Distance Collaborative Learning between Korea and Japan

Makiko Kishi

Kansai University, Japan

Sunhee Bhang

Hanyang University, Korea

Eriko Sawamura

Kansai University, Japan

Young-Sun Song

Hanyang University, Korea

Kenichi Kubota

Kansai University, Japan

Sung Ho Kwon

Hanyang University, Korea

Accompanying the proliferation of Information and Communication Technology (ICT), most schools are now equipped with computers connected to the Internet. Although this trend has stimulated growing interest in collaborative learning between schools, few studies have been conducted in this area. This study analyzes learning outcomes of Distance Collaborative Learning (DCL) at two schools in Korea and Japan. In the study, students used ICT tools, such as videoconferencing, forums, and e-mail to link with other students in different countries. The DCL study yielded various positive outcomes, and at the same time, underlined the importance of identifying appropriate counterparts. In this paper, the authors will analyze learning outcomes which appear quite different from each other.

Keywords: Distance Collaborative Learning, learning outcomes, differences in competencies and background of learners, Korea, Information and Communication Technology, Computer-Mediated Communication

BACKGROUND

Accompanying the proliferation of Information and Communication Technology (ICT), most schools are now equipped with computers connected to the Internet, and students in elementary schools learn how to create web pages and digital video clips (Inagaki, 2004). According to the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in Japan, 99.8 percent of elementary schools had Internet access in 2006. In the same year, furthermore, MEXT announced a plan to ensure that each teacher will have one computer and that schools will be equipped with one computer for every 3.6 students in the future.

This trend has been accompanied by the increasing popularity of collaborative learning between schools, in which students use ICT tools such as video conferencing, discussion boards, and e-mail to

communicate with students in different schools.   This collaboration is not only among domestic schools but also with schools overseas. MEXT encourages schools to promote intercultural understanding as part of integrated studies to learn other cultures and countries and to acquire global and multiple perspectives (Kume & Hirai, 1998).

Some researches have already been conducted in Japan in this area, including "Analysis of transformation of internationally minded junior high school students through distance learning between Korea and Japan" (Morita, 2004), "The outcomes of intercultural education through videoconferencing" (Hirai, et al. 1998), and "Exchange learning between junior high schools abroad through videoconferencing" (Nishida et al., 2003).   MEXT officials have suggested that if students acquire intercultural understanding and perspectives, they will play more active roles in international society. Therefore, MEXT recommends incorporating DCL activities in elementary education.

In spite of MEXT encouragement, DCL activities have not been well organized according to Kimura (1999) and Yamagishi (1997).   They pointed out that many of DCL study are kind of a temporary events and do not promote intercultural understanding.   It is because DCL is not introduced as a continuous activity for semester long, but treated as an event.   Teachers themselves do not understand cross-cultural activities so that they cannot design DCL as a part of educational activities.   In most cases, themes, the objectives, the learning style and assessment are not matched.   In this study, we would like to clarify how these differences influence learning outcomes by analyzing data taken from Japanese and Korean schools.

THEORETICAL BACKGROUND

DLC has two salient features, collaborative learning and computer-mediated communication (CMC). The authors will explain the theoretical background as regards these two features.

Collaborative Learning

Collaborative learning provides an environment that enriches the learning process.   The importance of collaboration has been emphasized by Vygotsky (1978) and Thomas and Funaro (1990).

It has been reported that collaborative learning could stimulate intrinsic motivation of students (Malone & Lepper, 1987), constructs knowledge (Wenger, 1999), facilitates problem solving (Blaye, et al., 1990) and promotes active participation (Cordova & Lepper, 1996).   In addition, collaboration helps learners form closer relationships with each other and weakens stereotypes (Aronson et al., 1979).

Although collaborative learning has demonstrated various positive effects on learning, the learning outcome is influenced by the differing backgrounds of the learners involved.   Kuhn (1972) found that a small difference in cognitive level between collaborating peers was more conducive to cognitive growth than a larger difference.   This supports the view that it is important to have almost equal knowledge levels to succeed in collaborative learning.   The study by Azmitia (1988), however, found that when novices were paired with experts on a model building task they improved significantly while equal-ability pairs did not.   Azmitia's view is further supported by Rogoff (1990, 1991) and Kevin (2006), who found better results with adult-child than with child-child pairings.   Thus, a collaborative learning environment should also implement mechanisms for identifying appropriate peers.

The purpose of the research is two schools whose students have differing competencies.   The authors attempted to discern whether these different competencies would influence learning outcomes positively. It is important for us to understand how such differences influence learning outcomes using DLC.

Computer-Mediated Communication (CMC)

Collaborative learning at a distance requires CMC tools such as videoconferencing, discussion boards and e-mail.   The teacher should select the appropriate ICT tools according to the learning objectives.   For example, it has been reported that videoconferencing is often used for motivating learners or for boosting awareness of the counterparts' real-life presence. Synchronous communication can provide instant, real-time exchange of ideas and convey important communication cues such as body language, tone of voice,

accents, dialects, pacing, pauses, and other important cues to meaning. Therefore, the learner can communicate in a way that more closely resembles face-to-face interaction. On the other hand, asynchronous communication tools such as online forums provide the means for users to share ideas in a distributed environment, choosing when they will post messages to the board.

Discussion boards are among the easiest tools for users to set up and use, so there are many case studies which use discussion boards for collaborative learning. Jonassen (2007) summarized the benefits of online forums as follows:

(1) With text-based discussion boards, race, gender, age, and infirmities are irrelevant.
(2) Participants can secure ample time to consider an idea and formulate their responses.
(3) Learners can participate in it whenever and wherever they like.
(4) Asynchronous communication can be a vehicle for promoting international links and project work.
(5) Asynchronous discussion boards are effective with nonnative speakers, as it provides them with time to consider and articulate their ideas, tasks that are difficult for them to accomplish extemporaneously.

In addition, the text entered on online forums can be translated by translation systems such as Google Translation so that it is useful for international links and project work.

Thus, communication mediated by computer is very effective for DCL.   In this case study, the authors designed the collaborative learning using video conferencing and discussion boards for the following four reasons.

(1) Online forums can be used for communication without considering time differences.
(2) The text entered on online forums can be translated by a translation system so that the learners can communicate via their mother languages.
(3) Learners can take time to respond to others' questions and requests by using asynchronous communication.
(4) Videoconferencing imparts a sense of reality so that the learners can feel closer to their counterparts.

Communication mediated by computer can support collaborative learning to facilitate discussion.   Based on this framework, the authors designed the DCL.   The following explains the content of this case study.

RESEARCH OBJECTIVE AND METHODOLOGY

Objective

An objective of the research is to clarify how differences in competencies and backgrounds influence the learning outcomes.   When we design a learning environment for DCL, we need to identify how students can collaborate with each other.   Sawahashi (2004) and Konno (2006) found that differences in learners' competencies, pedagogy, learning style and prior knowledge can act as a hindrance to effective DCL because the objective and activity are not equally suitable for both sides.   Some learning outcomes are suitable for one school, while the same outcomes are sometimes too difficult for the other school. Setting up the same learning objectives may be hindrance to the other school.   More detailed research may be required for deep understanding of DCL.   Therefore, we decided to focus on differences in the learners' competencies and background, and learning outcomes.

Subject

The subject is ten students (grades 5 and 6) in K elementary school, Osaka, Japan and ten students (grade 6) in G elementary school, Seoul, Korea.   The reason why the authors conducted this research between Korea and Japan is for the two reasons.   One reason is that Korean and Japanese cultures are similar so students can easily understand each other.   Many elements of Japanese culture historically came from Korea so Japanese students can feel an affinity with Korean culture.   Kuma et al. (2002) has said that if both sets of students have similar cultural practices, they can easily find common interests to suit their theme.   Second reason is that Software can be used for translation.   It is difficult for students in primary

education to use English as a medium of communication. Instead of using English, they can communicate by applying translation software (Kishi, 2006; Uenishi, 2002). The grammatical structure of the Korean language is more similar to Japanese than to English, so students can more accurately express and translate ideas and feelings with their mother tongues.

For two reasons, the authors, from Kansai University in Japan and Hanyang University in Korea, chose to conduct collaborative research on schools in Korea and Japan. The case study was implemented at K elementary school in Japan and G elementary school in Korea for three months, from September to December 2007.

Data collection

To analyze the differences in learning outcomes, the authors gathered two kinds of data, concept maps and questionnaires, both taken before and after the activities. In addition, the authors conducted interviews with the teachers and accumulated data from participatory observation to explain how the differences influenced the learning outcomes.

(A) Concept Maps

Concept Map is used to measure meaningful learning as shown in figure 3 and 4. Concept maps are sketches or diagrams that show the relationship among a set of terms by the positions of the terms and by labeled lines and arrows connecting some of the terms (Taricani and Clariana, 2006). The students were asked to write down any words associated with the central theme, in this case "Japan" for Korean students and "Korea" for Japanese students. Students at each school conducted brainstorming sessions, and they freely wrote down any words that came to mind. By comparing the concept maps produced before and after the DCL, the authors analyzed the quantity and quality of words the students wrote on their sheets (Hirai et al., 1998).

(B) Questionnaire

The authors produced 23 questions based on the questionnaire developed by Suzuki, et al., (2000) and Kishi (2005) to evaluate international understanding. The questionnaire asks four themes covering (1) self esteem, (2) intercultural understanding, (3) interest in the counterpart country and (4) awareness of the counterpart country. The questionnaire was implemented before and after DCL for comparison. Students answered each question based on a 1 to 5 rating, with 5 expressing the strongest agreement. The content of the questionnaire is in Table 1.

(C) Semi-structured interviews of teachers and participatory observation

To help explain how the differences influenced the learning outcomes, we conducted semi-structured interviews with the teachers at the Korean and Japanese schools and recorded data from participatory observation. The teachers were asked:

   (1) Their impressions of the students while they were involved in activities.
   (2) Did the students' different competencies influence their learning? If so, why?

   The participatory observation data was recorded each time the Japanese school conducted learning activities related to the DCL.

Table 1. *Questionnaire*

(1) Self-esteem	1	I want to introduce many things about my country to my friends.
	2	I know many things about my country.
	3	I think my country is a good country.
	4	I love my country.
	5	I love the traditions, culture and customs of my country.
	6	Japanese have specific ideas and values that are different from other nationalities.
(2)Intercultural understanding	7	Everyone in the world has the same ideas and values.
	8	It is necessary to have the same ideas and opinions as others.
	9	It is difficult for me to think about things from others' perspectives.
	10	I try to think about things from others' perspectives when I deal with a different culture and different values.
	11	Anyone who acts differently from us is strange (abnormal).
(3) Interest in the counterpart country	12	My country should learn from other countries.
	13	I want to go to stay in Korea (Japan) to learn more about Korean (Japanese) culture and customs.
	14	I want to study the Korean (Japanese) language.
	15	I want to know more about Korean (Japanese) culture and customs.
	16	I want to make friends with Koreans (Japanese).
	17	I love Korea (Japan).
(4) Awareness of the counterpart country	18	I think Korea is a very close friend of Japan.
	19	Korea (Japan) has specific customs, culture and traditions that differ from ours.
	20	Korea (Japan) is closely related to Japan (Korea).
	21	Korea (Japan) has a culture and customs that are similar to ours.
	22	I understand Korean (Japanese) people well.
Expressive skills	23	It is difficult for me to express what I am thinking and feeling to others.
Other	24	Do you want to keep communicating with your Korean (Japanese) friends?
(1) Self-esteem	1	I want to introduce many things about my country to my friends.
	2	I know many things about my country.
	3	I think my country is a good country.
	4	I love my country.
	5	I love the traditions, culture and customs of my country.
	6	Japanese have specific ideas and values that are different from other nationalities.
(2)Intercultural understanding	7	Everyone in the world has the same ideas and values.
	8	It is necessary to have the same ideas and opinions as others.
	9	It is difficult for me to think about things from others' perspectives.
	10	I try to think about things from others' perspectives when I deal with a different culture and different values.
	11	Anyone who acts differently from us is strange (abnormal).
(3) Interest in the counterpart country	12	My country should learn from other countries.
	13	I want to go to stay in Korea (Japan) to learn more about Korean (Japanese) culture and customs.
	14	I want to study the Korean (Japanese) language.
	15	I want to know more about Korean (Japanese) culture and customs.
	16	I want to make friends with Koreans (Japanese).
	17	I love Korea (Japan).
(4) Awareness of the counterpart country	18	I think Korea is a very close friend of Japan.
	19	Korea (Japan) has specific customs, culture and traditions that differ from ours.
	20	Korea (Japan) is closely related to Japan (Korea).
	21	Korea (Japan) has a culture and customs that are similar to ours.
	22	I understand Korean (Japanese) people well.
Expressive skills	23	It is difficult for me to express what I am thinking and feeling to others.
Other	24	Do you want to keep communicating with your Korean (Japanese) friends?

CASE OUTLINE

The DCL started in September 2006. Ten students (grades 5 and 6) in K elementary school, Osaka, Japan and ten students (grade 6) in G elementary school, Seoul, Korea participated in this activity. Hanyang University and Kansai University collaboratively organized and supported this activity.

Although the aim on both sides was greater international understanding, the schools' specific objectives and characteristics did not match. First, their environments were different, as shown in Table 2. Second, the teachers' intention was different. The Korean teacher preferred to hold debates so that the students could recognize the different values and ideas held by those in both countries, while the Japanese teacher preferred to provide students with international experience by using ICT. Third, their academic attributes were different. The students of G elementary school have a higher level of logical thinking and ICT skills than their Japanese counterparts because they practiced debate and discussion as club activities and were familiar with ICT tools, not only at their school but also at their house as shown in table 2. Although there are different intention of teachers, different academic attributes and skills of the students, the teachers agreed to have the DCL as shown in Figure 1.

The instructional process

Before starting the DCL, both teachers discussed by video conferencing how to design the DCL. Although Japanese teacher though debate activity was difficult for his students, he agreed to have debates activity under the condition the topics should be uncomplicated. And they got consensus that the objective of the DCL should be to nurture intercultural understanding and self-esteem. Discussion boards were used to inform ideas on both sides after the debate. The steps of the DCL were as follows, as detailed in Figure 1:

1) The teachers decided topics for debate in advance by video conferencing and e-mail. The first topic was "Is it acceptable for elementary students to wear accessories?"
2) At both schools, the students independently conducted a debate in a face-to-face setting. The students were required to give their own opinions and reasons for agreeing or disagreeing with the proposition that accessories are desirable.
3) The teachers drew conclusions from each class.
4) A summary of the proceedings of each debate was posted on discussion boards by the teachers.
5) Both teachers distributed the proceedings of the other school's debate at the next lesson. Both sets of students read the summary posted on discussion boards.
6) Both sets of students learned about the different outcomes from their respective debates, and they discussed why the outcomes differed. The teachers encouraged the students to consider why the other school's students realized different outcomes. The students discussed the outcomes again with their classmates. This exchange of debate results helped provide greater understanding of the other culture.
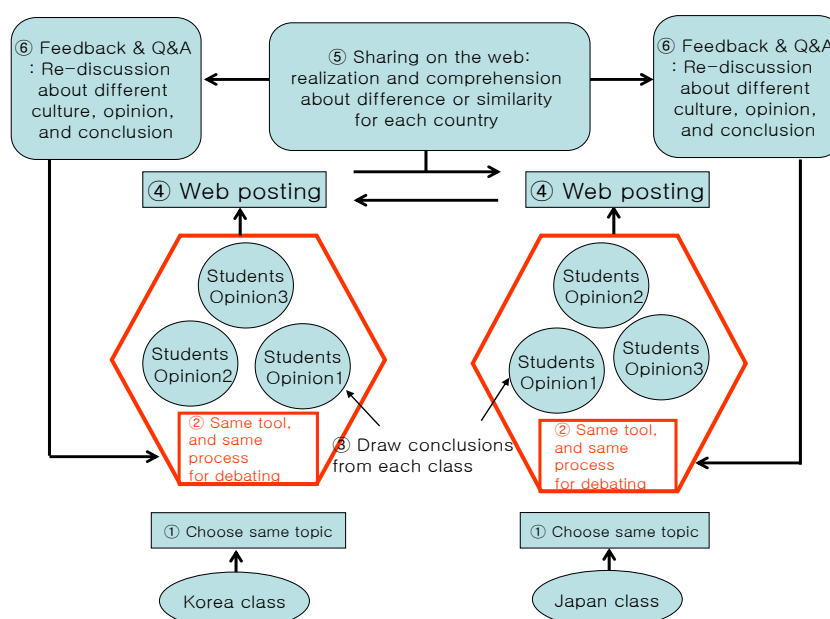7) The teachers asked the students to reflect on what they learned from the DCL experience.

Figure 1. *The Instructional Process and Some Associated Learning Activities*

Table 2. *Differences between Kita Elementary School and Gongyeon Elementary School*

Schools	K elementary school (Japan)	G elementary school (Korea)
Students	10 students in 5th grade and 6th grade	10 students in 6th grade
Activity time	Extracurricular activities were held once a week. The time devoted varied, depending on the school calendar.	Club meetings were held every Friday
English skills	Not very high. Students can speak and write basic words in English.	Very high. Students can write and verbalize their ideas in English.
ICT skills	The students have inadequate ICT skills, but they can use Microsoft Word with their teacher's support.	The students have adequate ICT skills. They can use basic applications such as Microsoft Word without assistance.
ICT environment	Few students can access the Internet at home.	Most students can access the Internet at home, at school, or at an Internet cafe.
Debate experience	Few students have debate experience.	The students participate in debate activities in class or club at least once a week.

Debate topics

Debates were conducted three times, with three different topics.   The teachers agreed on the following three themes:

(1) Is it acceptable for elementary school students to wear accessories?
(2) Do students need to attend private academies or cram schools to succeed in their studies? , and
(3) Should we offer seats to older persons when riding public transportation, such as subways and buses?

Communication tools

To exchange ideas between schools, teachers used discussion boards and videoconferencing.   Discussion boards were used to exchange the results of the debates, and videoconferencing was used to allow students to get to know each other and become friendly towards the end of the activity.

ANALYSIS AND DISCUSSION

After analyzing the data of the concept maps exercise and the questionnaire, the authors found that students in both schools improved self-esteem and intercultural understanding, as their teachers expected. The authors, however, recognized that learning outcomes were different in the Korean and Japanese schools.   The authors, therefore, analyzed this difference by comparing the data.

Analysis of Concept maps and Discussion

The concept maps were produced before and after the activity.   Nine Korean and six Japanese students wrote words in a concept maps format as shown in Table 3.   The students were asked to jot down words related to the central keyword, either "Korea" or "Japan."

First, the students jotted down their associations with the central keywords.   We call this first set of words "categories."   They then continued to write down their word associations for each category.   We labeled these simply as "words."

(1) Number of words and categories before DCL

The Korean students recorded more categories and words than Japanese before the DCL.   The average total number of words written by the Koreans was 25.56, while the average for the Japanese was 10.8. The average number of categories for Koreans was 6.6, while that of the Japanese was 2.63.   This comparison indicates that the Korean students knew more about Japan than Japanese students knew about Korea before the DCL.   The average number of words in each category written by Japanese, however, was more than those written by Koreans.   This is because Japanese students wrote many adjectives to modify their words.   For instance, one student wrote: "kimchi – delicious – red – spicy." On the other

hand, there were few adjectives in the concept maps created by Koreans.   This suggests that Koreans had more initial knowledge about Japan than Japanese had about Korea.   However, after the DCL, both students showed an increase in total words.   This supports the view that both groups gained knowledge from interaction with the other school.

In other words, the Japanese students first knew relatively little about Korea, although they recorded more words in each category.   They tended to write down associative adjectives rather than more substantive nouns.   On the other hand, Korean students jotted down nouns, not adjectives.   Because Korean students knew quite a lot about Japan, they could think of many types of substantive information to write.

(2) Quality of written words before DCL

The words written by Japanese students tended to consist of aspects familiar to them from daily life, such as kimchi, Korean-style barbecued beef, and the names of Korean actors or actresses.   On the other hand, the words written by Koreans covered a wide range of information, such as geography, history, animated movies, manga, historically famous persons, food, politics, and economics.   Most of the words written by the Japanese students came from the mass media, while the words written by the Korean students came not only from the mass media, but also from what they had learned at school.   This indicates that the Korean students already knew about Japan because they had studied about Japanese culture and history at school.   Table 3 shows the contents of the words written by Japanese and Korean students in the pre- and post-test concept maps.

(3) Comparison between pre-test and post-test

The pre-test and post-test data were compared in order to analyze how both sets of students have changed their image or increased their vocabulary concerning the other country.   The data indicate that DCL affected students' knowledge in terms of quantity.

However, there was also a notable qualitative difference in the results of the pre- and post-test concept maps exercises.   Figures 3 and 4 show fairly characteristic student concept maps.   Figure 3 is for a Korean student and Figure 4 is for a Japanese student.   Since Korean students had considerable knowledge about Japan they were able to write many words related to the country's geography and other objective facts.   However, for concept maps written after the DCL, the Korean students wrote down many adjectival phrases to express their subjective feelings or about local or personal aspects of Japan. One student wrote: "Japan - K elementary school - pure people - kind people." Another wrote: "Japan - close to us - we have many shared ideas - they are friendly to us."   In other words, the knowledge which Korean students have in their mind shifted from the "information" to "feelings."

Figure 4 shows a typical concept maps drawn by a Japanese student.   Comparing the concept maps created after DCL with those before it, the written words changed in quality. Japanese students increased their knowledge of Korea after exchanging information about general, cultural, historical, and political matters. For instance, the latter words referred to Japanese colonization of Korea during World War II, Takeshima, Taekwondo, chima-jeogori, bibimpa and so on.   Japanese students knew very little about Korea before the DCL so they increased their store of knowledge about Korea after the DCL. In the post-test concept maps they also wrote words to express their feelings, such as "Koreans are kind," "Koreans are friendly," "Koreans are similar to us," and "It is very enjoyable to talk with Korean friends."

Table 3. *Words Used in the Pre-test Concept Maps*

	Japan	Korea
Physical geography		Nature (Mt. Fuji), geography
Culture	Food (kimchi, barbecued beef, Korean noodles), drama (Bae Yong Joon, other famous actors), movies, massage, sports	Food (sashimi, soba, oden, etc.), clothes, animated movies, sports (soccer, sumo, etc.), traditional arts (kabuki, etc.)
Politics		Prime minister, international concerns (islands, Takeshima island conflict, Yasukuni Shrine), economy
History		Yasukuni shrine, colonization of Korea by Japan, historical persons (Toyotomi Hideyoshi, etc.)

Table 4. *Number of Words in Concept Maps*

Student	Before			After		
	Total number of words	Number of categories	Average number of words per category	Total number of words	Number of categories	Average number of words per category
Korea-1	33	7	3.71	20	5	3
Korea-2	47	6	6.83	58	4	13.5
Korea-3	22	6	2.67	28	6	3.67
Korea-4	19	6	2.17	22	4	4.5
Korea-5	12	12	0	15	14	0.07
Korea-6	30	5	5	38	4	8.5
Korea-7	23	5	3.6	28	7	3
Korea-8	17	5	2.4	22	9	1.44
Korea-9	27	7	2.86	21	8	1.63
Average	25.56	6.56	3.25	28	6.78	3.13
Japan-1	14	3	3.67	16	5	2.2
Japan-2	9	2	3.5	18	5	2.6
Japan-3	14	2	6	23	5	3.6
Japan-4	17	6	1.83	15	4	2.75
Japan-5	11	4	1.75	11	4	1.75
Japan-6	8	1	7	5	2	1.5
Japan-7	4	1	3	Unknown	Unknown	Unknown
Japan-8	9	2	3.5	Unknown	Unknown	Unknown
Average	10.75	2.63	3.78	14.67	4.17	2.4

Concept maps before DCL (Korea) | Concept maps after DCL (Korea)
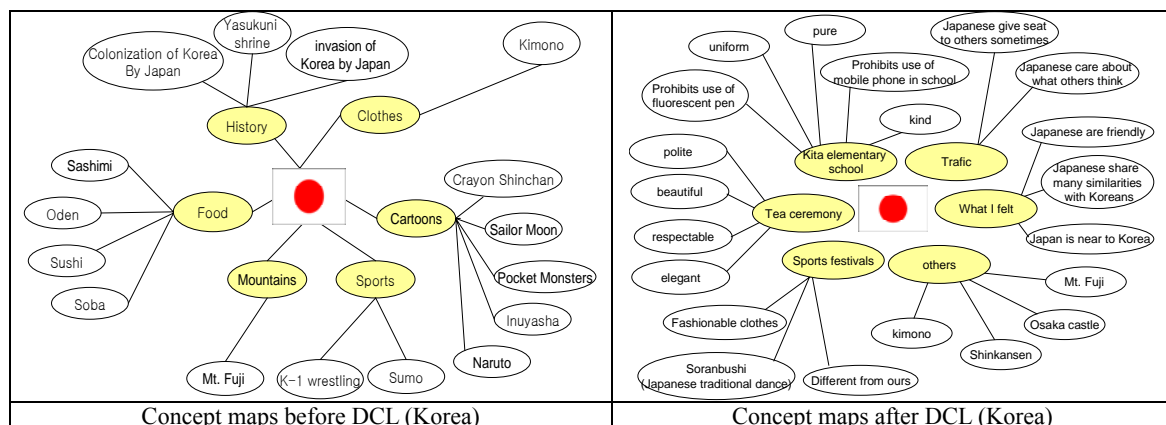
Figure 3. *Concept Maps before and after DCL*
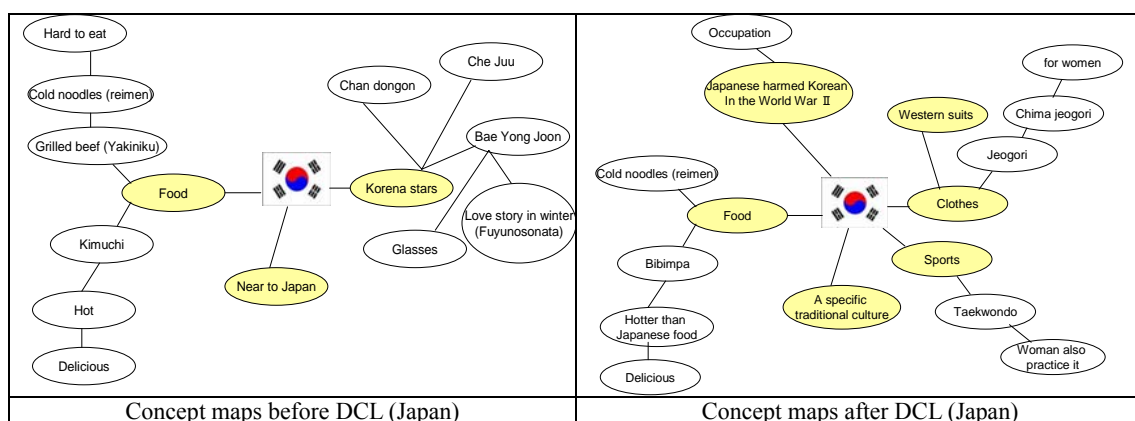

Concept maps before DCL (Japan) | Concept maps after DCL (Japan)

Results and discussions

Pre- and post-test student questionnaire data was analyzed according to four measures: (1) self-esteem, (2) intercultural understanding, (3) interest in counterpart country, and (4) awareness of counterpart country, as shown in Table 1.

(1) Self-esteem (Questions 1 to 6)

Question 1 to 6 related to students' self-esteem.   The mean responses to Questions 2 and 5 were higher post-test in both Korea and Japan, while the mean for Question 3 decreased in the post-test.

The higher responses for Questions 2 and 5 indicate that both sets of students felt greater pride in their own culture and traditions.   As part of the DCL, the students researched about their own countries in order to explain about them to their counterparts, thus becoming more knowledgeable about their own countries.   In Question 3, however, both students evinced lower responses to positive statements about their own countries.   This is mainly because Japanese students learned more about the historical relations between Japan and Korea, including colonization and territorial issues.   They felt ashamed of their previous ignorance and felt sorry about Japanese behavior in the past.

Questions 4 and 6 showed diverging results for Koreans and Japanese.   For Question 4, the Japanese students answered they did not like Japan, but Korean students wrote that they liked their country.   This result may be explained in two ways.   First, the students' national characters may have affected their responses; while Japanese seek to appear modest, Koreans are more proud. Second, embarrassment concerning historical and political events might have affected the results.   Question 6 indicates that Japanese students found more similarities with Koreans, while Korean students identified more differences with Japanese.   Japanese students paid attention to physical similarities with Korea, while Korean students paid attention to underlying differences such as Japanese values and belief system.

(2) Intercultural understanding   (Questions 7 to 11)

Questions from 7 to 11 were about intercultural understanding.   Both Korean and Japanese mean responses were higher for Question 9 but decreased for Questions 8 and 11.   Questions 7 and 10 showed diverging results.

Question 9 had low responses for both sets of students, meaning that they first considered it difficult to look at issues from different perspectives.   However, after the DCL, the mean response rose, indicating that the students had learned to think about issues from different viewpoints through debate activities.

Questions 8 and 11 asked whether people in different countries have difference perspectives.   In debate activities, students are required to understand different viewpoints logically in order to consider various perspectives.   However, as Question 7 shows, Japanese students tend to assume that all the world's people have similar ideas.   This explains why Japanese students found only similarities with Koreans through the DCL activities, although Koreans found differences.

Question 10 asked about attitudes to other people. Korean students came to consider others' viewpoints more than they did before the DCL, unlike Japanese students.   Overall, though, Korean students were less considerate than Japanese of other viewpoints. Japanese had high awareness of other viewpoints, although the mean response decreased by a few points after the DCL.

(3) Interest in counterpart countries (Questions 12 to 17)

Question 12 to 17 asked about interest in counterpart countries.   Both Koreans and Japanese increased their mean responses to Question 14, but other questions showed opposite results.

Question 14 indicates that both sets of students became more interested in the language of the other country.   In carrying out the DCL, students made use of their own mother tongues to write messages to

counterparts on discussion boards.   Students became interested in the other language because they saw foreign words on discussion boards.

Question 13 and 17 did not show much difference between pre-test and post-test, which means that the DCL did not affect the results.   In other words, both students showed high initial interest in experiencing a different culture and in visiting the counterparts' country.

Question 15, however, showed a wide range of difference between Koreans and Japanese.   The DCL did not affect the results, but the degree of interest in the counterparts' culture, traditions and daily life is very low for Korean students but very high for Japanese students. One reason for this is the different student objectives for participating in the activity.   At K elementary school, the teacher gathered students who were interested in communicating with Koreans, so the objective of the students was to communicate and experience a different culture through DCL.   That is related to Question 16. In Question 16, Japanese students recorded high scores when asked if they wanted to make friends with Koreans.   On the other hand, the objective of the Korean students was to discuss about basic values in different cultures and countries.   This divergence in objectives affected the results of Questions 15 and 16.

Question 12 indicates that Japanese students recognized that they had many things to learn from Korea, although Korean students did not feel similarly. Japanese students noted respect for Koreans as they were impressed by the Koreans' clear and logical opinions and their discussions during the debate activities.

(4) Awareness of counterpart countries (Questions 18 to 23)

Questions 18 to 22 concerned recognition about counterparts, in short, how the students reconsidered their views about the counterparts' country.   Questions 18 to 21 showed an increased score for both Koreans and Japanese, and only Question 22 showed opposing results between the two sets of students.

Question 18 indicates that both sets of students feel friendly towards each other.   This is felt to be the effect of the videoconferencing implemented at the last stage.   Especially for Japanese students, the impact of videoconferencing was strong, as the data shows. Students' recognition that both countries share similar cultural traits and customs also caused students to feel closer to each other (Questions 18 and 21).

Question 19 indicates that both sets of students could identify characteristic cultural aspects and customs of their counterpart countries because they learned from each other aspects of daily life and local areas where the students live, including aspects that are similar or different from their own.

Question 20 indicates that both sets of students gained more awareness of Japanese and Korean relations. The students studied the relationship from historical, political, and cultural perspectives, learning about such topics as Japanese occupation and similarities in the culture.
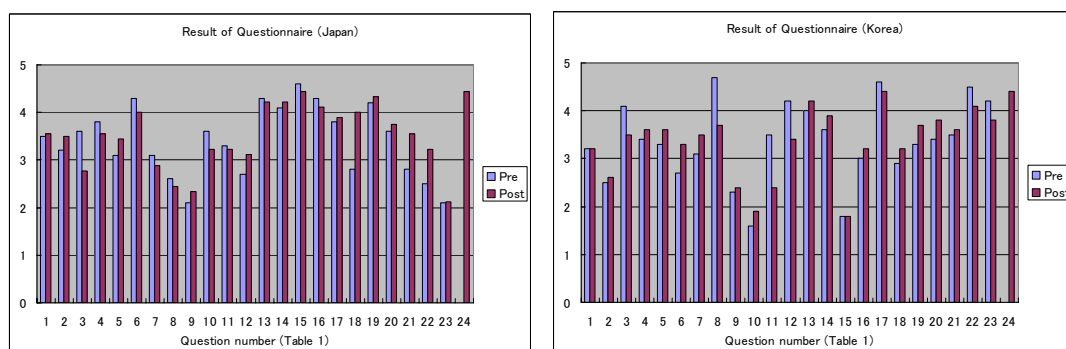

Figure 5. *The Results of the Questionnaire. The Horizontal Bars Show the Mean Result for Each Question, with the Survey on the Left before the DCL and the Survey on the Right after the DCL.*

CONCLUSION

The authors summarize the research with the following four points:

Both sets of students showed increased knowledge in terms of quantity

According to analysis of the concept maps, both sets of students became more knowledgeable about the counterpart country. This knowledge was enhanced by debate activity, communication on discussion boards and videoconferencing. Students especially increased their knowledge through discussion board communication and videoconferencing, suggesting that videoconferencing and discussion board communication contributed more than the debate activity to increasing knowledge.

The quality of knowledge gained through the DCL diverged between Koreans and Japanese

The knowledge that Korean students gained through the DCL was local and area specific, while the knowledge Japanese students gained was more general. Korean students already knew a great deal about Japan before the DLC so they focused on local and personal aspects revealed by the Japanese students. On the other hand, what the Japanese students learned from the Korean students was all new to them, so they increased their general knowledge about Korea.

Because Japanese students focused more on overt traditional and cultural practices, they tended to see more similarities, while Korean students paid more attention to differences because they were more interested in Japanese values and belief systems.

Factors which affected the outcomes

a. Different competencies and knowledge base decreases learning motivation for students

The differing competencies between students made the activity more difficult to carry out than the teachers had expected beforehand. According to interviews with the teachers, Japanese students lost interest in activities because they expected to communicate with Korean students through videoconferencing as their seniors had done the previous year. Moreover, they did not have enough training in debate techniques so they felt it was difficult to maintain their motivation for learning. On the other hand, Koreans felt it was too easy to study with the Japanese and they were dissatisfied with the activities because they already possessed ample debating experience because they belong to a debate club. It is important to consider the students' competencies and knowledge base when designing DCL.

b. Expectation from both sides were not met so the students were not satisfied

Both sets of students had different expectations about what they would like to do in the DCL. The Korean students expected to learn more about values and different ways of thinking, while the Japanese students expected to communicate freely and learn different cultural matters. The different expectations of both sides resulted in unsatisfactory results.

Media use can enhance student learning in some respects

A. BBS usage

During the DCL, the authors found that the discussion boards was not being utilized sufficiently to exchange information between students. After the debate activity, the students were supposed to write comments on the discussion boards. However, nobody wrote comments about the debates; instead, they just input daily conversation on the discussion boards. The authors identified three reasons why the discussion boards were not well used. The first reason is that the Japanese teacher was not accustomed to checking the discussion boards on a daily basis, so the Japanese teacher often neglected to access the

discussion boards unless he was urged by the support staff.   The staff needed to remind him to check the discussion boards whenever the Korean teacher or students input new messages.   The second reason is that the Koreans replied more frequently than the Japanese.   In Korea, students accessed the Internet not only at school but also at home, while the Japanese could not access the discussion boards because most of the students did not have computers connected to the Internet at home.   As a result, the discussion boards were not activated as much as the teachers expected at the beginning.   In other words, the Japanese did not have occasion to respond to the Koreans except at school.   The third reason is that Japanese students are not accustomed to using computers.   Therefore, the Japanese teacher distributed the comments on the discussion boards in print format.   The Japanese teacher said in the interview that the reason he distributed the data on paper was that he tried to avoid making students use computers because they lack computer skills.   The teacher at the G elementary school said that all students at the school have computers connected to the Internet in their homes and they usually use the Internet in daily life.   Therefore the Korean students replied to the messages from the Japanese students promptly and without any difficulties.   It is important to insure equal accessibility for students to the Internet and consider the students' social situation.

B. Videoconferencing and chat room system

At the end of the DCL, the teachers set up videoconferencing between the students of both schools using videoconferencing and chat rooms.   The chat room software has a translation system, which allowed the students to communicate in their mother tongues.   This greatly motivated the students; when they experienced difficulties in video conferencing, they switched to a chat room to use their native language. Both sets of students seemed excited about communicating with each other by introducing aspects of their cultures such as clothing, dance, and performance arts.

THE CHALLENGES

Detailed communication between teachers

DCL activities generally consist of three important elements: 1) preparation, 2) implementation, and 3) prerequisite conditions (Inagaki, 2004).   In this case, the teachers set up videoconferencing links twice to design the DCL activities before implementation.   The teacher at K elementary school agreed with the suggestions from the Korean teacher although he knew that the project would be too difficult for his students.   As a result, the students at K elementary school got tired and lost motivation to complete the DCL project.   It is very important to consider the competencies, skills and situations of both sets of students in setting up the objectives and designing lessons.

Pedagogy and lesson plans

At the beginning of the DCL, some Japanese students expressed such thoughts as "I am afraid of Korean people," or "Koreans are unfriendly." After the DCL activities, however, the students came to have a different image, making comments like "Korean people are friendly and fun," "I feel like making friends with Koreans," "I respect Koreans because they have their own clear opinions," and "I respect them because they can clearly express to others what they want to say."   Videoconferencing motivated the students to engage in learning with each other.   According to Gagne and Leslie Brigges (1974), "gaining attention" should be the first step.   However, the first activity was a debate, which did not attract the students' attention in this case.   It is important to consider an instructional design model to conceive activities in a more systematic way.

ACKNOWLEDGEMENTS

REFERENCES

Aronson, E., Blaney, N., Stephan, C., Sikes, J. & Snapp, M. (1987). *The jigsaw classroom.* Beverly Hills: Sage Publications.

Azmitia, M. (1988). *Peer interaction and problem solving: When are two heads better than one? Child Development, 59,*: 87- 96.

Blaye, A., Light, P., Joiner, R., & Sheldon, S. (1990). Collaboration as a facilitator of planning and problem solving on a computer-based task. CITE Report 90. *Institute of Educational Technology*, Open University, Milton Keynes, U.K.

Cordova, D. & Lepper, M. (1996). Intrinsic motivations and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology, 88.* 715-730.

Ehninger, D. and Brockriede, W. (1978), *Decision by debate* (2nd ed.). New York: Harper & Row.

Ellen M Taricani and Roy B Clariana. (2006) A Technique for Automatically Scoring Open-Ended Concept Maps. *Association for Educational Communications and Technology. 54*, 65-82

Gagne, R. M., Wager, W. W., Golas, K. & Keller, J.M. (2005). *Principles of instructional design.* Wadsworth Publishing.

Keller, J. M., Golas, K. C., Briggs, R. M. & Crowley, K. (1998). Identifying and supporting shared scientific reasoning in parent-child interactions. *Journal of Museum Education, 23.* 12-17.

Jonassen, D., Howland, J., Marra, R. M., & Crismond, D. (2007). *Meaningful learning with technology.* Upper Saddle River, NJ: Prentice Hall College Press.

Kazuko Kimura, Tadahiko Abiko. (1999). Curriculum for international understanding education: New edition, *handbook for Curriculum research.* Keizou Shobou

Kishi, M. (2006). *Intercultural education utilizing the Web – case study of collaborative learning on www between Korea and Japan.* Paper presented at international conference on Web-based communities, Spain.

Konno, T., Kishi, M., & Kubota, K. (2006). International collaborative learning through art with Japanese and Palestinian refugees. *Proceedings of the Japan Association for Education Media Study,* Japan, 13, 112-113.

Kuhn, D. (1972). Mechanisms of change in the development of cognitive structures. *Child Development, 43.* 833-844.

Kume, T. & Hirai, S. (1998). Practice of intercultural distance learning using videoconferencing. *Proceedings of the Intercultural Education Society of Japan,* Japan, 12, 163-172.

Lepper, M.R. & Malone, T.W. (1987). Intrinsic motivation and instructional effectiveness in computer-based education. In R.E. Snow and M. J. Farr (Eds.), *Aptitude, Learning and Instruction III: Cognitive and Affective Process Analyses* (pp. 255-296). Hillsdale, N.J.: Erlbaum.

Midori Yamagishi. (1997). Intercultural literacy and intercultural competency. *Journal of Intercultural Education Society of Japan,11.* 37-51

Morita, Y. (2005). Analysis of transformation of international awareness in secondary school students through distance learning between Korea and Japan. *Japan Journal of Educational Technology, 28,* 1-4.

Nagaume A. (2006). Exchange learning with overseas students using a network. *Proceedings of the Japan Society for Educational Technology,* Kumamoto, Japan, B-13.

Naruse, N. (2006). The meaning and challenge of international collaborative learning using ICT. *Proceedings of Learning Resources and Information,* Japan, 188, 13-16.

Sawahashi, N. ＆ Takashi K. (2004). Use of art for communication in international exchange learning. *Proceedings of the Japan Society for Educational Technology ,* Japan.

Steele, C. (1998). The psychology of self-affirmation: sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology, 21,* (pp. 261-302). New York: Academic Press.

Suzuki, K. (2006). *Critical thinking and education.* Kyoto, Japan: Sekaishisousha, (pp. 164-193).

Uenishi, M. & Nakasato, S. (2002). Factors to support international exchange learning using an automatic translation system. *E Square Advanced Outcome Report,* 38-39.

Vygotsky, L. S. (1978) *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wenger, E. (1999). *Communities of practice: Learning in doing: Social, cognitive, and computational perspectives.* Cambridge, MA: Harvard University Press, 52 - 91.