the interactionist in terms of the opportunities it can provide for provision of input, interaction and negotiation of meaning, to the

social constructivist theorist the theoretical import of the computer in foreign language acquisition is the role the computer can play in promoting the type of social interaction that promotes foreign language acquisition. More concretely, the computer's ability to establish a zone of proximal development (ZPD) for learners, to scaffold learners appropriately, and to engage learners in cognitive activities that are carried out by means of language, are of primary interest to social constructivist theory.

At the present stage of development, computers are still unable to interact with humans in such a way that a learner's ZPD can be activated and determined, and that learner-specific scaffolding can be provided in real time. However, there are two potential areas allowing the marriage of technology enhanced language learning and social constructivist theory can be robust. First, in viewing the computer as a learning tool, it can be equally productive to analyze learner interaction during a computer-mediated task as it can be to analyze learner computer interactions. To do such a learner-learner analysis would be completely within the realm of sociocultural theory, and would provide interesting insights into the social nature of learning that can be brought about by computers. Second, an investigation into the students who are engaged in discourse with each other through computer-mediated communication lends itself to social constructivist analysis of discourse features that promote language growth.

HybridNTELL model incorporate such asynchronous CMC tools as electronic forum, wiki and web-log into a social constructivist learning environment. Although there is a comprehensive body of research in CMC tools, systematic application in a learning environment throughout a semester with qualitative and quantitative investigation based on social constructivist theory has yet been found. Since social constructivist theory has been diversely interpreted, it is important to address the only concepts that inform the design framework of the model. In HybridNTELL environment, the concepts of language and thought, Zone of Proximal Development (ZPD), mediation, internalization and goal-directed learning based on the modern activity system are discussed.

#### ***2.5.1.2 Uses of network technology in HybridNTELL model***

Advocates of the use of electronic communication claim that the new technology provides the ideal conditions in which language learning may take place. The central premise of this perspective is that participation in networking is conducive

to natural language learning. This view has been greatly influenced by modern conceptions of language teaching, which emphasize learner autonomy and communicative task-based learning models. These perspectives focus on the negotiation of meaning (Barson et al., 1993) and, in a wider sense, the development of interactive competence (Chun, 1994).

The negotiation of meaning has long been perceived as an important factor in the acquisition of foreign language (Ellis, 1990). Learners must communicate in order to achieve fluency. Communicative effort on the part of the learner promotes the learning strategies necessary for the acquisition of foreign language knowledge. As computer-mediated communication provides learners with plentiful opportunities to engage in meaningful discourse, the technology is seen as fostering authentic communication.

In a study based on the language output of university German students, Chun (1994) has argued that the use of computer networks facilitates the emergence of interactive competence by providing conditions in which learner may “generate and initiate different kinds of discourse, which in turn enhances their ability to express a greater variety of functions in different contexts as well as to play a greater role in managing the discourse” (p. 18).

Looking through social constructivist lens and activity theory, “information technology can support and penetrates activities at all levels” (Kuutti, 1996: 34), i.e. at the operation, action and activity levels. At the level of operations, information technology can allow the automation and substitution of human operations (e.g. calculations, spell checks, data manipulation and updating, document formatting, etc.). At the level of actions, “information technology can serve as a tool in manipulative and transformative actions directed to an object or to a part of it” (Kuutti, 1996: 34). Such tools may include word-processors and other editors, spreadsheets, presentation software, or drawing tools to mention but a few. At this level, “Information Technology can also help in actions that are directed toward sense making” (Kuutti, 1996: 34) and support “communicative actions between participants” (Kuutti, 1996: 35). The former class of technology may also include anything that will help participants to take part in the activity (email, computer conferencing, etc.) while the latter may include not only on-line resources but also courseware or training packages. Finally, Information Technology “can be the principal enabler for an activity” (Kuutti, 1996: 35) by either connecting the participants, for example via a

network or platform, or by enabling participants' awareness of the object of the activity.

\* Despite much research showed how CALL supported language learning, there is still little empirical evidence investigated through a social constructivism approach to assessment of the functions and outcomes of an integration of Internet-based learning environment into a foreign language classroom building on an activity theory system.

The flexibility of activity theory concepts and principles lends itself a useful analytical tool for a learning context with CALL provides abundant sets of evidence of learning in socially constructed networks to be investigated through activity theory. HybridNTELL model built upon social constructivist theory and CALL principles then incorporate activity theory to describe and analyze its structure. Then, it addressed through social constructivism approach to assessment of the functions and outcomes of an integration of Internet-based learning environment into a foreign language classroom based on the actions, interactions and changes in the environment where the model was implemented.

### *2.5.1.3 Foreign language learner autonomy*

The major shift in theory on foreign language acquisition from the behaviorism-based audiolingual method to communicative language teaching implied drastic changes in classroom instruction. Still tied to the habit-forming tenets of audiolingualism, at first language teachers saw "communication" as an additional opportunity (in addition to mechanical drills) for learners to practice or demonstrate their knowledge of recently-taught language structures. As early as 1975, though, Wagner-Gough and Hatch pointed out that the action of conversation in the foreign language classroom was not the mere practice of structures, but rather was the locus of the development of the learner's linguistic system (Wagner-Gough & Hatch, 1975). In other words, communication is not a vehicle for practicing grammatical structures, but rather, grammatical structures are tools to be employed in bringing about communication.

It is now commonly recognized that communication in the foreign language is the means by which learners acquire language. As Lee and VanPatten put it: "communicative language ability—the ability to express one's self and to understand others—develops as learners engage in communication and not as a result of habit formation with grammatical items" (Lee & VanPatten, 1995). Even though

communication began to be emphasized in the literature on foreign language acquisition and in foreign language classrooms, there was still an adherence to the traditional notion that grammatical structures are the crux of foreign language teaching and learning. Foreign language textbooks began to include an increased quantity of “communicative” activities, but the chapters were still organized around discrete grammatical structures. In the 1970s a strand of research on foreign language acquisition known as the “morpheme order studies” (Dulay & Burt, 1974) provided telling evidence that foreign language learners go through somewhat fixed orders of acquisition of foreign language structures, which is relatively unaffected by the first language as well as by instruction. In other words, teachers can teach, drill and practice discrete grammatical structures in the classroom, but if learners are not cognitively prepared to acquire the taught structures, they will not acquire the structures, regardless of the fact that they may have comprehended and produced those structures in a given class period. These findings, as well as the need to create optimal communicative conditions for foreign language classrooms, led to what is now known as task-based instruction or task-based language teaching.

The term “task” is often employed with a variety of definitions in the literature on foreign language acquisition. Some researchers might consider that anything done in the classroom, for example, can be considered a task. Most researchers and practitioners, however, understand a task to include specific communicative goals which are achieved by means of language (see Lee, 1999: 31, for a review of definitions). Confronted with empirical evidence that instruction makes little difference in the order of acquisition of grammatical structures, Long and Crookes adopted the task as the unit of analysis for foreign language syllabuses, rather than the traditional structural syllabus (Long, 1985). Long and Crookes do not suggest that learners acquire their foreign language in one task at a time, any more than they do one structure at a time. Rather, they claim that tasks “provide a vehicle for the presentation of appropriate target language samples to learners—input which they will inevitably reshape via application of general cognitive processing capacities—and for the delivery of comprehension and production opportunities of negotiable difficulty” (Long & Crookes, 1993: 39). In the task-as-unit of analysis model, language lesson goals become the accomplishment of a certain task, rather than practice and demonstration of mastery of the grammar structure of the day.

Lee and VanPatten (1995) and more recently Lee (1999) advocate the restructuring of classroom communication in terms of information-exchange tasks. Citing Savignon, they define communication as “the expression, interpretation, and negotiation of meaning” (Lee & VanPatten, 1995). Any activity that falls short of this definition is not a communicative activity. Lee and VanPatten argue that classroom communication, like real-world communication, must have a purpose, be it psychosocial (social or psychological bonding with someone) or informational-cognitive (to obtain needed information). The best way to bring about communication in the classroom, according to these researchers, is to establish defined communicative tasks. Lee defines task in the following manner:

A task is a classroom activity or exercise that has (a) an objective attainable only by the interaction among participants, (b) a mechanism for structuring and sequencing interaction, and (c) a focus on meaning exchange; (2) a language learning endeavor that requires learners to comprehend, manipulate, and/or produce the target language as they perform some set of workplans (Lee, 1999: 30).

In Lee’s view, then, tasks go beyond practicing language for its own sake, in that tasks require language use as a means to an end. The social constructivist theory literature on foreign language acquisition also speaks of task, although what is of importance to the social constructivist theorist is the language activity that occurs as learners socially engage in the construction of tasks rather than the specific input and output that is generated in the task. When sociocultural theorists utilize language tasks in their studies, they do so with a different set of constructs (mediation, ZPD, etc.) from those used in the interactionist framework. This study will employ tasks utilizing social constructivist theory approach to frame a HybridNTELL environment incorporating network technology to enhance university students’ EFL learning.

## **2.5.2 Ideas for HybridNTELL model research**

### ***2.5.2.1 Classroom analysis***

From social constructivism perspective, the learner is immersed in an environment full of potential meanings created from HybridNTELL model. These meanings become available gradually as the learner acts and interacts within and with this environment. Learning is then the development of increasingly effective ways of dealing with the world and its meanings. Furthermore, social constructivism approach asserts that the perceptual and social activity of the learner, and particularly the verbal and nonverbal interaction in which the learner engages, are central to an



understanding of learning. Van Lier (2001) posited that they do not just facilitate learning, they are *learning* in a fundamental way. This scenario is important to prepare the learners in higher education for living and working in the 21<sup>st</sup> century. Thus, in HybridNTELL model we look for learning by looking at the active learners in their environment, not at the contents of their brain. As Reber (1993: 58) put forward, 'ask not what's inside your head, ask what your head's inside of,' we rather look at their *potential* development in the active learning than their displayed actual performance.

Neisser (1992) explained that cognition and learning rely on both representational (schematic, historical, cultural, and so on) and ecological (perceptual, emergent, action-based) processes and systems. Language itself is therefore also both representational and ecological. Its definition, its structure, and its use are inherently dialogical. Obviously, language, even in a language classroom, is viewed as a tool for communication at the same time for learning.

In linguistics, early references relating ecology and language are Trim (1959) and Haugen (1972), and recent work explicitly using the ecological label includes Makkai (1993) and Mühlhäusler (1996). Other approaches to linguistics with a strong ecological approach include Halliday (1994) and Lamb (1999). In the work of second language acquisition theorists (e.g. Gass, 1997; Long, 1996; Pica, 1996), the notion of observing interaction and negotiation of meaning is highlighted as being indicative of learning processes at work, or at least as a likely candidate for learning opportunities. Long (1996) put an assumption that the learner can learn best from negotiating with a native speaker or a more competent interlocutor, presumably because knowledge has to come from one who knows or can do more. Interestingly, in a study by Pica et al. (1996), some suggestions surface that may indicate that learners can be effective in assisting each other in communicating meaningfully. However, the effectiveness of the learners' interaction with one another is evaluated by comparing them to equivalent interactions with native speakers. The results showed that the latter is more preferable. This leaves open and unaddressed the possibility that in learner-learner interaction other meaning-making and language-learning processes may occur that are different from, but not necessary less beneficial than, those in native – nonnative speakers interaction. HybridNTELL model built upon the lack of native speakers as interlocutors aims to draw upon an alternative view and provide a possible

environment as addressed some design concerns based on social constructivist perspective.

In creating a learning environment and analyzing learning, Bronfenbrenner (1979, 1993) developed a bioecological model viewing learning as brain-resident. The model is hierarchically nested ecosystems, and a methodology for investigating contextualized learning that has the notions of person, process, context, time, and outcome as a checklist of concerns. Learning contexts are described in this work as *proximal* processes, analogous to Vygotsky's Zone of Proximal Development. In the bioecological model, such contexts are effective if they encourage the realization of

1. differentiated perception and response
2. directing and controlling one's own behavior
3. coping successfully under stress
4. acquiring knowledge and skill
5. establishing and maintaining mutually rewarding relationships
6. modifying and constructing one's own physical, social, and symbolic environment.

These features of proximal learning contexts can serve as a guide for the identification of learning opportunities in classrooms, particularly for HybridNTELL model where the research is conducted in the framework of social constructivist approach. In reference to the first research question, this is the reason why this study establish a qualitative investigation of how learning *emerge*, what are the overt signs of its processes at work and what evidence can be gathered to document learning.

#### ***2.5.2.2 Investigating task performance and development***

Vygotsky (Wertsch, 1985) noted that "instruction is good only when it proceeds ahead of development. Then it awakens the rouses to life and entire set of functions which are in the stage of maturing, which lie in the zone of proximal development" (p. 71). The notion of studying classroom interaction by analyzing classroom discourse would be a logical extension of the work started by Vygotsky, especially because he was interested in the dynamic changes experienced by children in the learning process. However, Moll (1990) voices an important cautionary noted that not all assisted learning (e.g. rote drill and practice, work sheets, and skills-based practice) represents this notion.

The zone of proximal development then becomes another case of the individuals' learning and developing within and through their social connections with

the collective. In Vygotsky's view, it was relying on the spontaneous concepts alone to gauge the child's progress that led to the view of development leading instruction. Vygotsky theorized that assessment should focus on what the child is able to do with the assistance of an adult.

He took up this work as a way of studying the formation of processes by analyzing the subjects engaging in activities (Moll & Greenberg, 1990) by observing participants who were given tasks to complete that were beyond their present capabilities. By observing what children would do when offered objects to mediate, tasks that were initially beyond their present capabilities, Vygotsky emphasized "the child's construction of new means that can help to solve the problem and that restructure the whole task situation" (Valsiner, 1988: 137). He could look at the process of the subject's interacting with the environment and the use of tools to mediate the completion of task.

Moll (1990) further recognized the importance of this work: "the concept of the zone of proximal development integrated social activity into the (previously conceptualized) theory while retaining the significance of sign and tool mediation in understanding human learning and development" (p. 5). This has been the goal in the next section: *construction of community and technology support*.

### ***2.5.2.3 Assessing the zone of proximal development in foreign language learning***

Most research has addressed the concept of *Zone of Proximal Development* and its relation to organizing a foreign language learning environment or tasks in classroom settings. The *zone* has been variedly arranged. As well, the *development* has been observed by different measures after an intervention. However, what is left to be investigated is *proximal*. We hardly find classroom-based research that rigorously defined where proximal is in the development of students. Thus, the complete picture of ZPD in foreign language classrooms has yet been widely created. This section describes a clearer picture of ZPD means from the perspective of assessment and provides a basis on which the students are assessed in HybridNTELL model.

The only reason why proximal are difficult to define in classroom learning is that it is in the future and occurs in reciprocity between learner/mediator interaction. Most language classrooms filled with more than 20 students offer only limited opportunities for making the reciprocity to happen.

An attempt to search for ways to look at proximal is anchored from Vygotsky's notion of ZPD in reference to two educational problems: how children are assessed and the evaluation of instructional practices (Wertsch, 1985). His concern was that, if we only assess the matured functions, what has been learned, we would miss the possibilities that lie just ahead, in the very next level of performance.

Vygotsky proposed that 'determining the actual level of development not only does not cover the whole picture of development, but very frequently encompasses only an *insignificant* part of it (1998: 200; cited from Lantolf & Thorne, 2006). He insisted that responsiveness to assistance is an indispensable feature for understanding cognitive ability because it provides an insight into the person's future development. Moreover, Vygotsky showed that potential development varies independently of actual development. This means the actual development cannot be used to predict the former. He gave an explicit example that can make this point forcefully. I summarized the extended quote from Wertsch (1985: 68) as follows. Imagine that we have examined two children whose determined mental age is seven. Both children carried out a test above their level with the help of leading questions, examples, and demonstrations. One of them might easily solved the test items taken from two years above his level while the other could solve the items that are only a half-year above. Vygotsky concluded that from the point of view of their independent activity they are equivalent, but from the point of view of their immediate potential development they are sharply different. That which the child turns out to be able to do with the help of an adult points us toward the zone of the child's proximal development.

Grounded in Vygotsky's important insight that in the ZPD instruction leads development, Dynamic Assessment (Lidz, 1991; Lantolf and Thorne, 2006) was introduced. Lidz remarks that DA focuses on "modifiability and on producing suggestions for interventions that appear successful in facilitating improved learner performance" (p. 6).

Valsiner (2001) outlines three ways the future has been construed in developmental psychology. In the first, human is mature rather than develops. This is the way Innatist theories are posited. In the second, 'the role of past life history of the organism in leading to its present state of functioning' is acknowledged as past-to-present model. The future is predicted when it already has become present. This is the way Freud's theory of emotional development, Piaget's theory of cognitive development, and, in language acquisition research, Krashen's morpheme-order

hypothesis, and Pienemann's (1998) processability hypothesis are all examples. The third way of conceptualizing the future has been through present-to-future models, where focus is on the *emergence of novelty*. This is the way Hopper based on the concept of 'emergent grammar' and Selinker on 'interlanguage' look at learners development. Lantolf and Thorne (2006) argued that not only do these models allow researchers and educators to chart out development before it happens, 'through their study while they are emerging' (this is what proximal means in ZPD), they also compel researchers and educators to participate actively in the developmental process itself.

#### ***2.5.2.4 Assessing the ZPD in HybridNTELL model***

The last method informs us that assessment and instruction are dialectically integrated as the means to move toward an always emergent and dynamic future rather than a fixed end-point. In words, learning should be assessed while it is mediated. This method provides a clearer picture of how EFL students' Z, P, and D can be assessed from social constructivist perspective.

***a) Actual ability assessment.*** Although the focus of assessment is students' potential level through mediation, we cannot disregard their actual level to define their zone. From Vygotsky's example of children's different potential level above, it is obvious that the children were determined their mental age before taking the test.

***Proficiency measures.*** In foreign language learning context, the widely acceptable determination of learner's ability is a standardized proficiency test. The movement of communicative language teaching (CLT) mentioned above, resulted in two well-established communicative proficiency assessment guidelines. The first is the ACTFL Proficiency Guidelines (1986) by the American Council on the Teaching of Foreign Languages. The ACTFL guidelines "define and measure [a learner's] language ability in speaking, listening, reading, and writing" (Omaggio-Hadley, 2001: 12). Those guidelines distinguished four proficiency levels in the four language skills for learners to make progress – novice, intermediate, advanced, and superior (from least proficient to most proficient) (ACTFL, 1986). The second is the Common European Framework Reference Levels (CEFR) by Council of Europe (2001). The CEFR defines communicative proficiency at six levels, arranged in three broad bands (A1 and A2; B1 and B2; C1 and C2) in relation to five skills (listening, reading, spoken interaction, spoken production, and writing). They are also described in a comprehensive way what language learners have to learn to do in order to use a

language for communication and what knowledge and skills they have to develop so as to be able to act effectively. The descriptors imply mostly adult communicative behavior based on an adult range of experience.

Both ACTFL and CEFR have already been adopted by worldwide both in educational and business settings.

***Performance measures.*** Another trend resulting from the CLT movement is performance assessment. Performance assessment is a type of criterion-referenced assessment. It is an exercise in which a student demonstrates specific skills and competencies in relation to a continuum of agreed upon standards of proficiency or excellence, and reflects student performance on instructional tasks and relies on professional rater judgment in its design and interpretation. Performance assessment is a method of finding out what a student knows or can do that is intended to show growth and inform instruction.

This way of assessment is authentic and reflects the notion of ZPD because it is based on activities that represent actual progress toward instructional goals and reflect tasks typical of classrooms and real-life settings. It requires integration of language skills and may include teacher observation and student self-assessment.

In recent years, portfolios are complementary approaches to performance assessment for reviewing student language development and academic progress. Together they represent authentic assessment, continuous assessment of student progress, possibilities for integrating assessment with instruction, assessment of learning processes and higher-order thinking skills, and a collaborative approach to assessment that enables teachers and students to interact in the teaching/learning process. Thus, performance measures can well support the concept of social constructivist in foreign language learning.

***Performance measure based on proficiency references.*** Although performance assessment is proven to be more positive judgment and has largely been explored, most institutions' concern is its reliability as a benchmark. Thus, it is obliged for the teachers to demonstrate the effectiveness of their practices in terms of proficiency gains. In 2001, the Council of Europe then launched the project of the '*European Language Portfolio*' (ELP) to help researchers and practitioners make good justification of their portfolio use in classroom. The ELP provides practical evidence of second language (L2) proficiency and intercultural experience against the matrix of the Common European Framework's common reference levels. Thus, the

ELP can make the language learning process more transparent to the learner as well as foster the development of learner autonomy (the Council of Europe, 2001).

This seems to suggest that in measuring actual ability of a foreign language learner in educational settings, HybridNTELL model should include both proficiency and performance measures with reference to proficiency. In so doing, it provides a thorough, yet reliable gauge of actual development in learners' ZPD.

**b) Potential development assessment: Patterns of interaction and microgenetic growth.** In foreign language classroom settings, cooperation and collaboration in groups with teacher as a facilitator becomes more common especially those embracing social constructivist approach. Again, in practice, the classroom arrangement and activities are valued but in assessing or analyzing learning gains (or potential development), relevant measures need to be introduced.

Ellis (2005) proposed procedures which work towards a microgenetic qualitative analysis of mediated learning within the ZPD as follows: (1) selecting relevant episodes for analysis, (2) determining patterns of interaction, (3) determining microgenetic growth. These three aspects, although presented separately, are closely interconnected.

In the first step, the researcher or the teacher determines which episodes of interaction are relevant for close analysis. Any relevant criteria can be used in a particular context so I will not expand on this step. However, the next two steps are extensively discussed because they are considered as a vital importance in any social constructivist analysis. The nature of relationship between the participants needs to be determined. The patterns of interaction provide a basis of analysis on which we can further look for evidence of mediated microgenetic development.

**Patterns of interaction.** According to Ellis (2005) applying labels such as 'more capable peer', 'student', 'expert', and 'teacher' may not be enough. Storch (2002) in proposing a model of dyadic interaction, argued that knowing more about how learners approach an activity, the roles they assume, and the level of involvement and contribution of each member helps the researcher or teacher understand more deeply the dialogic process. At the very least, an awareness of the role relationships between participants provides the context for interpreting the interaction.

Storch's (2002) work on the model of degrees of collaboration in dyadic interaction in an adult ESL classroom identified four distinct role relationships: collaborative, dominant/dominant, dominant/passive, and expert/novice. Drawing on

the work of Damon and Phelps (1989), Storch distinguishes these role relationships according to two indexes: equality and mutuality. Equality refers to the degree of control or authority over the task, and mutuality refers to the level of engagement with each other's contribution. Storch's study focused on adult peer which are useful for HybridNTELL model to adopt to describe patterns of interaction in the context of university level EFL classroom.

The four role relationship patterns are represented in Figure 2.4. Researchers or teachers need to make decisions concerning the levels of equality and mutuality.

The following are the relevant descriptors (Storch, 2002: 128):

**Quadrant 1: Collaborative**

The participants demonstrate high equality, and moderate to high mutuality. They work together on all parts of the task and willing to offer and engage with each other's ideas. They offer and discuss alternative views and reach mutually acceptable resolutions.

**Quadrant 2: Dominant/dominant**

The participant demonstrate moderate to high equality, and moderate to low mutuality. They are unwilling or unable to fully engage with each other's contribution. They might have high level of disagreements and are unable to reach consensus or set distinct division of labor without engagement with each other's contribution.

**Quadrant 3:**

The participants demonstrate moderate to low equality and mutuality. The dominant participant(s) takes authoritarian stance and appropriates task while other participants adopt a passive, subservient role, with few contributions. A little negotiation is found.

**Quadrant 4:**

The participants demonstrate moderate to low equality but moderate to high mutuality. The experts take control of task and actively encourage other participants to participate.

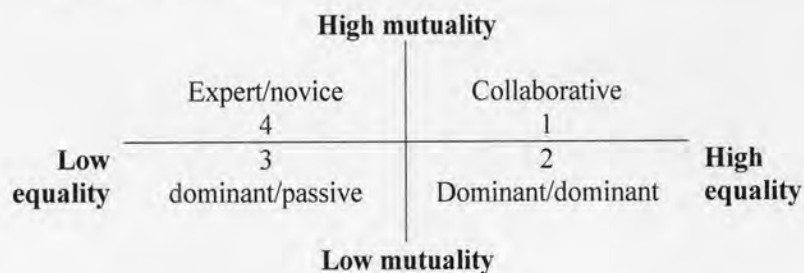


Figure 2.4 A model of dyadic interaction (Storch, 2002: 128)

Johnson and Johnson's (2004) argument of the power of groups also supports the reason why group interaction needs an investigation. They proposed that group has an impact on students' actions in that the groups they belong to largely determine their behavior. However, Storch's (2002) model of interaction provides a judgment from the perspective of teacher only. How learners perceive their group dynamic can give another insightful perspective of group interaction patterns.

Fink's (2002) team-based learning model proposed that if group work is going to be a component of students' course grades, it is imperative that peer evaluations are included as part of the grade-calculation process. From SCT perspective, his *Assessment of Contributions of Group Members* (see Appendix A) provides a



systematic judgment that can support teacher's view of students' interaction patterns. The key part of Fink's assessment form that the student is asked to (1) distribute 100 points among the other members of the group, and (2) add some comments for each person, indicating the reasons for the evaluators' point assignments. The students fill out the form *privately* and turn it in to the teacher. If all members of the group contributed equally (corresponding to Storch's quadrant 1: collaborative), students will give the same number to each person, and the total score for each person will make 100. If there were differences, students will give some students more points and other students less, and the totals for the students will be more varied. Fink (2002) uses peer evaluation score to adjust group grades before they are added to the course grade provided that the initial points for the graded group work is the same for everyone in each group.

Fink's (2002) assessment is a potential complement to Storch's (2002) model for an investigation into learners' interaction patterns. However, empirical evidence need to be collected and tested whether the assessment provides a valid and reliable insight into assessing learner's potential development.

Research into online environments for foreign language learning (e.g. Hudson & Bruckman, 2002; Beauvois, 1992; Bruce et al., 1993; Kelm, 1992; Kern, 1995) have shown that discussions online have a significantly different character from those in the classroom.

Hudson and Bruckman (2002) took a closer look at the interactions online and in the classroom over the course of a semester. The results showed that classroom interaction was largely teacher-oriented while online interaction was student-driven and significantly more interactive. Their qualitative findings suggested that important features of the medium lead students to feel more comfortable in the online environment. Figure 2.5 describes a significant change of participation patterns when conversation moves online (adapted from Hudson & Bruckman, 2002).

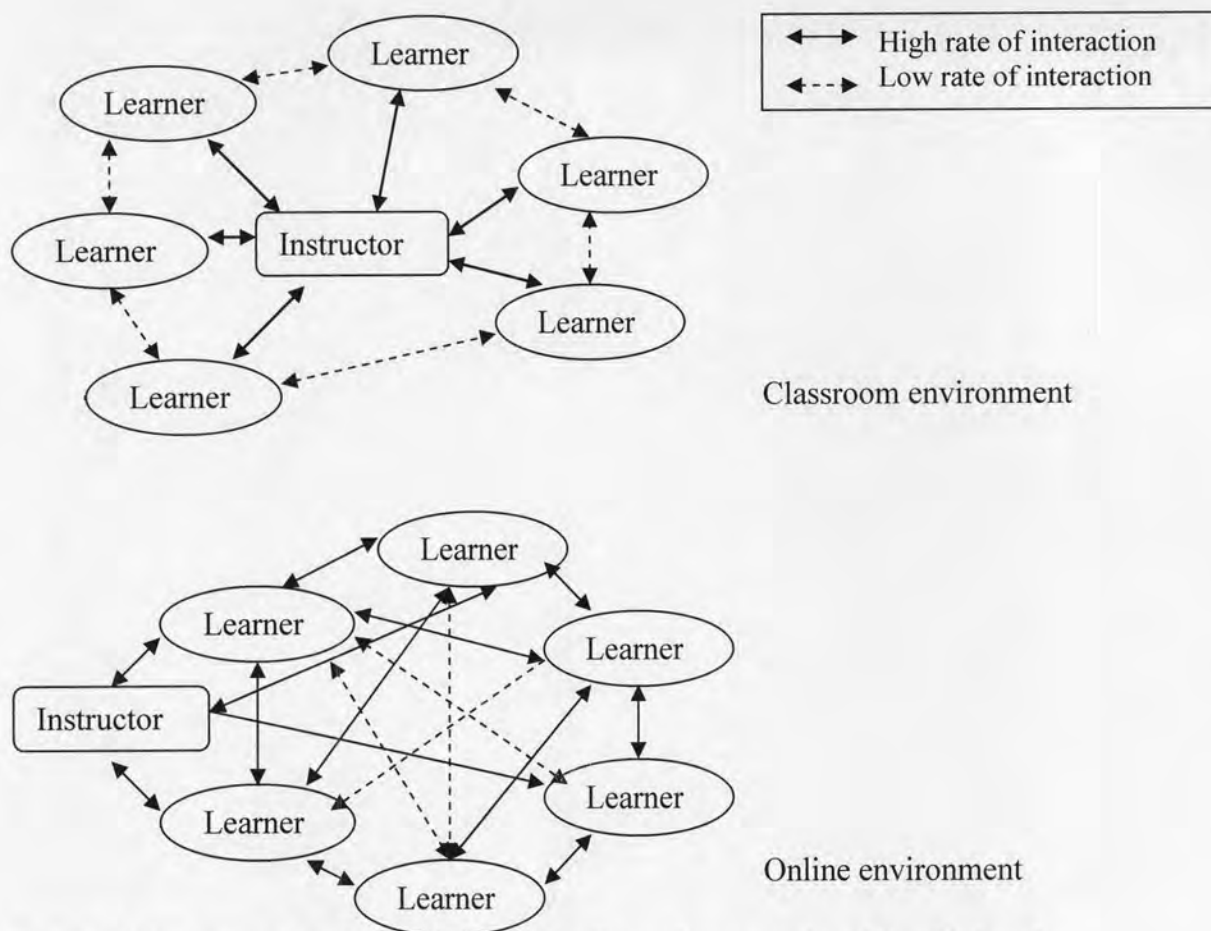


Figure 2.5 Social network graphs of classroom and online environments adapted from Hudson & Bruckman (2002)

Unique among forms of group interaction and collaborative learning is the automatic creation of the text-based archives or transcripts of interactions that make up the online forum (Harasim, Hiltz, Teles, & Turoff, 1995). Analysis of these transcripts provides a powerful tool to understand online learning. Various researchers have developed models and tools to facilitate this analysis, although there are as yet few publications in which these tools have been applied to actual online conferences. Levin, Kim, and Riel (1990) describe a quantitative method of analyzing the structure and content of online interactions by the creation of *message maps* that graphically display the interrelationships among the messages submitted to a conference. Levin et al. used this analysis to identify *threads* within a conference and to display the multithreaded nature of the conference interaction. In addition, they observed that some messages were particularly influential in producing numerous responses or lengthy sequences of responses.

Henri (1992) has developed a cognitive analysis model for online interaction. She delineated four dimensions related to the quality of the messages:

1. Content that reflects the social dimension of conference interchanges.
2. Content relating to the interactive dimension of the conference.
3. Content indicating the application of cognitive skills.
4. Content showing metacognitive skills.

Henri (1992) also defined a fifth category related to the quantitative posting rate of the participants; this dimension is defined as the compilation of the number of messages or statements transmitted by one person or group.

Although Henri (1992) provides a sophisticated framework for cognitive analysis, shortcomings have been identified. Henri's model is based on a teacher-centered instructional paradigm, and as Gunawardena et al. (1997) note, such a paradigm is inappropriate in a social constructivist learning environment where learning is based on the shared construction of knowledge. Gunawardena et al. therefore proposed the model of content analysis. They theorized that the active construction of knowledge moves through five phases, and that although every instance of socially constructed knowledge may not progress linearly through each successive phase, they are nonetheless consistent with much of the literature related to constructivist knowledge creation. Based on these phases, a model was developed that could be used to analyze the construction of knowledge (constructivism) in computer conferencing transcripts. The phases are as follows:

*Phase I. Sharing/comparing of information.* In everyday transactions, this might take the form of ordinary observations, statements of problems, or questions. This phase may include an observation, opinion, agreement, corroborating example, clarification, and/or identification of a problem.

*Phase II. Discovery and exploration of dissonance or inconsistency among the ideas, concepts, or statements advanced by different participants.* This is defined as an inconsistency between a new observation and the learner's existing framework of knowledge and thinking skills. Operations, which may occur in this phase, might include identification of differences in understanding of terms, concepts, schemas, and/or questions to clarify the extent of disagreement.

*Phase III. Negotiation of meaning and/or co-construction of knowledge.* This phase includes negotiation or clarification of the meaning of terms, identification of areas of agreement, and proposal of a compromise or co-construction.

*Phase IV. Testing and modification of proposed synthesis or co-construction.* Events that occur in this phase include testing against an existing cognitive schema, personal experience, formal data experimentation or contradictory information from the literature.

*Phase V. Phrasing of agreement, statement(s), and applications of the newly constructed meaning.* This phase encompasses summarizing agreement(s) and metacognitive statements that illustrate new knowledge construction and application.

Since HybridNTELL model aims to provide an arena for social interaction, Gunawardena et al.'s model (1997: 7) is considered useful to be incorporated in analyzing students' interaction in online open-ended tasks. Ellis (2005) suggested that the nature of the relationship between the participants can change in different contexts

and even within particular interactions. Thus, the relationship should be viewed in dynamic and changing process not a static one.

***Microgenetic development.*** The last stage of assessing potential development is to look for evidence of mediated microgenetic development within the learner's ZPD.

*The role of teacher or tutor.* The work of Aljaafreh and Lantolf (1994; 1995) is a pioneer, and their analytic methods offer an example for the close analysis of collaborative dialogue within the ZPD. The participants in this longitudinal study were adult English as a second language learners receiving one-to-one feedback from a language tutor on weekly writing assignments. At each weekly tutorial, the students re-read their own writing, and checked for any errors they could identify without help. When an error was identified, the tutor aimed to scaffold the learner to correct it in a contingent manner: "the idea is to offer just enough assistance to encourage and guide the learner to participate in the activity and to assume increase responsibility for arriving at the appropriate performance" (Aljaafreh & Lantolf, 1994: 469). They aimed to determine whether the learner shows evidence of shifting from other-regulation (reliance on the tutor) to self-regulation.

In their study Aljaafreh and Lantolf determined this by considering the *frequency* and *quality* of help the learners received from the tutor. They identified five levels of transition as the learners moved from intermental to intramental functioning; i.e. "as they moved through the ZPD towards self-regulation and control over the target structures" (Aljaafreh & Lantolf, 1994: 470). These five levels below differ according to: (1) the learner's need for intervention from the tutor, (2) the ability of the learner to notice the error, and (3) the ability of the learner to correct the error.

1. The learner is not able to notice or correct the error, even with intervention [or explanation] from the tutor
2. The learner is able to notice the error, but cannot correct it, even with the intervention.
3. The learner is able to notice and correct the error, but only under other-regulation [help from the tutor].
4. The learner notices and corrects an error with minimal, or no obvious feedback from the tutor and begins to assume full responsibility for error correction
5. The learner becomes more consistent in using the target structure correctly in all contexts. Noticing and correcting of errors, when they arise, do not require intervention. Thus, the individual is fully integrated.

Aljaafreh and Lantolf (1994) on the basis of their five levels of transition created Regulatory scale (Table 2.1) listing specific types of help or regulation ranging from the most implicit to the most explicit. Learners requiring help at the top of the hierarchy would be closer to self-regulation than those from the bottom to the

top. Aljaafreh and Lantolf's (1994) scale emerging from their research on corrective feedback on written composition learners receive from tutors shows evidence of microgenetic development.

Table 2.1

Regulatory scale from implicit (level 1) to explicit (level 12) (Aljaafreh & Lantolf, 1994, 471)

0	Tutor asks the learner to read, find the errors, and correct them independently, prior to the tutorial
1	Construction of a 'collaborative frame' prompted by the presence of the tutor as a potential dialogic partner.
2	Prompted or focused reading of the sentence that contains the error by the learner or the tutor
3	Tutor indicates that something may be wrong in a segment (e.g. sentence, clause, line) – 'is there anything wrong in this sentence?') Tutor rejects unsuccessful attempts at recognizing the error.
4	Tutor narrows down the location of the error (e.g. tutor repeats or points to the specific segment which contains the error).
5	Tutor indicates the nature of the error, but does not identify the error (e.g. 'There is something wrong with the tense marking here')
6	Tutor identifies the error (e.g. 'You can't use an auxiliary here')
7	Tutor rejects learner's unsuccessful attempts at correcting the error.
8	Tutor provides clues to help the learner arrive at the correct form (e.g. 'It is not really past but something that is still going on')
9	Tutor provides the correct form
10	Tutor provides some explanation for use of the correct form
11	Tutor provides examples of the correct pattern when other forms of help fail to produce an appropriate responsive action
12	

The levels on the Regulatory Scale, therefore, are obviously support a written task, and they focus specifically on the correction of grammatical forms.

*The role of peer.* Ohta (2001), in her extensive study of Japanese L2 development in natural classroom conversation, examined the effect of corrective feedback in classroom learning. She also investigated the way students assisted each other through scaffolding, or how they *assisted performance*. Assistance was not only forthcoming when learners made errors, they were also assisted when they were struggling; for example, to produce or understand a word or grammatical structure. She has also developed a scale of assistance. In fact there are two scales: assistance given to partners when they are struggling, and assistance provided when they have produced an error. The scale presents an array of mechanisms the learners used to assist one another, and these are arranged according to their level of explicitness, determined by how much information the assistance gives to the learner.

Aljaafreh and Lantolf's (1994) and Ohta's (2001) scales provide a very useful set of indicators which point to the regulatory level of the learners, and thus the position within their ZPDs. There are many research replicated those scales (e.g. Ellis,

2005; Nassaji & Swain, 2000). Ellis (2005) suggested that the analyst needs to be on the lookout for:

1. The frequency of intervention by the tutor
2. The quality of intervention (see the regulatory scales)
3. The need for intervention (i.e. when the learner is struggling or has made an error)
4. The learners' ability to notice an error
5. The learners' ability to correct an error
6. evidence of the learner struggling

*The role of discourse in collective scaffolding.* More research in the past decades examined the role of peer review qualitatively in conjunction with the types of discourse they used during the process. Discourse analysis is concerned with the study of the "relationship between language and the contexts in which it is used" (McCarthy, 1991: 5). In language teaching, discourse analysis has proven to be a robust research tool in detecting patterns in classroom communication (Sinclair & Coulthard, 1975). Language researcher employ discourse analysis toward their objective of understanding how humans learn language.

"Classroom discourse is a central part of this social context, in other words the verbal interaction shapes the context and is shaped by it" (van Lier, 1988: 47). In a similar vein, Fairclough defines discourse as the use of language as social practice, and discourse analysis as the analysis of how texts work within social constructivist practice (Fairclough, 1995:4). As Vygotsky-inspired social constructivist theory posits that learning is discursively constructed, discourse analysis is an appropriate data analysis method to employ in this study of students' collective scaffolding in task completion.

Methodologically, discourse analysis can be problematic. As discourse can be analyzed on any number of levels, there does not exist a well-defined analytical category system for discourse analysis (Larson-Freeman, 1980). In this study, the method of discourse analysis consisted of searching the online recorded interaction for excerpts that illustrated the phenomena sought in the research questions.

*Measuring language development: a developmental index.* The original goal of the developmental index studies begun in the late 1970s was the search for an index of development that could determine second language developmental level by means of an 'objective' measure.

In first language acquisition, mean length of utterance has commonly been used as a developmental index, but it does not work with adults who are cognitively

mature (Larsen-Freeman & Strom, 1977). According to Larsen-Freeman (1983: 287), it is important to use “a developmental yardstick against which global (i.e. not skill nor item specific) second language proficiency could be gauged.” That yardstick should “increase uniformly and linearly as learners proceeded towards full acquisition of a target language” (Larsen-Freeman, 1978: 440). Such a developmental index could be used by second language teachers and researchers who do not have access to the same language proficiency tests. One important purpose of using a developmental index would be to allow a more precise description of learners’ developmental level in research studies. That would allow greater comparability between studies, perhaps comparability between developmental levels in different learning situation or different target languages (Cooper, 1976; Harley & King, 1989; Hyltenstam, 1988; Monroe, 1975).

Most studies produced their results from a combination of many of the most common measures. In second language acquisition research studies, developmental measures of fluency, accuracy, and complexity have also been used as dependent measures for examining the effect of a pedagogical treatment on either oral or written language use. That is researchers have attempted to ascertain the effect of a particular instructional context by measuring differences on some of these developmental measures. They have been used in studies of the effect of program (Carlisle, 1989; Ferris & Politzer, 1981), feedback (Kepner, 1991; Robb, Ross, & Shortreed, 1986), task (Chastain, 1990; Foster & Skehan, 1996; Witte & Davis, 1983), grammar instruction (Frantzen, 1995), planning (Crookes, 1989; Foster & Skehan, 1996; Ortega, 1995), topic (Reid, 1992; Tapia, 1993; Tedick, 1990), and time (Kroll, 1990). The assumption is that these measures might be able to capture how the language use of learners differs in relationship to the context of use.

Wolfe-Quintero, Inagaki and Kim (1998) classified the measures that have been used in studies of second language development as belonging to three major categories corresponding to different aspects of development: (1) fluency; (2) accuracy; and (c) complexity (both grammatical and lexical).

The classification captures three types of intuitions that have been assumed in studies of second language development in writing:

1. Second language learners write more fluently, or write more in the same amount of time, as they become more proficient.

2. Second language learners write more accurately, or produce fewer errors in their writing, as they become more proficient.
3. Second language learners write more grammatically and lexically complex sentences as they become more proficient.

According to Lennon (1990: 390), *fluency* refers to speaking with “native-like rapidity,” *accuracy* refers to speaking with “error-free,” and *complexity* refers to “using a wide range of structures and vocabulary.”

The underlying assumption is that these three characteristics of language development progress in tandem, that more proficient second language writer write more fluently, accurately, and grammatically and lexically complex sentences than less proficient writers. However, some evidence suggests that there is individual variability at any given point of time, as well as points where one aspect of development may progress at the expense of another (i.e. there may be accuracy-complexity or accuracy-fluency trade-offs; see MacKay, 1982). For example, Casanave (1994) showed that learners vary in their patterns of T-unit length and accuracy in journal writing over time, and Tedick (1990) found that on field-specific composition where writers took more risk and increased their T-unit length, the accuracy of those T-unit decreased. Any assumptions of co-linear progression need to be investigated carefully (Young, 1995).

Lennon (199) points out that there is a complex interconnection between fluency, error, lexical range, syntactic complexity, and productivity, an interconnection that we feel is part of the process of a language learner attempting to encode many aspects of language at the same time, at many linguistic levels. The competition for attention and resources allows only so much information to be assimilated, automatized, or restructured at a time (Foster & Skehan, 1996). Young (1995) pointed out that we cannot assume that growth in language use is a linear or unitary process with various components of proficiency or development progressing at the same rate. For measures of language development, there may be writers who are fluent but inaccurate along with writers who are accurate but non-fluent, or writers with complex syntax but not a complex lexicon and vice versa (Hamp-Lyons, 1991).

Wolfe-Quintero, Inagaki and Kim (1998) examined cumulative effect of the research that has attempted to show their relevance as indicators of language development. The research selected compared developmental measures with an independent measure of language or writing proficiency by means of correlations, t-



tests, or analysis of variance. They categorized the developmental measures found in the research as follows:

1. Developmental measures that highly correlates with proficiency ( $r = .65+$ ) or show an overall effect for proficiency ( $p < .01$ ).
2. Developmental measures that moderately correlates with proficiency ( $r = .45-.64$ ) or show an overall effect for proficiency ( $p < .05$ ).
3. Developmental measures that weakly correlates with proficiency ( $r = .25-.44$ ) or show a trend towards an effect for proficiency ( $p < .10$ ).

HybridNTELL model incorporates three selected developmental measures from the past studies, in three aspects of development: fluency, accuracy and complexity, that highly correlates with proficiency to measure the students' language development. The measures include (1) the total number of word count for fluency development, (2) the ratio of error-free T-units per total number of T-units for accuracy development, and (3) the ratio of total number of clauses per T-units for complexity. The purpose is to search for ways to predict the students' *potential* development in their ZPD while learning with the HybridNTELL model and to support the holistic evaluation to produce a more precise description of learners' developmental level in this study.

Social constructivist theory provides a basis on which HybridNTELL model is developed. An integration of network technology makes social constructivist learning environment possible in foreign language classrooms where opportunities for collective scaffolding and communication in the target language are limited. HybridNTELL model, thus, aims to enhance students' language learning experience and use as well as foster language learner autonomy. The overview of HybridNTELL model is described in Figure 2.6

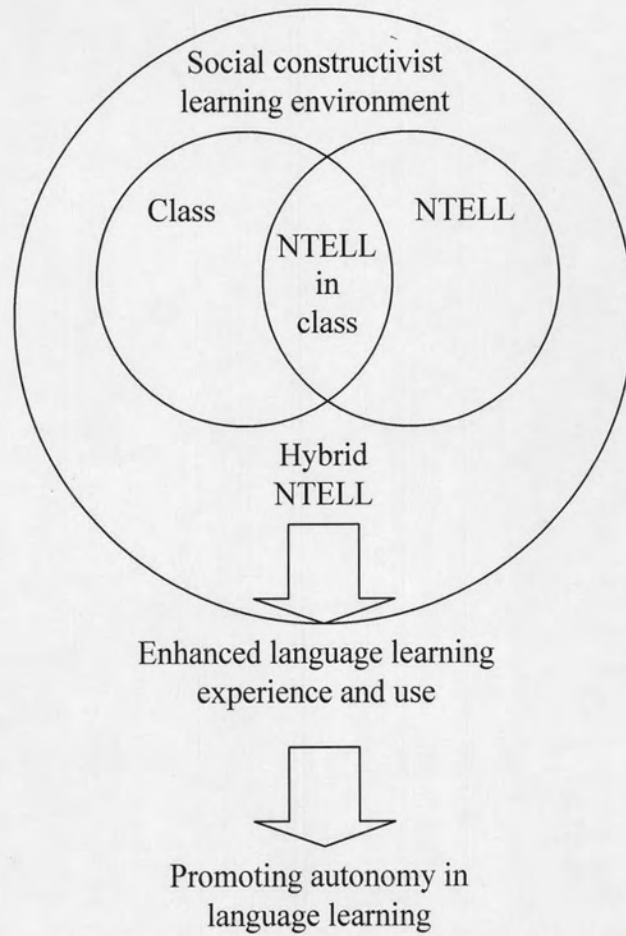


Figure 2.6 An overview of HybridNTELL model