

Effects of the Concept Mapping and Reflection Strategies on Motivations of EFL Learners

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Abstract: This study evaluated the learning motivations of the foreign language oral interaction course integrating Computer-Mediated Communication and Native-Speaker peer-tutoring strategies based on the assessment results of ARCS motivation design. The study found that no matter the students used the reflection strategy or not after the class, they will have confidence in the oral peer-tutoring activities when the students do concept mapping activities every time before they conducted the oral peer-tutoring activity via CMC platform. However, if the students did not use the concept mapping strategy, the students could use the reflection strategy in the post-activity had higher confidence than the students who did not use the reflection strategy when they reviewed after the class. Conversely, the study found that no matter the students used concept mapping strategy or not before the class, they will have confidence in the oral peer-tutoring activities when the students do reflection activities every time they end the oral peer-tutoring. However, if the students did not use reflection strategy, the students using concept mapping strategy in pre-study had higher confidence than the students who did not use concept mapping strategy when they prepared before the class.

Keywords: Computer-Mediated Communication, English Native-Speaker, Peer-Tutoring, ARCS Motivation Design, learning motivation

1. Introduction

This study applied the peer-tutoring strategy which was defined as a part of the collaborative learning (Slavin, 1995). Some scholars noted that it is a one-by-one teaching and learning between students (Utley & Mortweet, 1997). The peer tutoring activities could be conducted based on different level of pairing, complementary relationship, or the combination across ages, and so on (Hughes & Fredrick, 2006). In the process of peer tutoring, the students who play as tutors can improve their learning from teaching other peers (Sharpley, Irvine, Sharpley, 1983). The student who is the tutee will learn from the urge of the peers. Both the tutor and tutee will become much active in participating in concept explaining because of social activity (Rohrbeck, Ginsburg-Block, Fantuzzo & Miller, 2003). The previous study also indicated that the students could gain active learning from the constructions and explanations of content, aware and corrections of errors, exploration of reactions or responses in peer-tutoring activities (Webb, 1989). Therefore, during peer tutoring, the students not only learn from being taught but also from questioning, retorting and challenging the peer's views (Webb, 1989; Sharpley, Irvine, Sharpley, 1983). As a result, the peer-tutoring strategy is a both win-win learning strategy between the students who play the role of a tutor or a tutee.

Take language learning for an example, a good use of peer tutoring brings tutors more chances to utilize language, and bring tutees higher learning motivations and communication opportunities. If the students are in different countries, they can conduct language peer-tutoring activities by the assistance of digital technologies, so as to across the limitations of geography and interact with native speakers. When the students become the tutors, they will learn by doing and teaching because of their task completion and practical interactions with foreigners;

conversely, when the students are the tutees, they will have more opportunities to get adaptations to the habitual practice or common usage of the foreign language from the native speakers. In light of the advantages of the peer-tutoring strategies in language learning, there was a primary school from Britain and the other one from Spain conducting peer-tutoring activities in learning writing of second language. The results showed that when student was performed as a tutor they got the sense of honor and learned from teaching. The students thought that native speaker corrected and taught them how to use the language more properly. Hence, students had improved their vocabularies and writing ability (Dekhinnet, Topping, Duran & Blanch, 2008). The students in Britain and Spain said that they loved learning second language through peer tutoring with native-speaker peers since they could feel pleasant to make foreign friends and had social motivations. Learning language requires practical opportunities to use. Language chatting or interactions has a real listener and peer response when the students had transnational learning activities with native-speaker peers. In traditionally oral class, teachers often let students do the speaking practice with their classmates (Flanigan, 1991). In other word, in traditional class, the students practice language speaking with their classmate instead of native speaker. Therefore, it is difficult for the students to combine international cultural background and native-speaker perspectives during the communication (Hickey, 2007). Nowadays, the Internet has broken up the geographic limitations, so that the students are not restricted to only do oral interactions with their classmates. The students can perform oral communication with native-speaker peers in abroad or different cultural backgrounds by using Computer Mediated Communication (CMC) technologies.

Applying technology to learn foreign languages or second language, and incorporating proper teaching strategies, such as the peer tutoring strategy, the concept mapping strategy, reflection strategy and so on will be helpful to build up feasible scaffoldings for the students and achieve comprehensive language as well as culture communications (Levy, 2009; Chapelle 2009). Therefore, this study conducted the foreign language exchange activities between Singaporean and Taiwanese students by means of peer tutoring strategy. The students could not only do oral practice but also had a chance to interact with the native-speakers' perspectives. The Ministry of Education in Taiwan highlighted that students should focus on listening and speaking during learning English. In this study, the students interact with their peers abroad by using the CMC technology. Among several CMC technologies, this study used Google-talk which is a freeware. This study mainly evaluated the motivations of the students when they have different treatments during the peer tutoring activities with their native-speaker peers.

Some studies have explored cross-national language learning. For example, a study used the asynchronous CMC technology between Taiwan and Japan to assist the students to practice oral communications of foreign language (Natalie Wu & Kawamura, 2012). In addition, there have been many countries using CMC technologies to conduct the transnational language learning activities, such as Taiwan and the United State, China and the United State, Taiwan and Australia. Some of them used synchronous CMC channels, while some of them used asynchronous CMC manners. Recently, some scholars suggested that the future researches ought to help students build up partnerships with English native speakers in order to have more oral exercise (Vivian Wu, Marek & Huang, 2012). They also noted that it is beneficial for English as Foreign Language (EFL) learners to provide the real-life situations or leaning topics with locality characteristics of the native speakers. However, the participants of most studies previous mentioned were mainly college students. Little research has investigated on the students in the primary or secondary schools by means of using a synchronous CMC technology, such as Google-talk in this study, for cross-national language learning. This study stands on an important state because of assisting the students in the secondary schools to learn foreign language by properly using CMC technologies in the well-design activities and learning process via different instruments, and bringing the students opportunities to make

contact with the native-speaker peers on the house. This study aimed at finding out whether the instructional design and different leaning strategies incorporated in the peer tutoring activities via the CMC platform (i.e. Google talk) impact on the motivations of the students. The following section will further review some related work.

2. Related Work

There were several researches that made a good use of computer mediated functioning (Spitzber, 2006). The possibility of learning second language with CMC tools has gradually attracted researchers' attentions. Some researches indicated that VC could make learners involve in the online real-time oral communications (Grace Peng, 2012). Furthermore, a previous study pointed out that Computer Medicated Communication Competence (CMCC) model included many aspects, such as the motivation, knowledge, skill, situation and achievement (Spitzberg, 2006). The competence of the students' attentions and expressions would be affected by the process, background, and the situation when the communication occurred. The competence then brings the motivations of the students and further results in the performance of the students. In brief, in CMCC model, the motivations of the students had impacts on their attitudes toward online interactions by means of CMC. Furthermore, another study indicated that communications with foreigners by means of CMC caused the motivations and interests of the students due to the different culture background and appearance of the native speakers' countries (Natalie Wu & Kawamura, 2012). Whether the foreign language oral course conducted between countries on the CMC way causes the attentions of the students, recalls the relevance to their daily lives, encourages the confidence in themselves, and brings the perceptions of satisfactions will have impacts on the learning motivations of the students. When the languages between the two countries are complementary to each other without time differences, it would be appropriate for the students in the two countries to conduct the cross-national language exchange activities. For example, the first problem of carrying out synchronously interactive activities at school between the United States and Taiwan is too large divergence between the time zones of the two locales. In other words, to coordinate with American time, students need to come to school at night to participate this language class. In addition, the second problem may be the lacks of complementary languages so the students cannot use substitute language to keep communicating when they do not understand what their partners said at all. As a result, the interactions will be interrupted because the students could not switch to other language to continue the dialogue when one student does not understand to another. The activity would be quitted due to the misunderstanding. This study tried to conduct the experiments and prevent such problems. Therefore, the students who are the native speakers of English are employed in this study from Singapore.

The ARCS motivation model was proposed based on four scales which are attention(i.e., A), relevance(i.e., R), Confidence (i.e., C) to maintain and improve the learning motivations of the students in an instructional activity. In short, the term ARCS is the abbreviation of A(Attention), R(Relevance), C(Confidence) and S(Satisfaction) (Keller, 1983). Research has indicated that one of the key points for successful online learning is to design the instructional activities based on the motivation model (Keller, 1999). The following paragraphs will explain the four steps of the ARCS motivation model one by one according to the factors defined by the advocate (Keller, 1987, 1999). In sum, the ARCS motivation model was constructed for assessing whether the instructional design will cause or reduce the motivations of the students based on the four scales which are Attention, Relevance, Confidence, Satisfaction (Keller, 1987, 1999). This motivation model is also able to be employed in the evaluation of the distance course design (Keller, 1993). Therefore, this study introduced the

ARCS measurement to assess the motivations of the students in the learning activities of the language peer-tutoring with their partners abroad via the CMC platform.

This study aimed at well using the existing digital technologies of Computer Mediated Communication, such as Google Hangouts, and integrating them with the peer tutoring strategy and a learning support approach, such as concept mapping, to achieve online language oral practices and interactions with native speakers without distance limitations. The learning support approach used for organizing the cognitions of the teenagers before the oral interactions in this study is concept mapping. A previous study combined the concept mapping method into the story-telling activities, and found that the students were like the tutors who needed to share, organize, evaluate, communicate, and turn out their daily experience or knowledge to their own voice and materials reacting and conveying the ideas they developed (Liu, Fan-Chiang, Choum & Chen, 2010). The students could have advanced comprehension and application of their present knowledge and experience from the process of telling (Druin, 1998). A previous study also indicated that concept mapping did contributions to organize the complicated structure, clarify the topics, and come out with much more creative ideas with richer contents during telling (Liu, Chen, Shih, Huang & Liu, 2011). In this study, the students did not use concept mapping to prepare tell story, but use it to draw up the main ideas they were going to say and arrange the vocabulary or sentences they were going to use before they conducted the peer-tutoring activities. In other words, this study brought the concept map for students to establish and organize their teaching concept graph which can help them organize and prepare the guidance for their peers, help them get higher level of thinking, cognitive construction, and learn from the process of preparation.

Concept map used to be applied in some science learning topics (Novak, Gowin & Johansen, 1983). Later, it was also widely used in different subjects, including support instruction, course development, assessment, and so on. A previous study used concept map for course planning tool, and showed that learners would like to use concept map for course planning in real teaching situation (Martin, 1994). Accordingly, in our study, concept map is utilized to support students to organize their ideas and content they will interact with their peers in foreign language during peer tutoring, so that they can easily get connections among teaching process, concepts, and oral contents in Synchronous Computer Mediated Communication tutorial process. Recently, more and more studies used concept maps in language learning and found that concept maps were beneficial to reading comprehensions of the students (Maps, Meaningful, Sánchez, Cañas & Novak, 2010; Liu, Chen & Chang, 2009). This study would use concept map to organize the materials the students prepared before oral peer-tutoring activities via computer mediated communication.

3. Method

1. 3.1. Participants and Treatment Procedures

There are four groups, totally 130 participants, joining the instructional experiments. They received different treatments in different group. The four groups came from four different schools in Taiwan. They all learn English as Foreign Language (EFL). Their learning course and content is the same. All the four groups conducted the same instructional themes. They used Computer-Mediated Communication (CMC) platform, such as Google talk/hangouts, to conduct English oral interactions with native speakers in abroad (i.e. Singapore). When the

students carry out each time of the peer tutoring activity, there are three different stages which they will confront.

Before the class, some students used concept mapping strategy which the teacher instructed to prepare their peer-tutoring materials, while some students did not used concept mapping strategy and only used their own notes to prepare their peer-tutoring material, which is the first stage of the task. In the oral class, the students actually conducted the synchronous peer-tutoring activity by using computer-mediated communication technology to interact with their native-speaker partners abroad. That is the second stage of the task. Finally, after the class, some students had to reflect what they taught and spoke with their native-speaker partners abroad in the oral class while some students did not have to do reflection activity in accordance with their own speaking and instructional content. The following table showed the number and treatments of the four groups. The group one named NC_R was not treated the concept mapping strategy for preparation before the peer-tutoring on CMC platform, but was treated the reflection activity after peer-tutoring. The group two called NC_NR was not treated concept mapping strategy before the peer-tutoring on CMC platform, and was not treated the reflection activity after peer-tutoring, either. The group three named C_NR was treated concept mapping strategy before the peer-tutoring on CMC platform, and was not treated the reflection activity after peer-tutoring. The group four named C_R was treated concept mapping strategy before the peer-tutoring on CMC platform, and was treated the reflection activity after peer-tutoring.

Table 1. Two-factor variances comprise four groups

Treatments	No Concept Map (NCM)	Concept Map (CM)
Reflection	Group 1 (NC_R), N=23	Group 4 (C_R), N=26
No Reflection	Group 2 (NC_NR), N=40	Group 3 (C_NR), N=41

3.2. Research tools

The research tool of the computer-mediated communication used in this study was Google Hangouts. The research tool of evaluation in this study utilized the ARCS motivation questionnaire for measuring the students' learning motivation based on the Course Interest Survey (CIS). The ARCS Questionnaire was developed by Keller (Keller & Subhiyah, 1993; Keller, 2006). It consists of four dimensions (i.e., Attention, Relevance, Confidence and Satisfaction). The questionnaire totally contains 34 items with a 5-point Likert rating scheme, including 8 items for "Attention", 9 items for "Relevance", 8 items for "Confidence", and 9 items for "Satisfaction". The totally perfect scores of the 34 items are 170 (Keller & Subhiyah, 1993; Keller, 2006). The threshold each item is 3.5 (Ley, 2010). When the score of every item is higher than the threshold (i.e., 3.5), the peer-tutoring activities successfully motivate the students to learn oral speaking. The Cronbach's alpha values of the four dimensions are 0.84, 0.84, 0.81, and 0.88, respectively. The overall coefficient of reliability is 0.95. In addition, this study increased two open questions in the questionnaire to investigate the difficulties or other opinions which the students met in each time of activity.

4. Results and Discussions

4.1. Whether using concept mapping strategy or not in pre-task significantly impacts on the

learning motivations of the students in the oral peer-tutoring?

The students who used concept mapping strategy in pre-task of preparation showed higher confidence during the oral peer-tutoring activities. Therefore, the cognition clearly organized by using mind tool did contribute to the motivations of the students, especially in the performance of confidence ($t=2.14^*$, $p<.05$) shown as Table 2 although there were no significant improvement in the motivation scale of Attention ($t=1.41$, $p>.05$), Relevance ($t=1.68$, $p>.05$), and Satisfaction ($t=1.19$, $p>.05$). The CM group refers to the students who used concept mapping strategy in the pre-task, and the NCM group means the students who did not use concept mapping strategy in the pre-task.

Table 2.Independent sample t-test between the CM group and NCM group

Scale	Group	N	Mean	SD	t
Confidence	CM	67	4.01	0.64	2.14*
	NCM	63	3.77	0.63	

* $p<.05$

4.2. Whether conducting reflection activity or not in post-task significantly impacts on the learning motivations of the students in the oral peer-tutoring?

The students who used reflection strategy in post-task after peer-tutoring activities on the network showed higher confidence so as to motivate their learning interests. Therefore, the reflection strategy is beneficial to increase the motivations of the students, especially in the performance of confidence ($t=2.24^*$, $p<.05$) shown as Table 3 although there were no significant improvement in the motivation scale of Attention ($t=0.86$, $p>.05$), Relevance ($t=1.62$, $p>.05$), and Satisfaction ($t=1.00$, $p>.05$). The Reflection group refers to the students who used the reflection activity in the post-task, and the No Reflection group means the students who did not use the reflection strategy in the post-task.

Table 3. Independent sample t-test between the Reflection and No Reflection group

Scale	group	N	Mean	SD	T
Confidence	Reflection	49	4.04	0.48	2.24*
	No Reflection	81	3.81	0.71	

* $p<.05$

2. 4.3. Cross Analysis between the two factors

There were 49 participants conducting reflection strategy in the post-task, shown in the previous section. Among the 49 students, they came from two different pre-tasks. Some students were belong to the CM group which used the concept mapping strategy in the pre-task (N=26) while the others were the NCM group which did not use the concept mapping strategy in the pre-task (N=23). Both of the groups used reflection strategy after class in each round of peer-tutoring activity. The results showed that there was no significant difference between the two groups in terms of the ARCS motivations, including the dimensions of attention ($t=-1.86$, $p>.05$), relevance ($t=-1.43$, $p>.05$), confidence ($t=-0.49$, $p>.05$), and satisfaction ($t=-1.24$, $p>.05$).

There were 81 participants who did not conduct reflection strategy in the post-task. Among the 81 students, they came from two different pre-tasks. Some students were belong to the CM group which used the concept mapping strategy in the pre-task (N=41) while the others

were the NCM group which did not use the concept mapping strategy in the pre-task (N=40). The groups did not use reflection strategy after class in each round of peer-tutoring activity. The results showed that there was significant difference between the two groups in terms of the confidence dimension ($t=-2.15^*$, $p<.05$, shown as Table 4) in the four scales of motivation while the other three dimensions, attention ($t=-0.71$, $p>.05$), relevance ($t=-1.08$, $p>.05$), satisfaction ($t=-0.65$, $p>.05$), did not show remarkable difference.

Table 4. The NCM and CM groups did NOT use the reflection strategy

Scale	group	N	Mean	SD	t
Confidence	NCM	40	3.64	0.65	-2.15*
	CM	41	3.97	0.74	

* $p<.05$

On the other hand, there were 67 participants using concept mapping strategy in their pre-task. Among the 67 students, they joined different post-tasks. Some students were belong to the Reflection group which used the reflection strategy in the post-task (N=26) while the others were the No Reflection group which did not use the reflection strategy in the post-task (N=41). The groups used the concept mapping strategy before class in each round of peer-tutoring activity. The results showed that there was no significant difference between the two groups in terms of the ARCS motivations, including the dimensions of attention ($t=0.93$, $p>.05$), relevance ($t=1.27$, $p>.05$), confidence ($t=0.71$, $p>.05$), and satisfaction ($t=0.80$, $p>.05$).

There were 63 participants who did not utilize the concept mapping strategy in the pre-task. Among the 63 students, they joined different post-tasks. Some students were belong to the Reflection group which used the reflection strategy in the post-task (N=23) while the others were the No Reflection group which did not use the reflection strategy in the post-task (N=40). The groups did not use the concept mapping strategy before class in each round of peer-tutoring activity. The results showed that there was significant difference between the two groups in terms of the confidence dimension ($t=-2.29^*$, $p<.05$, shown as Table 5) in the four scales of motivation while the other three dimensions, attention ($t=0.22$, $p>.05$), relevance ($t=0.96$, $p>.05$), satisfaction ($t=0.43$, $p>.05$), did not show remarkable difference.

Table 5. The Reflection and No-reflection groups did NOT use the concept mapping strategy

Scale	group	N	Mean	SD	t
Confidence	Reflection	23	4.01	0.55	2.29*
	No Reflection	40	3.64	0.65	

* $p<.05$

5. Conclusions

In the 4.1 section, the study has confirmed that the concept mapping strategy before class could increase the confidence of the students so as to result in the motivation of the oral speaking course integrating the peer-tutoring activity on CMC platform. No matter the students used the reflection strategy or not after the class, they will have confidence in the oral peer-tutoring activities when the students do concept mapping activities every time before they conducted the oral peer-tutoring activity via CMC platform. However, if the students did not used the concept mapping strategy, the students could use the reflection strategy in the post-activity had higher confidence than the students who did not used the reflection strategy

when they reviewed after the class ($t=2.29^*$, $p<.05$), which is shown as Table 5. This implied that the skeleton of the whole oral interaction theme which was reviewed by the reflection strategy provided good training for students.

In the 4.2 section, the study has confirmed that the reflection strategy after class could increase the confidence of the students so as to result in the motivation of the oral speaking course integrating the peer-tutoring activity on CMC platform. No matter the students used concept mapping strategy or not before the class, they will have confidence in the oral peer-tutoring activities when the students do reflection activities every time they end the oral peer-tutoring. However, if the students did not used reflection strategy, the students using concept mapping strategy in pre-study had higher confidence than the students who did not used concept mapping strategy when they prepared before the class ($t=-2.15^*$, $p<.05$). This implied that the skeleton of the whole oral interaction theme which was organized by the concept mapping strategy in advance provided good connection and logic in the integrity for students.

Consequently, this study found that the students had best at least to choose one of the two strategies which are the concept mapping strategy in the pre-task and the reflection strategy in the post-task. Regardless which strategy the students choose, their confidence will be improved when they choose one of the two strategies at least, so as to result in higher motivation of oral peer-tutoring via computer-mediated communication.

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