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Title:

Cross-cultural Communication and Language Learning in the Computer-Mediated Environment: A Two-Year Developmental Research

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Abstract

With the development of globalization and multi-culturalism, the global community is increasingly using English as an international and intercultural language. Meanwhile, rapid advancements in information communication technologies (ICT), particularly the Internet, have created opportunities for teachers and students to enrich language-learning experiences and intercultural-learning experiences. This study draws from a larger federally-funded project, the *Learning of Intercultural Language over the Net* (LILON) project, whose researchers aim to create structured intercultural learning opportunities for high school students using information communication technology (ICT) to interact with and learn from students from other countries/cultures. As the project has completed its second year of operation, we have encountered both opportunities and challenges.

In this study, we identify the root causes of problems and provide possible solutions. The solutions that we propose include the need: (1) for a shared vision among participating personnel; (2) to create a collaborative partnership between high schools and the universities; (3) for a better technology-integrated curriculum into language-learning programs; (4) to use grouping strategies for students' online interaction; and (5) the need for Internet netiquette training. These solutions and conclusions will serve as instructional and pedagogical guidelines for future researchers and educators that aim to use information and

communications technology to enhance language learning and promote cross-cultural learning.

Keywords

Computer-supported collaborative learning, Cross-cultural learning, Collaborative learning with middle school students, Curriculum design

1. Introduction

Upon entering the twenty-first century, the world is becoming more and more aware of its interdependence and its interconnectedness. As the likelihood that a majority of today's youth will someday be living, working, or traveling abroad increases, it is imperative that they be equipped with the skills and the capabilities that will enable them to work or perform with people from different cultures and languages worldwide. In other words, they are expected to not only be able to effectively communicate with people from another country/culture but to also understand and construct shared meaning with them as well. However, a person's proficiency in a language does not guarantee the person anything near successful and meaningful communication. Language does not function independently from the context in which it is used (Byram, 1988; Kramsch, 1993). When language is used in contexts of communication, "It is bound up with culture in multiple and complex ways" (Kramsch, 2003,

p. 3). Successful and meaningful communication occurs because of a shared understanding of context, (Heath, 1986), and therefore, the cultural context affects the ways in which language is shaped by users in a particular interaction, at a particular time, and in a particular environment.

In this sense, in order to ensure successful and meaningful communication, an essential skill, as mentioned by Graf (2004) and Fantini (2001), lies in the development of intercultural communicative competence (or intercultural competence, or ICC, for short). In other words, future citizens of the world should develop a level of ICC in which they possess “the ability to interpret intentional communications and customs in cultures different from [their] own” (Bennett, 1999). Furthermore, with the development of globalization, English is the most recognized international and intercultural language around the globe (Li & Li, 2004; Sifakis, 2004). Consequently, the practices of English-language teaching and English-language learning require a rethinking and perhaps a retooling.

2. Language Learning and ICC Learning

2.1. The Paradigm Change of Language Learning

For decades, communicative language-teaching (CLT) has been the most dominantly used approach in English-language teaching. The central idea of CLT lies in (1) communication

and interaction among classroom members and (2) students' context-based learning of appropriate usage in the target language. However, by using the CLT approach, teachers fail to identify the heterogeneity of world Englishes and English-speaking cultures, the connections between one's own language (L1) and the target language (L2), and the connections between one's own culture (C1) and the culture associated with the target language (C2) (Li & Li, 2004). As a result, propositions about English-language teaching that treat English as an "intercultural language" have been drawing much attention in recent years, and the language-teaching perspective has shifted from an emphasis on regularity, codification, and standardization (norm-bound, or N-bound) to an emphasis on the comprehensibility of communication (C-bound) (Sifakis, 2004).

Traditionally, the assessment of learners of English as a foreign language (EFL), especially of EFL learners in most Asian countries, has focused on the learners' performance on paper-and-pencil tests; as a result, most of these learners do well in writing and reading but lack proficiency in the listening and speaking aspects of the English language (Savignon & Wang, 2003). Hence, we propose that not only should the basic principles of the communicative approach be considered by educators who are developing online learning-tasks for intercultural- and language-exchange projects but more importantly the methods of assessment should reflect these principles and focus on the developmental

changes in learners' attitudes, beliefs, and motivation toward learning a foreign language. Sifakis (2004) suggests that it is imperative for practitioners to understand "learners' attitudes regarding the issue of ownership of English" (p. 245) so that they know whether the learners hold a N-bound or a C-bound perspective on language learning. Is "native-like" English pronunciation the most important concern in their efforts to learn English (Sifakis, 2004)? Similar to what Sifakis proposed, the Australian government's *Report on Intercultural Language Learning* (Liddicoat, Papademetre, Scarino, & Kohler, 2003) identifies five principles of intercultural-language learning that address the importance of cultural components in language learning. They are:

1. Active construction – purposeful and active construction of knowledge.
2. Making connections – connect prior knowledge to new ones.
3. Social interaction – learning is socially interactive.
4. Reflection – awareness of underlying thinking, knowing, and reflection.
5. Responsibility – learning depends on one's attitudes and disposition.

2.2. Intercultural Communicative Competence (ICC) Learning

A number of studies have been developed to enhance students' intercultural communicative competence in either intercultural training courses or the foreign-language learning programs worldwide (e.g., MacFadyen, 2003; Varis, Kirsti, Marko & Esko, 2003; Wilson, 1993). The

term *intercultural communicative competence* and its constructs are defined differently among different studies. Until now, researchers have not yet reached a consensus on the definition and the constructs of ICC. Sáez (2002) defines *ICC* as the development of a cognitive environment motivated by an appreciation of diversity and by a recognition of critical awareness and analysis as means of knowledge and communication in a complex society. In line with the definition of *communicative competence*, the acronym *ICC* refers to competence that enables learners to convey and to interpret messages and to negotiate meanings interpersonally within specific contexts (Brown, 1993), including intercultural contexts.

In general, the two most critical dimensions of competence are “effectiveness” and “appropriateness,” and others that have been considered include ability (knowledge), skill (performance), and clarity (understanding) (Koester, Wiseman, & Sanders, 1993). Byram (1997) suggests that ICC consists of skills, knowledge, attitudes, and critical awareness. He further discusses the related factors that are involved in ICC, and suggests that ICC components be formulated as “objectives,” meaning observable behaviors. He believes that educators and researchers who emphasize observable performance would enhance ICC’s clarity and ICC’s measurability. For instance, in the construct of attitude, learners should be “willing to seek out or take up opportunities to engage with otherness in a relationship of

equality” (p. 57).

Fantini (2000) believes that the development of ICC requires “insights drawn from both language and intercultural areas” (p. 27). One’s language proficiency can reflect and affect how one perceives, interprets, and expresses their view of the world. On the basis of this fresh look, Fantini proposes four constructs of intercultural competence—awareness, attitude, skills, and knowledge (A+ASK)—as shown in Figure 1. He characterizes ICC as constitutive of “the abilities to perform effectively and appropriately with members of another language-culture background on their terms.” Among these four constructs, awareness of self or of others is seen as the keystone on which effective and appropriate interaction depends. That educators and researchers have raised the idea of performance indicates that learners’ improvement of ICC can be observed through certain behaviors.

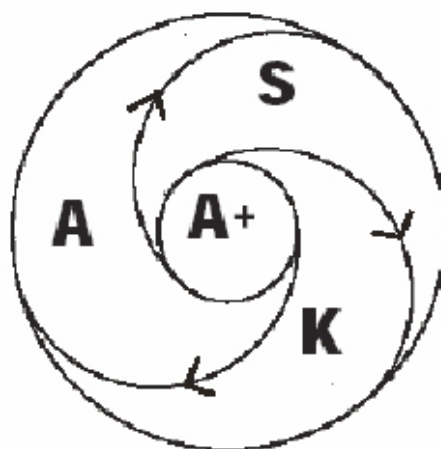


Figure 1. The construct of intercultural communicative competence (Fantini, 2000)

3. Using the Internet to Facilitate ICC Learning

The advent of information communication technologies (ICT), particularly the Internet, has created many opportunities in which users can acquire immediate access to the world. Students who want to learn a second language no longer need to travel or leave their homes to meet people from other countries and learn about their culture. Valuable resources via the Internet can be used to “bridge the gaps of international communication and help erase the cultural and social boundaries between countries” (Lu, 2004; Szente, 2003). Moreover, foreign-language curricula can be enriched as learning is contextualized through the cultural and linguistic diversity of Internet-based international communities.

As a result, and with an emphasis on ICC development, a growing number of classrooms, especially language classrooms in universities or high schools, are joining online learning networks and communities where teachers and students from around the world are able both to carry out cross-cultural communication and to develop cross-cultural awareness and understanding. Consequently, the language classroom is not limited to the surrounding four walls—it has expanded to include other people and places that will not only extend the meaning of CLT but also promote the implementation of C-bound language-teaching and C-bound language-learning.

Intercultural learning does not occur simply because of the potential for either exposure to cultural information through the Internet (Collombet-Sankey, 1997) or exchanges of learning materials through online partnerships (Lu, 2004). For example, Collombet-Sankey (1997) intended to expose her students to a rich cultural environment; but in her study, because the student's communicative skills were measured by their spoken-language presentation, it offered no evidence pertaining to the nature of either the cultural exposure that may have resulted or the cultural learning that may have resulted. Therefore, considering the contexts in which students learn about intercultural issues via the Internet, we propose that educators and researchers should take into consideration both pedagogical support for intercultural learning and sufficient online facilitation and mentoring insofar as these tools facilitate students' reflection on intercultural issues, intercultural skills, and intercultural knowledge. This view can also be found in the Australian report mentioned previously that, "the input [cultural learning] needs to be thoroughly integrated into a culturally centered curriculum and pedagogy" (p. 30).

As more and more schools implement ICC components in language-learning programs, educators will need to evaluate the extent to which their programs are successful in meeting the goals of the new curricula. Past research reveals that not all outcomes from joint online learning-communities or cross-cultural exchange projects are either successful or meet the

expectations of the participants (O'Dowd, 2003; Lu, 2004). Thus, while educators use ICT as a tool that facilitates instructors' teaching of—and students' learning of—a foreign language, these same educators should emphasize the design of the language-learning activities and especially the ways for assessing and evaluating both learning outcomes and learners' performance.

One important element in the evaluation process comprises learners' awareness, attitudes, skills, and knowledge relative to different cultures. If learners possess neither adequate knowledge nor adequate skills and do not feel that ICC learning is a relevant part of their foreign-language learning, they are unlikely to be interested in acquiring the needed knowledge and skills to communicate effectively in their intercultural encounters. Another important aspect that merits assessment concerns the improvement of learners' awareness, attitudes, skills, and knowledge before and after ICC learning. There are a few self-reporting inventories that facilitate educators' assessment of college students' ICC; however, to date, we have been unable to locate any existing validated instrument designed to assess ICC at the high school level. The use of a quantitative instrument (e.g., ICC inventory) may provide a general view of students' intercultural awareness, attitudes, knowledge, and skills; we believe that, on the other hand, the use of supplementary approaches such as observation, interview, or a portfolio of students' learning may present a more thorough picture of learners'

development of intercultural competence.

4. Foci of This Study

This present study describes a two-year longitudinal project, *The Learning of Intercultural Language over the Net* (LILON) project, whose researchers aim to create structured learning opportunities in which high school students can use ICT to interact with and learn from students from other countries. Meanwhile, we intend to perform instructional design, development, and evaluation activities and to study the process at the same time; therefore, this study can be characterized as a “developmental-research” endeavor (Richey & Nelson, 2004). As the project has completed its second year of operation, we have encountered both opportunities and challenges while using technology to enhance students’ cross-cultural learning experiences in an effective way. In this study, we seek to realize the following two goals:

- (1) to identify the root causes of problems, so we can provide long-term solutions;
- (2) to establish teaching and curriculum guidelines concerning technology use that enhances cross-cultural learning.

5. Methods

5.1. The Context and the Purposes of the Project

This study draws from a larger federally funded project, the *Learning of Intercultural Language over the Net* (LILON) project. In particular, the developers of this project aim to provide intercultural-learning experiences to two high school tenth-grade classes in Taiwan (in Taipei and in Hsinchu) and two high school eleventh-grade classes in the United States (in San Francisco and in St. Louis). Grounded on the theories that treat (1) foreign-language learning, (2) intercultural competence as part of language proficiency, and (3) computer-supported collaborative learning (Figure 2), the LILON project highlights critical concepts of intercultural-language teaching and of intercultural-language learning, and provides guidelines and optimal practices for teachers and future studies. We developed instructional-learning units for the participating high school classes. These learning units focused on themes that emphasize intercultural understanding, that promote intercultural communicative competence, and that enhance foreign-language learning beliefs. Similar to other cross-cultural exchange projects, this project uses telecommunications technology to facilitate collaboration between students from one country and students from the other country.

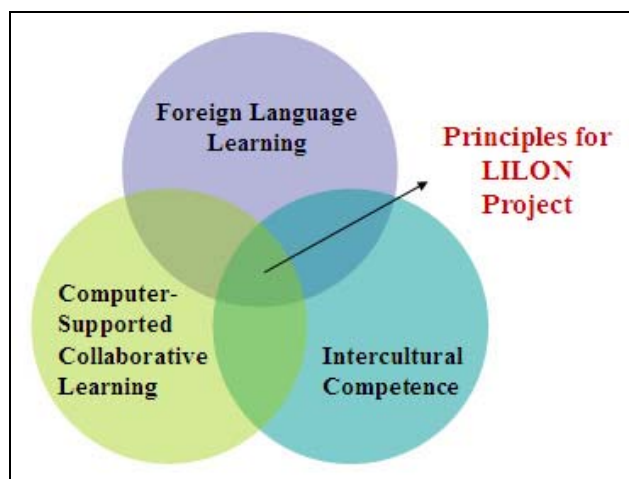


Figure 2. The design principles of the *Learning of Intercultural Language over the Net* Project

The design principles of the LILON project are;

1. Cooperation: Students are expected to share their own experiences and learning beliefs in an intercultural context, both in class and on the Internet.
2. Multiple aspects of knowledge: Students are encouraged to develop alternative answers and consider multiple perspectives toward knowledge..
3. Substantive learning: Students are presented with authentic, motivating, and meaningful learning content.
4. Challenging content: Students' thoughts and ideas are constantly challenged as they learn.
5. Real-life communication: Students have the chance to talk to native speakers.
6. Piecemeal knowledge presentation: Each dimension of culture is demonstrated in one

unit, an approach that helps students manage learning materials sufficiently (Schwartz, Lin, & Holmes, 2003).

7. Understanding one's own culture: Students are provided with the opportunity to value their own culture and prepare to learn about others' cultures.
8. Reflective learning: Students' learning of a foreign culture should generate reflection.
9. Easy access to online tools: Students can easily demonstrate their knowledge representation on the Internet.
10. Constraint-based online discussion (Marra, 2002): The topic for discussion is ready-made, and students may focus their thoughts on a specific topic.
11. Technology for knowledge representation: One's use of technology organizes and articulates one's thoughts.
12. Monitoring the process of communication: Students are able to monitor their own communication techniques and deal with misunderstandings or breakdowns in communication (Sifakis, 2004).

5.2. Participants and Procedure

In the first year of the project, the participants in this study comprised of 198 high school seniors in Taiwan and 136 high school seniors in the United States. In the second school year of operation, there were 156 high school students in Taiwan, and 63 high school juniors and

seniors in the United States. What makes this project unique lies in the design of the learning environment in which students in Taiwan are studying English as a foreign language and in which students in the United States are studying Chinese as an elective foreign language. Therefore, participants were encouraged to use either Chinese or English to communicate. Communicating in the foreign language would provide participants the opportunity to practice with someone from the target language. However, the option to communicate through use of one's native language would enable participants to express themselves clearly if needed. We believe that this project constitutes an opportunity for high school students from one target culture to interact with high school students from the other target culture. All communication and collaboration were completed through computer-mediated communication tools on the Internet such as video conferencing and discussion boards via *Blackboard*, an online course-management system (see Figure 3). We used an asynchronous discussion mode because of its flexibility relative to students' reflections (Piburn & Middleton, 1998) during and after the activities.

The screenshot displays the Blackboard interface for a course titled 'LILON'. The top navigation bar includes 'My Institution', 'Courses', and utility links for 'Home', 'Help', and 'Logout'. A left-hand menu contains buttons for 'Announcements', 'Faculty Information', 'Course Documents', 'Communication', 'Tools', 'Course Map', and 'Control Panel'. The main content area features a blue header for 'Announcements' and a central graphic with a blue character holding a computer mouse and a 'G' logo, with the text '網路輔助跨國文化語言學習' and 'The Learning Intercultural Language Over the Net'. Below the graphic are filters for 'VIEW TODAY', 'VIEW LAST 7 DAYS', 'VIEW LAST 30 DAYS', and 'VIEW ALL', with a date range of 'August 31 - September 30, 2005'. A post from 'Thu, Sep 15, 2005' is titled 'Welcome to the LILON Project!' and is attributed to 'Hsinyi (Sindy) Peng'. The post text reads: 'Dear students and teachers, I would like to welcome you to the Learning of Intercultural Language over the Net project! In this project, you will work with one partner from a different country/culture and will collaboratively accomplish several activities! I hope you will enjoy this experience for the following year! There are a total of 2 high schools and 2 universities involved in this project: Chien-Kung High School (Hsinchu, Taiwan), Saratoga High School (San Francisco, U.S.), the University of Missouri-Columbia (UMC, Columbia, U.S.) and the National Chiao Tung University (NCTU, Hsinchu, Taiwan). Special thanks are given to Mariam Fan and Steve Grad, high school personnel, NCTU system administrators, and research assistants for their fully support in making this project possible!'.

Figure 3. The screenshot of the *Blackboard* online course-management system

In order to motivate students and to better assess their learning and performance, the researchers and classroom teachers agreed to integrate the LILON project into their course curriculum. Integration (1) occurred through classroom discussions on relevant intercultural learning topics and (2) required participation in the online cross-cultural project—participation that included participants’ contributing to discussion-related board activities and participants’ constructing of learning products. Rather than develop paper-and-pencil tests, this project developed a set of rubrics for assessing the complex performances of students’ learning products and online interactions (Jonassen, Howland, Moore, & Marra, 2004). The project scores, which were counted toward the students’ final semester grade, accounted for approximately 5% of the total grade.

6. Data Collection and Analyses

Data were collected from (1) a demographic survey and (2) a language-learning belief and motivational-orientation inventory (developed by this study). To address the proposed research foci, the analyses of data included descriptive information of participants' background variables, transcripts of student and teacher interviews, and students' online interaction and collaborative products.

7. Results

In this section, we first identify the causes of problems in the first-year project. Second, we provide solutions for the alleviation of the problems that characterized second-year endeavors. Third, we extract from the collected data a number of data-driven results for a re-design of both the LILON curriculum and, indeed, the project operations themselves.

7.1. A Shared Vision among Participating Personnel

A shared vision means that “the commitment to the project is systemic” (ISTE, 2002, p. 21).

From the project staff and the schools' administrative personnel to the teachers and even to the students, there needs to be an understanding of, a commitment to, and a sense of advocacy for facilitating the project's implementation across a school site.

Challenge:

Lack of support from the administrative support was one important factor that hindered the partnership in the first-year project. Since it was a voluntary decision made by the classroom teachers to join the LILON project, the teachers had a great amount of control over how much time and effort the students were allowed to spend on the project. Although the participating teachers recognized the importance of helping students both expand their worldviews and appreciate the differences and the similarities that characterize other cultures compared to the students' own culture, the amount of time students were given to work on the LILON project, however, depended on how much time remained after the teacher covered content from their own curriculum. Additionally, it was also a challenge for the teachers to continue the partnership when they were the only ones in their school that were working on a project of this kind.

Solutions:

Facilitating the integration of technology and cross-cultural learning materials may require a change of policy or rules, and the decision-maker has to be willing to look at the situation, create some type of compromise or exception, and ensure that it is feasible. When classroom teachers integrate technology, collaborate with their colleagues, and incorporate the cross-cultural materials into their classroom curriculum, they need encouragement and

support from the school, from other colleagues, and from parents. Therefore, in order to obtain widespread support for the project, we made efforts to include parents, school administrators, and teachers at the beginning of the second-year project. We have also demonstrated that the LILON materials would fit into the teachers' instructional plans, and we have solicited the teachers' input regarding a redesign of these materials. The schools' administrative personnel in Taiwan and the United States helped to coordinate changes in class schedules and in other logistics to create a classroom environment optimal for technology use.

7.2. A Collaborative Model between High Schools and the Universities

Challenge:

Limited time for coordination among participating teachers is another challenge for the classroom teachers, who try to stay focused on the project, as well as on their regular classroom teaching. Technical support and instructional support were two common requests made by the participating teachers. Technical support includes equipment set-up (i.e., for conducting a video conference), Internet connection and bandwidth problems, and online system trouble-shooting. In these instances, the school technology coordinators played an important role because they could provide assistance to the teachers effectively and efficiently.

Instructional support refers to the background knowledge of intercultural learning and to the

rationale underlying the integration of certain learning materials and of certain Internet resources into the curriculum. Furthermore, the mid-term exams and the holidays during different times were another drag on the partnership.

Solution:

We propose a collaborative model (see Figure 4) between high schools and the universities in terms of ensuring (1) technical support (including ensuring accessibility of hardware, software, and telecommunication networks), (2) instructional support, and (3) personnel support.

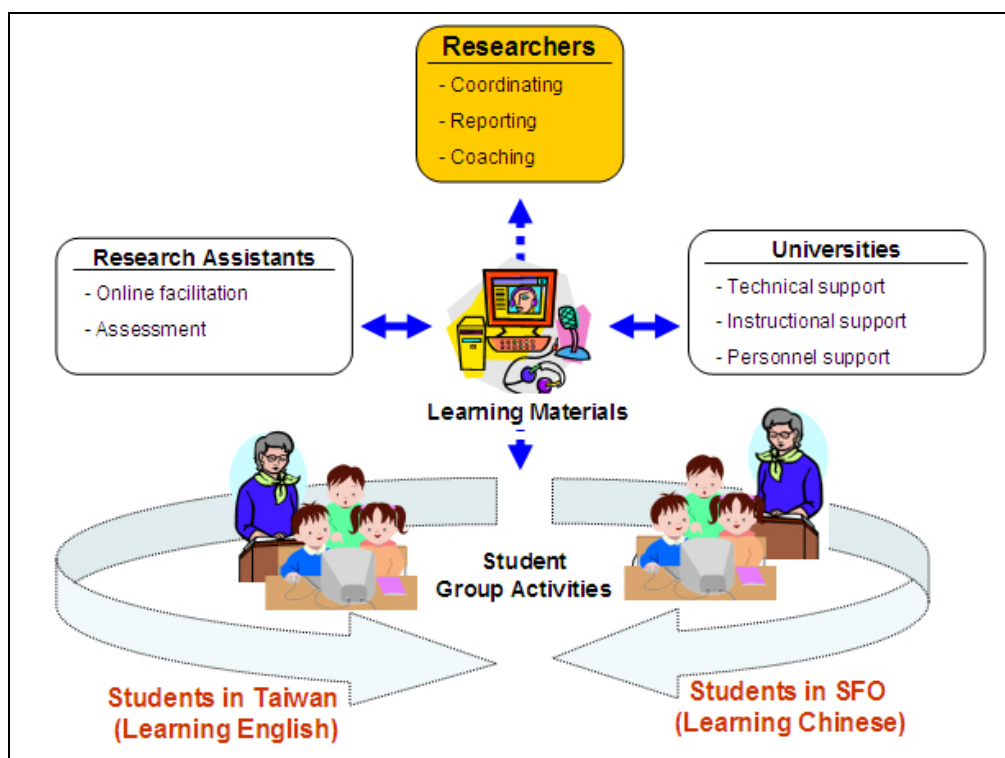


Figure 4. The collaborative model between high schools and the universities

To save teachers' time on coordination and to maintain a contact window of communication, we were responsible for all the coordination among teachers and students. Coordination includes (1) a kickoff meeting that, by launching the project, orients all the participating teachers and (2) the presence of two main facilitators, which will have a trouble-shooting function relative to incidental problems in Taiwan and in the United States. The teacher in the United States had sufficient knowledge and skills to solve such technical problems; however, owing to the distance barrier, we were not able to provide immediate technical support to the teacher in Taipei. Therefore, for the second-year project, we considered a high school in a university neighborhood and provided better technical and instructional support.

In terms of personnel support, we provided step-by-step training materials to teachers, who then integrated these materials into the student-centered instruction. Four research assistants majoring in English education and educational technology served as online facilitators and were required to provide timely feedback and grades on project assignments two days after the submission dates. These four research assistants considered online teaching and grading to be a practicum in their master's programs; therefore, this project established a mutually beneficial foundation for both the research assistants and the high school students.

7.3. A Better Technology-integrated Curriculum

Challenge:

The way teachers integrate LILON materials into their curriculum made a difference relative to not only teachers' and students' perceptions of the project but also students' learning outcomes. One teacher commented that she did not have time to do all the regular schoolwork and then the extra work for the project. In addition, because of the pressures of routine class tests and mid-term exams, she found that class time was very limited, and so there was not enough time during the school day for her students to work on the project assignments. She even had her students come to school before class started so that they could work on the project. On the after-project feedback form, some students complained about the workload of these projects because the related assignments counted for a relatively low percentage of the semester grades. Because students were working in pairs, if one student did not respond to the collaborative assignment on a regular basis, the communication would suffer a breakdown, which would in turn discourage the diligent learning partner from continuing on with the projects.

Solution:

In the second-year project, we attempted to design technology-integrated curriculum that would (1) motivate students by providing them with mutually beneficial partnerships, (2)

match the assessment to the project assignments, and (3) strengthen educators' planning of flexible timeframes. Students were encouraged to use their native language to communicate with each other, and this use reduced the frustrations of language barriers. We also found that some students made helpful, kindly phrased suggestions regarding the writing style or the grammar found in the narrations by the students' partners. In this way, such partnerships became friendships.

We measured students' accomplishments in a manner that suits the kinds of learning activities that the students had completed with their learning partners. Students were given a project kit listing weekly schedules, and the students understood from the start the rubrics by which the teacher would use to measure their performance. The project scores accounted for approximately 5% of the students' final semester grade. We tried to keep activities small and simple by breaking down each learning unit into separate assignments and giving them a total of five to six weeks to complete; however, we also remained flexible on schedule.

7.3. Grouping Strategy, Online Interaction, and the Need for Internet Netiquette

Training

Data-driven Results

By analyzing quantitative and qualitative data, we found that group members of the same sex

(e.g., girls with girls, and boys with boys) had better and more frequent online interaction than those of the opposite sex. According to literature, in traditional classrooms in both Taiwan and the United States, female students tend to be shy and not to express themselves in class (Honigsfeld & Dunn, 2003; Maccoby, 1990). However, in the context of this intercultural collaborative learning via computer-mediated communication, female students outperformed their male peers. We found that male students did not dominate the discussions whereas females seemed to be able to take advantage of small-group discussion settings within the elasticity of virtual time because everyone had an equal and uninterrupted opportunity to respond.

In looking at issues of communication styles, we found some other interesting results. First, male students usually posted shorter messages and used more demanding tones than their female students. Compared to male students, females showed better interpersonal skills and added a tag (such as “I appreciate it if you can help with this, thank you”) at the end of their sentences to soften their tone. Second, female students’ interactions were more often personal and related to a sharing of feelings, whereas male students’ messages were more often impersonal and task-oriented. In general, female students were more polite, adding a frequent “thank you” and “please” to their responses. Our findings support previous literature that concern students’ interpersonal behavior in face-to-face classrooms (Eagly, 1987; Bender,

2003). Bender (2003), who found that females and males interacted in different ways in online classes, concluded that the communication patterns typical of the traditional classroom (including men's tendency to engage in more argumentative conversation and women's tendency to engage in more open-ended conversation) carry over onto web-based learning environments.

Solutions:

Specifically, computer-mediated communication can be of substantial use to female learners who enjoy text-based interaction as their primary learning approach. We suggest that the related curriculum design needs to accommodate gender differences and, in this sense, should encourage female learners' collaborative tasks and also the independent work of male learners (Bender, 2003). Internet Netiquette training should be provided before students' collaborating with their partners.

8. Conclusions

Regardless of the challenges, the *Learning of Intercultural Language over the Net* project was judged to be very successful by the participating researchers, teachers, and students. First, we designed and developed a feasible cross-cultural learning curriculum that incorporated foreign-language learning, intercultural competence development, and computer-supported

collaborative learning. In addition, we also created evaluation tools and guidelines that systematically assessed students' artifacts. Second, in order to measure and study both the learning results and learners' performance in the LILON project, we modified and validated an instrument in such a way to assess intercultural communicative competence (ICC) of high school students in Taiwan and the United States. Third, we proposed a collaborative model and made necessary accommodations, based on the consensus of the university researchers, high school teachers, and their students, to ensure the mutual benefit of all participants involved and the operability of the LILON project as well.

In sum, the successful integration of technology into the foreign-language curriculum served as a valuable channel to the accomplishment of intercultural education and foreign language learning at high schools, as well as the professional development of the university students.

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References

- Brown, H.D. (1993). *Principles of Language Learning and Teaching (3rd ed.)*. Englewood Cliffs, NJ: Prentice-Hall.
- Bender, T. (2003). *Discussion-based online teaching to enhance student learning: Theory, practice, and assessment*. Sterling, VA: Stylus Publishing, LLC.
- Bennett, C.I. (1999). *Comprehensive multicultural education: Theory and practice (4th ed.)*. Boston: Allyn & Bacon.
- Byram, M. (1988). Foreign language education and cultural studies. *Language, Culture and Curriculum*, 1(1), 15-31.
- Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Clevedon, Philadelphia: Multilingual Matters Ltd.
- Collombet-Sankey, N. (1997). Surfing the net to acquire communicative competence and cultural knowledge. R. Debski, J. Gassin & M. Smith (eds), *Language Learning through Social Computing* (pp. 141-158). Canberra, ALAA.
- Eagly, A.H. (1987). *Sex difference in social behavior: A social role interpretation*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Fantini, A. (2000). A central concern: Developing intercultural competence. In *About Our Institution, SIT Occasional Papers Series, Inaugural Issue* (pp. 25-33). Brattleboro, VT: World Learning.

- Graf, A. (2004). Assessing intercultural training designs. *Journal of European Industrial Training*, 28 (2-4), pp.199-214.
- Heath, S.B. (1986). *Beyond Language: Social and Cultural Factors in Schooling Language Minority Students*. Sacramento, CA: California State Department of Education.
- Honigsfeld, A., & Dunn, R. (2003). High school male and female learning-style similarities and differences in diverse nations. *Journal of Educational Research*, 96(4), 1-12.
- International Society for Technology in Education (2002). *National Educational Technology Standards for Teachers: Preparing Teachers to Use Technology*. Eugene, OR: ISTE.
- Jonassen, D.H., Howland, J., Moore, J., & Marra, R.M. (2003). *Learning to solve problems with technology: A constructive perspective*, 2nd Ed., Columbus, OH: Merrill/Prentice-Hall.
- Koester, J., Wiseman, R.L., & Sanders, J.A. (1993). Multiple perspectives of intercultural communication competence. In J. Koester, R.L. Wiseman, & J.A. Sanders (Eds.), *Intercultural communicative competence* (pp.3-15). Newbury Park, California: Sage Publications.
- Kramsch, C. (1993). *Context and Culture in Language Education*. Oxford: Oxford University Press.
- Kramsch, C. (2003). *Language and Culture*. Oxford: Oxford University Press.
- Liddicoat, A. J., Papademetre, L., Scarino, A. and Kohler, M. (2003). Australian Government Department of Education, Science and Training: *Report on Intercultural Language Learning*. The Research Centre for Languages and Cultures Education at the University of South Australia and the School of Languages and Linguistics at Griffith University
- Li, S., & Li, F. (2004). Intercultural communicative language teaching: Rethinking the communicative approach to ELT in China. *EA Journal*, 22(1), 20-42.
- Lu, W., (2004). *Building cross cultural partnerships through the Internet: What works and what doesn't*. Paper to be presented at World conference on Educational Multimedia, Hypermedia & Telecommunications, Lugano, Switzerland.
- Maccoby, E. (1990). Gender and relationships: A development account. *American*

Psychologist, 45(4), 513-520.

MacFadyen, L. P. (2003). *Intercultural and international education via the internet: Success stories from Canada*. Paper presented at the UNESCO 2003 conference on Cultural Education, June 2003, Jyvaskyla, Finland.

Marra, R.M. (2002). The ideal online learning environment for supporting epistemic development: putting the puzzle together. *The Quarterly Review of Distance Education*, 3(1), 15-31.

O'Dowd, R. (2003). Understanding the "other side": Intercultural learning in a Spanish-English e-mail exchange. *Language Learning & Technology*, 7(2), 118-144.

Szente, J. (2003). Teleconferencing across borders: Promoting literacy—and more—in the elementary grades. *Children Education*. 299-306.

Peterson, M. (1997). Language teaching and networking. *System*, 25(1), 29-37.

Piburn, M.D., & Middleton, J.A. (1998). Patterns of faculty and student conversation in listserv and traditional journals in a program for preservice mathematics and science teachers. *Journal of Research on Computing in Education*, 31(2), 62-77.

Richey, R., Nelson, W. (2004). Developmental research. In D. Jonassen (Ed.), *The Handbook of Research for Educational Communications and Technology* (pp. 1213-1245). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Savignon, S.J. & Wang, C. (2003). Communicative language teaching in EFL contexts: Learner attitudes and perceptions. *International Review of Applied Linguistics in Language Teaching*, 41, 223-249.

Sifakis, N. (2004). Teaching EIL – Teaching International or Intercultural English? What teachers should know? *System*, 32, 237-250.

Varis, V., Kristi, L., Ljuan Marko, G., & Esko, M. (2003). *Loading the challenges of intercultural learning through the internet*. Paper presented at the UNESCO 2003 conference on Cultural Education, June 2003, Jyvaskyla, Finland.

Wilson, A.H. (1993). Conversation partners: helping students gain a global perspective through cross-cultural experiences. *Theory into Practice*, 32 (1), 21-26.