The Impact of Computer-Mediated Intercultural Communication on Learner's Cultural Awareness and Sensitivity: A Case Study

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Abstract.

This study examined the changes in the level of intercultural competence of high school students that had participated in a transnational project where technology was utilized to exchange information, ideas, and create a final web-based product. Participants of the study included 162 tenth grade students from three different high schools located in the U.S. and Taiwan. Data was collected from pre and post self assessment surveys and in-depth interviews with selected participants were conducted. Results show that American students as well as students with prior travel abroad experience had higher levels of intercultural competence compared to Taiwanese students and students with no travel experience. It was discovered that prevalent language barriers had prohibited the communication and collaboration between the participating students.

Introduction

Upon entering into the 21st century, it is becoming more evident of how increasingly interdependent and interconnected we are. As the children of today are the decision makers of tomorrow, it is imperative that they not only possess the knowledge and attitudes for becoming responsible, well-informed citizens of the society but are also equipped with the skills and capabilities to be able to work or perform in a variety of diverse settings that would call for interaction with people from different cultures. In other words, our students need to acquire a global perspective (Ramler, 1991) as well as develop a level of intercultural competence in which they have "the ability to interpret intentional communications and customs in cultures different from one's own" (Bennett, 1999).

According to Hanvey (1979), there are five key dimensions to a global perspective; perspective consciousness, "state of the planet" awareness, knowledge of global dynamics, awareness of human choices, and cross-cultural awareness. To achieve the goal of cultivating a global perspective in our next generation, we should provide students with learning opportunities that will help enhance their awareness and understanding towards intercultural and international "human relations, critical thinking, social sensitivity, and civic responsibility" (Garcia, 1999; Le Roux, 2001). In addition, Hughes-Wiener (1988) proposed that internationalizing the curriculum by incorporating cultural understanding, intercultural sensitivity, and attention to cultural change across the disciplines will help students develop a greater understanding in breadth and depth of the subject being learned.

With the advent of information communication technology (ICT), especially the Internet, valuable tools and resources that can "bridge gaps in international communication and help erase cultural and social boundaries between countries" (Lu, 2003; Szente, 2003) are made available. These rapid advancements in ICT have created many opportunities for teachers and students to be able to acquire immediate access to the world. Moreover, curriculums can be enriched as learning is contextualized through the cultural and linguistic diversity of transnational communities that are built through the Internet. Hence, we have seen a growing number of classrooms joining online learning networks and communities where teachers and students from around the world are able to get together to work on collaborative projects or carry out cross-cultural email exchanges. However, not all outcomes or results from joining online learning networks or email exchange projects meet the expectations of the participants (Lu, 2004). Nevertheless, despite the recent trend and increasing interest in utilizing technology to promote cross-cultural learning and collaboration, few studies have explored the impact of these learning experiences on the participants in terms of their cultural awareness, attitudes and sensitivity. Therefore, this study is an attempt to examine the impact of computer-mediated intercultural communication on learners' cultural competence that includes cultural awareness, understanding, acceptance and appreciation of

diversity (Ward & Ward, 2003).

The Intercultural Communication Over the Net (ICON) Project

This Intercultural Communication Over the Net (ICON) project is a transnational collaborative project between one high school in the U.S. and two high schools in Taiwan that was facilitated in the beginning of the year 2004 by the College of Education at the University of Missouri - Columbia, USA and the Graduate Institute of Education in National Chiao Tung University, Taiwan.

Like other transnational or international network projects via telecommunications technology, such as emailing or video conferencing, the ICON project provided the opportunity for participating teachers and students to build local-to-global, cross-cultural learning through the interaction and collaboration with people from other nations or cultures. Therefore, the ICON project researchers conducted an exploratory study examining the impact of learning with people from a different culture on the learner's level of intercultural competence.

Method

Sample

The sample consists of students (n=162) from three different senior high schools in the US and Taiwan. The teacher from the high school in St. Louis, Missouri USA, was interested in partaking in a cross-cultural exchange project and therefore agreed to have her students in all four of the classes that she was currently teaching, totaling 64 students, participate in the ICON project. Also, a teacher from Taiwan had her students from three different classes in two different high schools in Taipei, Taiwan, totaling 98 students join the ICON project as well.

Materials

The ICON project researchers were responsible for creating the collaborative activities for the participating classes. Many factors were considered in the design and development of the interdisciplinary instructional materials and instructional tasks. First of all, in order to prevent the ICON project from becoming an "add on" to their already packed curriculum, the expectations of the teachers and the overall curriculum goals had to be taken into account so that participation in the project will be seen as something that can actually enhance the students' learning experience. Therefore, in the initial stage of the project, the researchers had discussed with the participating teachers what their expectations of the ICON project were and how they thought it would fit into their curriculum. Information gathered from the discussions helped the researchers determine the content and format of the instructional activities.

Secondly, it was essential that the instructional activities focused on themes that introduced the students in a systematic way to different cultural traditions and norms as compared to their own so to foster intercultural insight, understanding and sensitivity. However, the context should also easily relate to real life experiences so that the students are encouraged to examine and reflect on their own perspectives, attitudes and cultural background. Therefore, the overall theme for the instructional activities was "Going abroad to study" and the sub-themes consisted of "Classroom culture" and "Scenic spots".

Finally, due to the physical distance between the participants, all communication and collaboration were to be done through the Internet utilizing online discussion boards, a computer mediated communication (CMC) tool. As the value of the project lies in the quality of the interaction and the exchange of information and ideas between the students, the researchers created structured discussion board topics and relevant questions to prompt the communication. Therefore, the instructional tasks included participation in structured discussions with an assigned partner; one discussion board for each of the two sub-themes, each one lasting for one week, and then in the third and final week, the paired groups create a web page reporting what they have learned from their discussions.

Instruments

In order to ensure data triangulation, a combination of quantitative and qualitative data collection approaches were employed, including: (a) pre and post surveys, (b) pre and post interviews with the teachers, (c) post interviews with selected students, and (d) student performance assessment through analysis of student artifacts. The surveys were the primary source of data as the follow-up interviews with participating students

provided support or clarification of preliminary findings.

The pre-/post survey instruments included the researcher-developed 36-items self-assessment survey, three open-ended questions and a background data sheet consisting of information, such as gender, cultural background, travel experience, and knowledge of other languages, were also collected from the survey. The 36 items were adapted from existing measures of multicultural personality and awareness and cross-cultural sensitivity, including measures developed by Cushner, McClelland & Safford (2002), D'Andrea, Daniels, & Heck (1991), Helfant (1952), Thurstone (1931) and Van der Zee & Van Oudenhoven (2000). The items selected were used to measure the intercultural knowledge and competence of the students. It also aimed to understand students' perception and attitudes towards other cultures, people from other cultures, and international relations.

Design and procedure

Implementation of the project started in early March of the year 2004 and was completed in early May of the same year. In this study the effects of the three-week intervention (i.e. instructional collaborative activities) were judged by the difference between the pre-survey and the post-survey results.

The intervention consisted of two aspects; the cultural scenario and the learning partner. The cultural scenario was based on learning about either American or Chinese culture. In addition to learning about a specific cultural scenario, the students were divided into two groups: the experimental group included intercultural pairs that consisted of one student from each culture (i.e. one American student and one Taiwanese student); the control group included intracultural pairs that consisted of students from the same culture (i.e. either all American students or all Taiwanese students).

Students were asked to complete required activities during the three-week implementation with their learning partner. The content of the final product was developed during the pair group collaboration and presented via web pages.

It was hypothesized that students who worked with a collaborative learning partner from another culture will develop a greater sense of cultural awareness and sensitivity than those working with a learning partner from the same culture. This is based on the belief that increased cultural knowledge and attitudes are associated with greater prior contact with or exposure to people from different cultures. Such results would demonstrate the significance and efficacy for participating in cross-cultural collaborative learning projects via the Internet.

Results

Of the 162 ICON project participants, 104 completed both the pre-survey and post survey. As stated earlier, the main purpose of this study was to examine the impact on the level of intercultural competence of students that had participated in a collaborative activity with a learning partner either from the same culture or from a different culture. In Table 1 a crosstabulation of the change between the pre and post survey results of the American and Taiwanese students that were either studying about their own culture or a different culture with a culturally same or culturally different learning partner is shown. The difference between the pre and post survey results was categorized into three levels; negative impact (pre survey results > post survey results), no impact (pre-survey results = post survey results), and positive impact (pre survey results < post survey results).

From Table 1 it shows that more than half (60.5%) of the American students self-assessed that the collaborative project had an overall positive impact on their level of intercultural competence. However, on the other hand, only a little over a third (39%) of the Taiwanese students thought the project had an overall positive impact.

Table 1: *Crosstabulation of Pre-Post Difference * Learning Partner and Cultural Scenario * Cultural Background*

Cultural Background	Learning Partner and Cultural Scenario			Total
	Someone from different culture, studying one's own culture	Someone from different culture, studying a different culture	Someone from same culture, studying a different culture	

America	Pre-Post	Negative	Count	2	2	3	7
n	Difference	impact	% of Total	5.3%	5.3%	7.9%	18.4%
		No impact	Count	3	1	4	8
			% of Total	7.9%	2.6%	10.5%	21.1%
		Positive impact	Count	3	6	14	23
			% of Total	7.9%	15.8%	36.8%	60.5%
	Total		Count	8	9	21	38
			% of Total	21.1%	23.7%	55.3%	100.0%
Chinese	Pre-Post	Negative	Count	9	8	13	30
	Difference	impact	% of Total	13.6%	12.1%	19.7%	45.5%
		No impact	Count	1	3	6	10
			% of Total	1.5%	4.5%	9.1%	15.2%
		Positive impact	Count	4	5	17	26
			% of Total	6.1%	7.6%	25.8%	39.4%
	Total		Count	14	16	36	66
			% of Total	21.2%	24.2%	54.5%	100.0%

An independent samples T- test was then performed to check if there was a significant difference between the American and Taiwanese student in terms of the impact on their level of intercultural competence after participation in the project. Results indicate that the impact of participating in the ICON project had a significant positive difference on the level of intercultural competence of the American students ($M = 1.61$, $SD = 3.04$) than the Taiwanese students ($M = -.21$, $SD = 3.05$), $t(102) = 2.93$, $p < .05$.

Therefore, the researchers continued to examine whether student's prior personal experiences such as the amount of travel abroad experience had any influence or impact on their level of intercultural competence before and after participation in the project.

In Table 2 it shows the pre-survey results of American and Taiwanese students based on their amount of travel abroad experience. The researchers categorized the pre-survey results into three levels of intercultural competence; low (total survey score from 8-16), moderate (total survey score from 17-25), and high (total survey score from 26-32). Also, the amount of travel abroad experience was categorized into three levels as well; no travel experience (has never traveled before), some (have traveled 1-3 times), a lot (have traveled at least more than 3 times).

Results show that in the case of having no travel experience, neither American nor Taiwanese students had assessed themselves as having a high level of intercultural competence.

Table 2: *Crosstabulation of Pre-survey * Amount of Travel Experience * Cultural Background*

Cultural Background				Amount of Travel Experience			Total
				None	Some (traveled 1-3 times)	A lot (more than 3 times)	
American	Pre-survey	Low intercultural competence	Count	2	2	1	5
			% of Total	5.3%	5.3%	2.6%	13.2%
		Medium intercultural competence	Count	8	8	12	28
			% of Total	21.1%	21.1%	31.6%	73.7%
		High intercultural competence	Count	0	2	3	5
			% of Total	.0%	5.3%	7.9%	13.2%
	Total		Count	10	12	16	38
			% of Total	26.3%	31.6%	42.1%	100.0%
Chinese	Pre-survey	Low intercultural competence	Count	6	7	3	16
			% of Total	9.1%	10.6%	4.5%	24.2%

	Medium intercultural competence	Count	18	22	8	48
		% of Total	27.3%	33.3%	12.1%	72.7%
	High intercultural competence	Count	0.0%	1	1	2
		% of Total		1.5%	1.5%	3.0%
Total		Count	24	30	12	66
		% of Total	36.4%	45.5%	18.2%	100.0%

Subsequently, similar to Table 2, in Table 3 it shows the post-survey results. Comparing the two Tables 2 and 3, we can see that after participation in the ICON project, none of the American students assessed themselves as having a low level of intercultural competence regardless of their amount of travel abroad experience. In addition, the number of American students with "high intercultural competence" increased from 5 to 8 students.

On the contrary, even though the total numbers in each categorical level of intercultural competence for the Taiwanese students did not change between the pre and post survey, the numbers in each of the cells however did change. In the "No travel experience" column, not only did the number of low level intercultural competence increased from 6 to 10 Taiwanese students but the number of moderate level intercultural competence also decreased from 18 to 14 Taiwanese students after participation in the project. Then again, for Taiwanese students with either some or a lot of travel abroad experience, the numbers in the low intercultural competence decreased while the numbers in the moderate intercultural competence had increased.

Table 3: *Crosstabulation of Post-survey * Amount of Travel Experience * Cultural Background*

Cultural Background				Amount of Travel Experience			Total
				None	Some (traveled 1-3 times)	A lot (more than 3 times)	
American	Post-survey	Medium intercultural competence	Count	7	10	13	30
			% of Total	18.4%	26.3%	34.2%	78.9%
		High intercultural competence	Count	3	2	3	8
			% of Total	7.9%	5.3%	7.9%	21.1%
	Total		Count	10	12	16	38
			% of Total	26.3%	31.6%	42.1%	100.0%
Chinese	Post-survey	Low intercultural competence	Count	10	5	1	1
			% of Total	15.2%	7.6%	1.5%	24.2%
		Medium intercultural competence	Count	14	24	10	48
			% of Total	21.2%	36.4%	15.2%	72.7%
		High intercultural competence	Count	0	1	1	2
			% of Total	.0%	1.5%	1.5%	3.0%
	Total		Count	24	30	12	66
			% of Total	36.4%	45.5%	18.2%	100.0%

Another independent samples T- test was performed to see if there was a significant difference between students with travel experience and students without travel experience in terms of the impact on their level of intercultural competence after participation in the project. Results show after participation in the ICON project, students with prior travel abroad experience ($M = 25.24$, $SD = 4.31$) significantly have a higher level of intercultural competence compared to students with no travel experience ($M = 23.59$, $SD = 3.73$), $t(102) = -2.02$, $p < .05$.

Following the data analysis of the pre and post survey results, the researchers proceeded with reviewing student artifacts and conducted in-depth interviews with 9 American and 6 Taiwanese students. Information acquired from the interviews provided valuable insight into the project's learning experience and the students' perspectives in terms of expectations, limitations, and accomplishments.

Discussion

The present study yielded two major findings. First, prevalent language barriers and limitations seriously inhibited the communication and collaboration between American and Taiwanese students. English

was the primary language used in the project, even though there were Chinese versions of the pre and post surveys as well as instructional materials, however all discussion board communication and development of the final product had to be in English. Therefore, being English as a Foreign Language (EFL) learner, the Taiwanese students felt deeply challenged and frustrated because they were limited by their lack of English proficiency. One Taiwanese student commented in her interview that she spent more time looking up new vocabulary in the dictionary than working on the collaborative activity. On the other hand, some American students did not realize that language barriers were the main reason for their partners' lack of response, which had made them feel discouraged at the time. Referring back to Table 1, this might explain why there were such high numbers of positive impact from students that were assigned with a learning partner from the same culture because language barriers may not have been as a serious problem when it came to working with someone from the same culture.

Second, the experiences of exposure to different people and culture, such as traveling abroad, not only enhances a persons' level of intercultural competence, but it also increases their capability and motivation to learn and develop more than others with less exposure to diverse people and cultures. In other words, the more a person experiences culturally different people and things, the higher their level of intercultural competence is. Unfortunately, not all people have the opportunity to experience or become exposed to diversity due to their surrounding environment or current situation. However, rather than studying about a culture from reading books or watching television, the project researchers believe that learning with and from a person of that culture is the most effective and motivating way to learn as technology plays the crucial role of bridging the gaps in time and distance between people from different countries and cultures.

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