



CHAPTER V

DISCUSSION AND CONCLUSION

The main objectives of this current study are to study, develop and evaluate the HybridNTELL model which was designed for an increasingly resource-stretched higher education environment. It reflected the corner stone for successful 21st century foreign language learning that promotes community of practice in language learning. The design framework and evaluation of the model were grounded upon Vygotsky-inspired social constructivist theory. The model provides an environment that enhances the students' zone of proximal development and facilitates the developmental process towards learning autonomy. Effectiveness and usability of the model was ensured by the theoretical-driven design framework and the following empirically evaluation processes based on the framework.

This section summarizes the research findings, discusses the HybridNTELL model development and research findings, offers suggestions on applications of HybridNTELL model, and projects for future research.

5.1 Summary of the HybridNTELL model research findings

Since this current study is a research and development (R&D) of a learning model, the two major findings are (1) the HybridNTELL model itself as the product and (2) the results of the model evaluation.

5.1.1 The HybridNTELL model

The HybridNTELL model combines asynchronous online learning environment with synchronous face-to-face classroom learning. The HybridNTELL model was created based on a theoretical framework that incorporates three areas of study: social constructivist theory, learner autonomy and network technology-enhanced language learning. The controlling idea of the model is the idea on task design which influences the way a learning environment is organized. Four task types are arranged in the respective concepts of reactive-interdependence, reactive-independence, proactive-interdependence, and proactive-independence. These task types were designed based on the social constructivist concepts of the zone of proximal development, regulation and mediation in conjunction with the learner autonomy concepts of source of direction and collectivity. Task design influence how *mediation* is used, how *subject* and *object* are arranged, and how *rules, community*

and *division of labor* are designed. To further elaborate on mediation, six types of mediation involving in the HybridNTELL model are provision and accessibility of resource, arrangement of classroom, design of curriculum, teacher's role, learner's role, and use of technology. The concept of network technology-enhanced language learning is incorporated to design the hybrid platform with face-to-face learning. In particular, the model results in a social constructivist learning environment that promotes foreign language learner autonomy.

5.1.2 The research findings

After stages of theory-based analysis and design, the model was piloted to ensure its practicality. The results show that the model works well with the group of students. All students have equal chances to improve their English ability regardless of their previous proficiency level. The students' development is correlated with their performance on HybridNTELL tasks which ensure the model positive effects on students' learning outcomes.

The main study firmly suggests that previous English proficiency levels have no effect on the students' autonomy and language development. The pre- and posttest suggest that the learners improve their language skills ($F(2, 87) = 7.04, p < .001$) regardless of their previous English proficiency levels, $F(2, 87) = .24, p = .078$. However, there is an interaction between the effect of English proficiency levels and degrees of learning autonomy demonstrated in the four task types ($F(6, 87) = 15.96, p < .001$) on the improvement of English proficiency. Furthermore, the experimental students' mean score on the curriculum-based achievement test show significant difference from the overall population's ($t = 6.66, p < .001$).

Further observation was conducted due to the efficiency of the NTELL platform recording system. Four variables related to learner development in HybridNTELL environment were observed. They are (1) the degree of autonomy, (2) patterns of social interaction, (3) discourse patterns in collective scaffolding, and (4) teacher's scaffolding. These learning variables are incorporated as the strong predictors of students' English proficiency development ($R^2 = .87, F = 63.03, p < .001$) and their curriculum-based achievement ($R^2 = .96, F = 81.54, p < .001$).

Findings suggested that students made good learning progress with HybridNTELL model but the different degrees of achievement are dependent upon the patterns of their learning process in the environment.

5.2 Discussions of HybridNTELL model research

5.2.1 Learner autonomy development and improvement of language ability

HybridNTELL model incorporated three types of test into its investigation. The first type is standardized English proficiency test, CU-TEP, which is believed to be concurrent with other standardized tests. The proficiency test was used as the pre- and posttest to capture the range of development overtime. The second type is the curriculum-based test distributed across the campus for first year students as the course final achievement test. The third type is the classroom-based performance test examining the students' growth overtime in thought and language development. The students' growth from pre-to posttest, higher achievement than those with similar proficiency levels, and their stages of development found from the close analysis through learning process are good source of data to ensure effectiveness of HybridNTELL model.

Vygotsky's (1962) ideas that learning is most effectively conducted in a generative and supportive social context were proven to also be effective in campus-based large class setting with an integration of online learning environment. However, the idea that learning is seen as a joint proposition, which requires students' participation also depends on institutions and staff providing students with the conditions and opportunities to become involved. Studies found that collective scaffolding over online conference appears to enhance their campus-based classroom learning as supported by the work of Astin (1979, 1985, 1993) Pace (1979, 1995) and Hu and Kuh (2001). Theoretical-based design with well-structured LMS can increase student engagement directly concerned with the nature of students' involvement with activities and conditions likely to generate learning. Hu and Kuh (2001) define engagement as "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes."

Although uses of learning management system was proven to have a diverse influence on the ways in which campus-based students engage with their university study by changing how students collaborate with others, communicate with staff and access the materials which they use to learn, well-designed classroom interaction is needed. Effective interaction requires not only the careful design of learning activities, but more importantly, the empowerment of the learner to engage collaboratively with others.

Influenced by Vygotsky's work, many scholars suggested ways to organize effective team learning among which Johnson and Johnson's (1989) five essential elements in structuring cooperation was selected to use as a guideline and proven effective. Based on the analysis of interaction patterns using Storch's model, positive interdependence, individual and group accountability, promotive interaction, interpersonal or group skills, and group processing found in more collaborative groups influenced how well the groups developed and learned. Group members who experienced such collaborative patterns as 1a, 1b and 4a showed further advancement in their development. Also, HybridNTELL model design also responded to many scholars on cooperation (e.g. Slavin, 1990; Johnson & Johnson, 1994) who acknowledge that heterogeneous groups provide the best mix for successful learning. The way students were assessed also corresponds to Foyle's (1995) three fundamental concepts of cooperative learning assessment process: (a) achievement of the group goal, (b) individual accountability, and (c) positive interdependence among group members.

Furthermore, students empowerment promoted through electronic learning network was achieved as shown in their social discourse (see Section 4.2.1d). Vygotsky (1978) claimed that social discourse between people gives rise to the growth of an inner voice which provides a person with a sense of control or mastery and which is especially important for language learning (cited in Bruner, 1987; Belmont, 1989; Cooper & Selfe, 1990; Warschauer, Turbee and Roberts, 1996). Palmer (1990) likewise emphasized the empowering process of social discourse, adding that learners need a sense of community before there can be honest critique among them. Freinet (1974) linked the empowering potential of social discourse to the issues of technology and networking arguing that balanced development for learners is possible only through direct engagement with their peers, adults and the environment and that modern media could hinder this engagement by rendering learners' passive vessels (p. 32).

The students' discourse found in HybridNTELL environment did not associated with only peripheral interaction in class but its association with interaction patterns, students' development and achievement investigated from the vivid evidence of their specific learning habits influencing their learning outcomes.

5.2.2 Observation on social constructivist learning environment

An investigation into learners' interaction served as additional data source to understand the students' zone of proximal development. Storch's (2002) model of dyadic interaction patterns despite its clear structure of students' interaction needs to be adjusted for team-based interaction promoted in HybridNTELL model. Three major types of interactions: collaborative, dominant/passive and expert/novice were found leaving only the dominant/dominant type undetected (see Figure 4.17). Three reasons that explain this phenomenon are that (1) the students worked in teams rather than in pairs, (2) a team comprises participants with mixed abilities and (3) the rule was set to rotate dominance and responsibility among team members to work towards a shared goal. Consequently, the lack of both mutuality and equality aspects should rarely be found. However, a new aspect of interaction was discovered owing to an emergent question of who took the lead in the team. This aspect questioned the social constructivist belief on the benefit of having a *more capable* peer to take the leading role.

The work on peer tutoring has suggested that interaction with a more competent peer is beneficial to learners' development (Hinger, 2006; Ghaith, 2002; Sotillo, 2000; Yang, Badger, & Yu, 2006). In this study more capable members were predetermined by their English proficiency test scores and degree of computer literacy based on a set of questionnaire. The aim is to assign more capable members to every group equally based on the belief in the past studies. The new aspect of members' capability was then included to the investigation against the two aspects in Storch's model: equality and mutuality. The results (see section 4.3) from further observations show that a presumed more competent peer is not necessarily the sole source of mediation. None of quality of excellence can predict who among the group members is regarded as the more capable member and takes the role of the leader. The majority of the groups (i.e., 1a group) are mutually collaborative while the other groups despite inequality in members' role did not have the person with the same capability across the groups as the more capable leader. Some presumed capable members remained passive or novice in the collective learning process whereas the less capable members took the leading or expert roles.

The dynamic of capability is obvious in an observation of the groups with dominant/passive and expert/novice patterns. Only three groups: A2, B6 and B9 with dominant/passive type (a) had the presumed capable members taking the lead while

other members remained passive. Two groups: A10 and B5 with dominant/passive type (b) had other members taking the lead. The observation of these two types led to another interesting observation of mutually collaborative group type which is the majority ($n = 13$). This collaborative pattern indicated that all members' interaction and learning emerged from a realization of both equality and mutuality among them. None of the presumed more capable members took the lead. Rather, every member took an equal role actively to work their ways towards a shared goal. The other group type is group 4a with expert/novice interaction patterns. This group pattern appeared to respond to the belief of the role of more capable peers that most work on peer tutoring suggested to be more beneficial to development. The belief is partly true based on the results of this current study on the students' classroom-based performance and development indicating that group 4a with expert/novice interaction patterns made as good progress as the collaborative ones and better progress than group 3b who lacked capable peers taking the lead.

However, it is not necessarily true that those groups with more capable members remaining passive or novice would have failed to make progress in their learning. The results revealed that having capable members as dominants or experts was not the main factor. According to the results (Figure 4.17), group 3a (with more capable members as the dominant) made less progress than the group 3b (with less capable members as the dominant). Although being less capable in English or computer literacy, the students in group 3b who took the lead made good attempts to outperformed group 3a. One important observation was that they were active to seek more help from teachers and probably from others. The results also indicated that group 3b made progress overtime although they did not reach as far as the other three groups: group 1a, 1b and 4a which comprises more active members. The results are likely to suggest according to the social constructivist belief that the scores reflected only an approach to examine students' ability. The students' potential development in HybridNTELL environment cannot be investigated from only one single test but through ecology of learning.

The results also agree with Tudge's (1990) study showing that in peer collaboration, the more advanced partner is not necessarily more confident of his or her beliefs. He then argued that one factor of importance appears to be the degree of confidence each child brought to the interaction. In sum, cognitive conflict, based on a difference in perspectives, induces cognitive development regardless of level of

competence. Tudge (1990) in trying to disentangle *competence* and *confidence* argued that not a relationship between more or less competent partners but that between conservers and non-conservers is similar to the relationship between an adult and a child. His study suggested that conservers are tantamount to experts within the particular domain in the study and are, moreover, confident of their beliefs (Miller, 1986; Miller & Brownell, 1975; Murray, 1982, 1987). Wink and Putney (2002) showed an authentic example and stimulated a discussion of who the more capable peer really is in the context. The example was drawn from a pair of classmates with very different economic, social, cultural and political backgrounds. They found that the child with a more positive background and many varied experiences was led by the child from a broken home when they worked together on ten giant puzzles. They concluded from the example that the more capable peer may not be obvious. In addition, the case-in-point shows that the more capable peer in one context may not be the more capable peer in another.

According to Table 4.9, the observation of students' changing of interaction patterns overtime also presented another interesting issue of group dynamic. With mixed abilities in group, many groups of students overtime changed their interaction patterns into a more collaborative fashion when all members were ready to realize equality and mutuality in their roles. According to Donato (2004), collaboration takes time for learners to develop socially and cognitively as supportive learning contexts for each other. Their readiness varied across groups. Some could manage to collaborate at the first task cycle, some at the second while some at the third. Thus, it is important as suggested by Donato (2004) to have long time frames enough for task performed to capture or depict the realities of how learning is dynamically constructed in collaborative contexts. This confirmed the benefit of three task cycles use in HybridNTELL model.

5.2.3 Integrating network technology into social constructivist learning environment

The key design concept is to provide a place for collaborative learning and collective scaffolding based on social constructivist perspective. The results agree with the past research (i.e. Mangelsdorf, 1992) that peer scaffolding gives students an authentic audience, provides opportunities for negotiation and elaboration of meaning, and help students practice speaking and listening skills along with reading and writing (Diaz, 1986; Keyes, 1984; Mittan, 1989).

HybridNTELL environment also promoted egalitarian with students controlling more discourse in classroom and online interaction and learning process rather than having only the instructor taking all controls. The results corresponded with Pica and Doughty's (1985) result showing that the advantage of the student engaged in a peer-group task is the opportunity for far more target language practice time than is available in teacher-directed activities since in practice there is little negotiation of meaning in foreign language classrooms, as shown by the findings of Pica (1987; 1994). Chun (1994) confirmed that electronic network learning environment allows students to play a greater role in managing the discourse, e.g. they feel freer to suggest a new topic, follow up on someone else's idea, or request more information. Written transcripts of discourse produced by the students in this study also show that learners do indeed perform a number of different interactional speech acts: they ask more questions of fellow students; they give feedback to others and request clarification when they have not understood someone else. In general, they take the initiative more than they do in the normal classroom, since the instructor's role has been decentralized.

The process of task conference in HybridNTELL model showed how internal linguistic processing and external verbal exchange take place continuously and concurrently among the teacher and learners in the context of classroom after online interaction. Although some past studies claimed that teacher feedback was more likely to be adopted and led to greater improvements in language learning, peer feedback was also associated with a greater degree of students' performance reflecting their degree of autonomy. This finding agreed with Yang, Badger, and Yu's (2006) findings in a comparative study of peer and teacher feedback in a Chinese EFL writing class.

Focusing on students' language acquisition, the analysis of students' language development and perception towards their learning revealed that the electronic discussion gives them more time to understand their friends' utterances and to plan, produce, and edit their own. Planning time is claimed to be crucial for language learners (Crooks, 1998; Skehan, 1998; Wigglesworth, 1997; Wendel, 1997; Ortega, 1999). Ortega (1999), for example, suggests that planning provides students with increased opportunities for focus on form, which has been claimed to promote second language acquisition (Long & Robinson, 1998; Doughty & Varela, 1998). Sotillo (2000) also states that online asynchronous discussion promotes the production of

more subordinate and embedded subordinate clauses, more formal speech, and more accurate productions than synchronous discussion. The results in section 4.1.4d on objective assessment of students' language development also supported this claim in that the students engaging in collective scaffolding online discussion were found to have more opportunities to monitor their writing and to edit their spelling and grammar. This type of interactions and the negotiation of meaning are believed to provide a positive environment for language learning in terms of comprehensible input (e.g., Chang & Dunkel, 1992; Gass & Veronis, 1985, 1994; Long, 1983, 1996; Pica, Doughty & Young, 1986), modified input and opportunities for modifying output (e.g., Hatch, Flashner & Hunt, 1986; Tarone & Liu, 1995; Shehadah, 1999) and opportunities to access target language form and meaning (Long, 1990; Schmidt, 1990).

The students also reported two major advantages of HybridNTELL environment. First, it offered more flexibility than restricted to only face-to-face discussion since they and their group did not need to meet on the campus nor be logged on to the computer at the same time. They could read and comment when convenient at their own pace which keep them engaged with the group despite their different and busy class schedules. Learners were able to take time to reflect on their ideas and rehearse responses to their partner. The use of *Track Changes* also made the reviewing process easier. Learners could edit and revise their feedback easily, and most learners found typing more convenient than handwriting. One learner wrote: "I think the benefits are as follows: it's easy to change any points I think not appropriate. It's easy to add whatever I want to express. It's clear to see my point to my peer's paper." It seems that being able to edit feedback on the computer was a real benefit for learners since typed feedback could be changed anytime before being forwarded to the author. In addition, most learners reported that they felt more comfortable and less pressure giving feedback on the computer. In online environment, they did not have to face their peers, and, consequently, many seemed to worry less about their peers' reactions. One learner wrote, "We can say what we want and express our thoughts directly." Another stated, "while giving feedback [on the computer], I feel free to say anything I wanted to say without worrying about my peer's reaction."

The students' participation both online and on campus also enhances group cohesion. Some theory-producing researcher (e.g., Clement et al., 1994; Crookes & Schmidt, 1991) indicated that group cohesion contributes significantly to second

language motivation in the foreign language classroom. However, Senior (2002) stressed that the need to operate language learning group as communities of learners, or as unified groups of learners and highlights the humanistic tradition in language learning. In the framework of small group research, group cohesion is seen as a crucial factor in a team's motivation and performance (Swezey et al., 1994). Furthermore, group cohesion is defined as a measure of group development and relates to qualitative as well as to quantitative group interaction (Clement et al., 1994) as also shown in students' different interaction patterns in HybridNTELL environment. The members of group 1a, 1b, and 4a which are considered cohesive groups are greatly involved in the team's activities, have less tendency toward absenteeism, and display high levels of coordination during team tasks and provide mutual support. These qualities were suggested by Zwezey et al. (1994) as the characteristics of members of cohesive groups.

Group cohesion is crucial especially in higher education where students are freer in their learning at the same time require more learning autonomy. Hinger (2006) found that group cohesion reduced drop-out rate. Ghaith (2002) also claimed that cooperative learning is positively correlated with the perceived degrees of academic and personal support provided by teachers and peers, as well as achievement of university-bound learners of English-as-a-foreign language.

The potential of the HybridNTELL to provide a collaborative learning environment agreed with and is supported by many past studies in different aspects. To ensure its effectiveness, the model was also evaluated by the following themes discussed below.

5.2.4 HybridNTELL model variables and learning outcomes

The correlation analyses revealed that such variables created in HybridNTELL model as tasks, interaction patterns, teacher's mediation influenced effective learning outcomes.

First, the correlation between task performance and students' development and achievement is significant despite the discrepancy of influence in each of the four different task types. Pro-inter task type appeared to have the strongest association with the students' growth. The result is supported by activity theory believing that an activity or interaction should be generated by students both internally through their main objectives and specific goals as well as externally through the relevant artifacts. In words, an activity should be dependent upon the motives and learning stages of the

students so that their zone of proximal development is facilitated properly by external factors (e.g. peers, teachers, use of technology, use of language, etc.). Theoretically, the goal for Pro-inter task type is immediate. Moreover, the tasks work as a self-directed preparation towards the course achievement examination. The structural and content characteristics force Pro-inter task type to be low support tasks. The association between this task type and students' development was correspond to Hardy and Moore (2004)'s study on foreign language students' conversational negotiations in different task environment. They found that low support task was associated with greater degrees of negotiating exchanges among students than high support task (see reactive task types). The students have more opportunity for exchanges with a focus on form, set in a personally meaningful context of collaborative task completion. Thus the strong association found in this study revealed how the students' completing the tasks and develop their skills. Pro-inde task type is also self-directed and should yield a similar degree of association with the students' growth but it did not due to the less immediacy the tasks appear to the students. Task type 4 was found to benefit only the students who were ready to demonstrate their full capability in long term self-directed learning activity. Moreover, collective scaffolding was not provided at hand in Pro-inde task type. For these reason, some students who made good progress in Pro-inter task type might not did the same in Pro-inde task type. The goal for Pro-inter task type was immediate and consequently associated more with the achievement test scores while Pro-inde task type was although less associated with the two test types than Pro-inter task type showed a stronger association with the English proficiency pre-posttest.

The other two reactive task types are pedagogical tasks aiming to provide modeling for students with less development of English language learning experience and more advanced students with reference and revision of language functions. The higher degree of association between Re-inde task type than Re-inter task type is due to the fact that Re-inter task type reflected potential development which is a different construct from the assessments the students took both in the pre-posttest and the achievement test. The task provided the students a prior step of development to Re-inde task type in which the students demonstrate their capacity to complete their task alone and Pro-inter task type in which the students set their own motives and goals for their tasks. Less association between Re-inter task type and students' development can be explained by the nature of the task and the holistic judgment scheme that was

made to the students in groups without taking individual accountability. For task type 1, all members of a group are required to complete a task collaboratively without any concrete division of labor. Contribution of each member was evaluated as a whole. In words, each member gained the same score for Re-inter task type regardless of how much effort they made. Pro-inter task type holds a different nature and scheme of assessment which include individual accountability in the judgment. A group's division of labor was stated clearly. Each member was in charge of a part of the whole and each part was assessed individually before the holistic judgment was made. Consequently the task assessment reflected capability when an individual works in groups.

Furthermore, the students learning process and collective scaffolding on task type 3 were recorded and observed more closely than that in Re-inter task type thanks to the LMS and the nature of the task. For a further investigation on students' collective learning process in Re-inter task type, video or audio recording while they are working on task at the computer is needed.

The second variable in HybridNTELL model that was tested in the regression is students' interaction patterns observed along with the learning and task completion processes. Interaction patterns included the students' scaffolding discourse found. In providing scaffolding to others, students' development was associated with four discourse functions: critical feedback, corrective feedback, metatalk and fostering autonomy (see Table 4.18). Students' receipt of scaffolding was also associated with their development only when the discourse was positive feedback, critical feedback, and corrective feedback. The construction of discourse types associated with students' development revealed the degree to which their thinking and knowledge of language use developed. Using Bloom's (1956) taxonomy of educational objective to evaluate, the discourse types that show significant association with the students' development required thinking process upto level three or above which are application, analysis, synthesis and evaluation surpassing the two basic levels: knowledge and comprehension. For example, when the students give corrective feedback, they analyze the problem, synthesize available resources they possess, evaluate the best solution to be given in a particular context (e.g. lexis, grammatical items, or recommended websites).

The teacher's role as mediator is one of the main component of students' progress in their learning. The results elevate the fact that teacher can never be

replaced by the technology but the key user to make learning happen. Although the association of teacher's role in the learning process is almost equal to learner-learner interaction, it is important to note that construction and management of a learning environment requires teacher training and awareness of significant variables. This research and development of HybridNTELL model aims to provide the theoretical framework for creating an environment and empirical evidence of putting it into practice. Any teacher or researcher who replicates the model can benefit from the findings and description. However, it is recommended to be aware of the context where the model aims to serve.

5.3 Suggestions on HybridNTELL model application

An implementation of the HybridNTELL model primarily requires good understanding of the theoretical framework. The concept of autonomy and social constructivist theory is multifaceted as suggested by Benson (2001). It is not "a single, easily describable behavior" (Little 1990: 7). Misconception might result in unexpected learning outcomes. Next, the design of the learning environment is also sensitive to the effect of the model on learning. Careful adjustment of the HybridNTELL model system requirements is recommended. This section offers ways to understand the concept of learner autonomy based on social constructivist theory and description of possible HybridNTELL contexts.

5.3.1 Understanding the theoretical framework and key concepts

Degrees of autonomy can be broadly measured from the matrix of four task types: reactive-interdependent, reactive-independent, proactive-interdependent, and proactive-independent tasks respectively. Reactive-interdependent tasks requiring less degree of autonomy should be put prior to the other three task types to offer scaffolding for students' zone of proximal development. Then, reactive-independent task can be delivered to see whether the students can accomplish the task alone. Finally, the students should have an opportunity to exercise their skills transferred from those reactive tasks. Proactive tasks provide a place where the students take more control over their learning both collaboratively in Pro-inter tasks and independently in Pro-inde tasks.

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.

However, many learners are unfamiliar with group activities or may have had unsatisfactory experiences with them. Both these factors may lead foreign language students to believe that the teacher-centered classroom offers the best learning environment (Brookes & Grundy, 1990). Thus, they may resist when teachers encourage them to take more responsibility for their own learning (Cotterall, 1995). To help students appropriate the advantages of becoming more independent, foreign language educators can explain their rationale for using groups to structure peer interaction in order to make it more productive at the level of individual learning (Brookes & Grundy, 1990).

Explanation might be related to the following. Peer feedback on writing represents one such practice that has seen a good deal of application (Amores, 1997; Carson & Nelson, 1994; Connor & Asenavage, 1994; Guerrero & Villamil, 1994; Jacobs, 1987; Yoshihara, 1993). Peer feedback came to prominence in second language education as part of the adoption from first language pedagogy of a process approach to writing instruction (Moffett, 1968; Murray, 1968). Peer interaction can be utilized in all phases of the writing process: pre-writing, creating multiple drafts, and revising with peer feedback being particularly useful in the revision phase. One reason for this use of student-student interaction in writing instruction is the belief that students need “to practice the process of writing in class and talk about it to peers” (Brookes & Grundy, 1990: 11). Reid, (1993: 135) who has written extensively on second language writing, states that “students learn at least as well and as much from peers as they do from teachers.”

5.3.2 Description of possible HybridNTELL contexts for implementation

Recommendations in implementing the HybridNTELL model involve three main issues in the design of the learning environment: technological issue, pedagogical issue and interface design.

5.3.2.1 Technological issue

Three things to consider in technological aspect are infrastructure planning, hardware and software availability.

For infrastructure planning, there is a need to explore whether the institution have a technology plan that clearly describes the process of acquiring, maintaining, and upgrading hardware and software required for e-learning. The institution's network system should have stable, long-lived, and widely available technology infrastructure. The course must have orientation programs that provide technical training to students before starting the course. The course website is hosted on the course provider's own system. Finally, there are disk quotas allocated for students in their accounts on the institution. However, there are commercial Internet providers available at low price. Teachers can search for available resource through the Internet.

For hardware preparation, computer and peripherals as well as internet connection and/or LAN (wireless) should be available. Otherwise, the online platform may be organized completely outside classroom provided that students have an access to the Internet personally outside the institution.

For software preparation, MS office tools: word processor, presentation program, spreadsheets, etc., electronic dictionary and Internet browsers are required. Graphic software, audio video editing software, eBook reader software: Acrobat Reader is preferable.

5.3.2.2 Pedagogical issue

In the design of HybridNTELL model, it is important to construct the type of content of the course to be based on social constructivist theory. The instructor's role is domain expert, facilitator, coach, mentor, eclectic. The learner's role is active participant in creating knowledge from within. As a result, the control of learning is student-centered.

Since the main platform for online interaction is the discussion board, it is important to describe specific tool design for discussion board application. The following guideline is recommended. The course instructor posts ground rules for the discussion forum and the discussion topics used in the course are relevant to the goals and objectives of the course. The course requires students to participate in scheduled online discussion. The course gives students opportunity to serve as online discussion leaders. The students are expected to assume a leadership role in moderating specific discussion topics at some time during the course. The learners are advised to use a

word processor in preparing their posting for discussion forum and save them to the hard drives. This way the students can check spelling errors and grammar before posting it on the discussion form. In the case of server failures, they can always retrieve their postings from their hard drives. The students are encouraged to read and comment on each others' postings on online discussions. The students are required to submit discussion topics for class discussion.

The instructor summarizes and analyzes the discussion at the end of each discussion topic and intervenes appropriately when online discussions go in the wrong direction. He/she encourages students to keep their posts brief and relevant to the discussion topic. The course discussion forum should be easy to use and has a system of archiving. The students receive training in the use of the discussion forum. The course encourages students to make comments about each other's assignments in the online discussion forum, and set up their peer study groups. Thus, learner-learner interaction is encouraged.

The course should support interactions through the use of peer evaluation, help sessions, collaborative projects. Thus, it is interactive among students, between students and teacher, and with online resources. Also, it directs learners to explore external sites where they can analyze and compare materials. The course should promote inside collaboration by providing a supportive environment for asking questions, clarifying directions, suggesting or contributing resources, and class members working on joint projects through asynchronous tools such as web-based threaded discussion forums, wiki, and web-log.

To boost up motivation, the course should consider the situational and topical interest factors of cognitive motivation. The students should receive ongoing feedback on their performance in the various learning activities. They should be encouraged to actively participate and contribute in online learning activities.

5.3.2.3 Design issue

Two major considerations for interface design are website design and navigation. It is recommended to select pedagogical based learning management system such as Moodle (an open source software), WebCT, Blackboard, etc. Without those LMSs, an online learning environment can also be tailor-made based on the following guideline.

For website design, it is noted that the Web documents are available in PDF, HTML, Text files, and Word processed. The pages of the course use reasonable blank

or white spaces (about 20%) to help readers' eyes move through the content more easily and comfortably. The text throughout the course legible and throughout the course, background colors of screens are compatible with the foreground colors of the screens so that they complement rather compete. The site has consistent look with the course print materials so the learner can easily make the connection between online course information and correspondence that comes printed forms. The course use consistent font type across elements such as heading, body text, link, etc. and use standard font type so that text appears the same in different computer platforms and browsers (e.g. Arial, Times Roman, Helvetica fonts). The course use a consistent layout including color and the placement of titles and content on Web pages. The choice of graphics enhance the learners understanding of the site's purpose. The pages on the course Website load within 3 seconds. Parts of the page appear even though the site is not fully loaded. Colored graphics are clearly interpretable when printed in black and white

To create an effective navigation system, the course should provide structural aids (i.e., unit, lesson, activities, etc.) to help learners navigate the course and a site map to help learners navigate the course. Pages of the course should fit within any graphical browser window without any horizontal or sideways scrolling. All links are clearly labeled and serve an easily identified purpose so that the learners have enough information to know whether they should click a link. The site should not contain so many links as to be distracting. The course should use a consistent color for both unvisited and visited links as well as is consistent with the use of terminology throughout. The course should have structural flexibility by providing students the choice of multiple pathways through the instruction. No part of the course links to pages that are under construction. The learners are informed when they use outside links that lead to different websites. The course website includes a search feature and use consistent symbols and words as navigation aids. Every page of the course should have links back to the site's main. All the links in the course link to the correct locations.

Although the three issues for consideration seem to restrict the implementation of HybridNTELL model only in the technology-rich environment, adjustment can be made for any implementation in the context where network technology is not available. Local area network can make a good supplement on which the learning environment can be constructed for internal use within a specific class or institution.

If no network technology is not available in the institution, online interaction can be assigned as homework. However, lack of readiness in terms of technology can delay the timeframe of HybridNTELL model application. Two or more semesters may be required for the model delivery.

5.4 Conclusion

This paper reported the development and evaluation of HybridNTELL model aiming to provide an example of a theory-driven design process and empirical evidence for EFL instructors or researchers in higher education. The model is open to be modified for application and further investigation. Social constructivism approach to model evaluation provided multiple measurements. Any further analysis on particular measures should offer more insightful information on students' development. For example, based on the results students' discourse in their collective scaffolding yielded a strong association with their development and thus, should be examined more closely so that appropriate training could be made to equip the students with skills for more effective scaffolding. Teacher training is another important issue to be addressed since the findings suggested that teacher variable holds a degree of association with the students' development. However, it is important to note that too strong association between the teacher variable (or teacher's help) and the students' development is not a good sign. The teacher should maintain their help in a moderate degree of association with the students' development. The design of environment and task to promote collaborative learning and self-directed learning should reduce students' dependence on teacher. In this context, teacher can act as a facilitator observing when help is required and the degree to which it should be provided. Then, self-directed learning and collective scaffolding can be effectively encouraged to foster learner autonomy. If teacher's help yielded a strong correlation with the students' development, students are prone to be less autonomous.

For researchers, the model needs to be implemented more than once in order to calibrate its effectiveness. This current study also left such interesting aspects of HybridNTELL to be further investigated as learning process in task type 1, different teacher's variable, different language themes, learners' use of resource available, and learner language corpus. Additionally, the model can be expanded to create an environment where students' from different classes jointly collaborate. Based on the survey of students' perception, the students' address for more opportunity to be

exposed to the target language in the course (e.g. distance communication with oversea students) created an assumption of their readiness and need.

In conclusion, for hybrid active learning to occur, both effective pedagogical principles including specific instructional goals and procedures, as well as technological tools must be thoughtfully taken into account at the stage of implementation. Although the results reported from this study can yet be generalized to the entire university population, it is fair to say that HybridNTELL model was well suited to the students' needs. Learners' development and perspectives toward online learning has offered valuable insights into a way to make connection between the teacher's goals and students' needs while learning English in HybridNTELL environment. Both students and teachers would do well to take advantage of network technologies in order to become active members of a community that thrives far beyond the spatial and temporal limitations of the traditional classroom.