Promotion of EFL student motivation, confidence, and satisfaction via a learning spiral, peer-scaffolding, and CMC

Wen-Chi Vivian Wu
Providence University, Taichung City Taiwan

Michael Marek
Wayne State College, Wayne, Nebraska, USA
Corresponding author

Ling Ling Yen
National Central University, Taiwan

Corresponding author contact: mimarek1@wsc.edu

Abstract: This study presents an EFL instructional model in which peer interaction improves motivation, confidence, satisfaction, and actual performance of students. Researchers used peer interaction for repeated assignments via Computer-Mediated Communication (CMC) to study how focused peer interaction contributes to changes in the four factors. EFL students in Taiwan interacted “live” via the Internet with a native English speaker in America. Integrative and instrumental motivation, satisfaction, confidence, and actual performance all improved as a result of the peer interaction with CMC methodology. Affective variables, such as anxiety, motivation, and self-efficacy, coupled with positive peer dynamics and teacher support, all influenced the students’ reported motivation, confidence, and satisfaction. This EFL instructional model has two strengths: 1) it demonstrates that peer interaction, properly channeled, results in improved motivation, confidence, satisfaction, and actual performance, and that, 2) CMC expands the engagement of students using peer learning, resulting in improved learning compared to traditional instruction.

Key words: Computer Mediated Communication, EFL, scaffolding, learning spiral, integrative motivation, instrumental motivation, constructivism, peer interaction, satisfaction, confidence, actual performance
Promotion of EFL student motivation, confidence, and satisfaction via a learning spiral, peer-scaffolding, and CMC

Introduction

The current generation of college students places an ever-increasing demand on colleges and universities for innovative approaches to teaching English as a Foreign Language (EFL). This is because in the 21st Century, English is the language of international business, science, and culture (Benzie, 2010; Ferguson, Pérez-Llantada; & Plo, 2011). Graddol (2006) predicted that in the foreseeable future English may be seen in EFL countries as a basic skill, not a special talent, as it is still conceptualized today. Many EFL programs around the world, however, use instructional designs that fail to focus on the diverse needs of students (Halverson, Grigg, Prichett, & Thomas, 2007; Toffler & Toffler, 2006), including in Taiwan, the site of this study. EFL programs benefit greatly from active learning methodologies that use authentic source materials (Author, 2011; Chu, 2007; Gömlekşiz, 2007). But for teachers used to the lecture-memorization format, active learning opens up many new challenges.

One commonly cited approach that both fosters active learning and offers authentic material is the use of Computer-Mediated Communication (CMC), which has been studied by many researchers (Guthrie & Richardson, 1995; Liou, 1997; Scardamalia & Van Aacken, 1999; Wiebe & Kabata, 2010). Students in the 21st Century are already common users of similar technologies for personal and social interaction with friends and family. As a result, they see the benefits of learning environments that enable them to use technology for classroom-related interaction. Research is clear that use of online tools, i.e. CMC, improves the listening and speaking skills of young learners (Terrell, 2011), but the CMC literature rarely addresses real communication between people of different cultural groups (Wang & Chang, 2011). In addition,
many teachers and academic programs are often nowhere near as advanced as their students in use of technology.

An equal challenge, in Taiwan, the site of this study, is that students are often passive learners (Wu, 2006). Innovative teachers seek ways to engage students in active learning that applies Constructivist principals. Such Constructivist learning models in which students have significant control over their learning methods, including the use of technology, strengthen the ability of the students to select information and make connections in their minds to other knowledge, thus learning more deeply than superficial memorization (Sengupta, 2001).

The purpose of this study, therefore, was two-fold. First, it was to employ a Constructivist model of student-centered learning with extensive and relatively independent peer interaction in order to strengthen student motivation, satisfaction, and self-confidence in EFL learning. The second purpose was to use CMC technology to allow students to interact “live” with a native speaker of English via CMC technology in order to promote student motivation, satisfaction, and self-confidence. The participants in the study were thirty-seven students taking an English conversation EFL class at a private university in Taiwan, as part of the requirements for completing the class.

These following specific research questions guided this study:

- Did the students’ perceived level of integrative and instrumental motivation, satisfaction, confidence, and their actual performance in learning English change over time as a result of the methodology used in this study?

- What factors stemming from the methodology in this study affected the students’ perceptions of changes in their own motivation, satisfaction, and confidence in learning English?
Literature Review

This section elaborates the framework of this study based on past studies related to this research, including the following subsections: (1) the relationship between satisfaction and academic performance, (2) Constructivism and the relationships among integrative and instrumental motivation, satisfaction, and self-confidence, (3) disconnects between self-esteem and actual ability, (4) the importance of peer learning and scaffolding from peers, and (5) the role of CMC in instructional designs using the above principals.

Relationship between satisfaction and academic performance

Much literature exists tying student satisfaction with learning outcomes (Chen & Jang, 2010; Kim, Newton, Downey, & Benton, 2010; Wu, Tennyson, & Hsia, 2010). The interplay of the factors is complex, but stronger learning outcomes generally result in higher student satisfaction, whereas students who are more satisfied with a course tend to be more motivated to work, thus producing better outcomes. Both dynamics relate to the expectation for success or failure, and the level of control felt by the students over the process by which they achieve their desired learning goals, because these beliefs directly lead to the desired outcomes (Schneider, 2001).

Constructivism and the relationships among integrative and instrumental orientations, satisfaction, and self-confidence

Understanding Constructivism is central to understanding how people learn (Powell & Kalina, 2009). It is the understanding that learners construct meaning by selecting information and fitting it in with what was previously known (Brandon & All, 2010; Bruning, Schraw, & Ronning, 1999). Constructivism is rooted in the discipline of cognitive psychology (Huit, 2009),
a mainstream concept in American psychology (McLeod, 2007), and holds that knowledge is stored and retrieved according to the memory “slots” in which it is originally encoded. Piaget's seminal theory of cognitive development held that humans cannot simply be provided information, which they immediately understand and use. Rather, Piaget (1953) said, humans must construct their own knowledge. In Constructivism, the creation of knowledge within an individual is seen as personal and subjective, meaning that teachers play the role of facilitators who foster an authentic and student-centered learning environment, compared to the Behaviorist model, in which teachers are authoritarian transmitters of knowledge (Bae, 2004). The major tenet of Constructivism, therefore, is that learning works best as an active process in which learners fit new ideas or concepts in with their current or past knowledge. Advocates of Constructivism agree that it is the individual's processing of stimuli from the environment and the resulting cognitive structures that produce beneficial learning outcomes (Huitt, 2009). Reliance on the older Behaviorist transmission model, on the other hand, often leaves students feeling they have no control and are, therefore, helpless, which greatly decreases motivation (Kuhl, 2005). Because other research has shown that motivation, confidence, and ability are interrelated and change in direct relationship to each other (Clèment & Kruidenier, 1985; Author, 2009), Constructivism is a central concept to understanding learning in the 21st Century.

Intrinsically motivated learners have long been considered to be successful because their fundamental learning goal is to achieve satisfaction and enjoyment (Deci & Ryan, 1985). Extrinsically-motivated learners tend to exert the minimum effort required to avoid punishment or to gain necessary outcomes. Gardner’s framework of Instrumental and Integrative motivation (2001) is commonly cited. EFL students who are instrumentally motivated are extrinsically driven, studying English only enough to complete a required class, to acquire minimum required
job skills, or to earn a degree — all of them external, utilitarian goals (Wu, 2006). In Gardner’s framework, motivation is influenced by affective factors, including self-esteem, anxiety, fear of making mistakes, excitement, etc (Stipek, 2002); and by cognitive factors including language learning strategies and abilities (MacIntyre & Gardner, 1994). Gardner found integrative motivation to be more beneficial because it is the result of an internal desire to be engaged with the subject matter being learned, concluding that integrative motivation is a strong predictor of success in learning a foreign language.

Changing realities of the 21st century, however, have led to an even broader and holistic understanding of motivation in language learning because EFL learners today are often called on to communicate with other non-native speakers in English (Kormos & Csizér, 2008; Lamb, 2004).

Instructional design in the past, more typical of the 20th Century, was often structured to use extrinsic, contingent incentives, the idea that if a student does something, there will be a reward, but the reward model of learning motivation has multiple drawbacks (Lei, 2010) including that the student may stop the activity when the reinforcement ceases, may do only the minimum required to achieve a reward, and low self-esteem and low self-actualization, making the reward model most suitable for motivating simple, basic tasks. Indeed, extrinsic incentives can undermine intrinsic motivation to learn, resulting in worse performance than would have resulted without extrinsic incentives (Schwartz, 2009). This is the case because students are primarily emotional and secondarily intellectual (Sanacore, 2007) and challenging them, giving them choices, and increasing their participation, emotionally strengthens their motivation to learn.
Pink (2010) noted that the defining tasks of the 21st-century, are more complex than in the past, in turn requiring an inquiring mind and the willingness to experiment to find fresh solutions. The best way to achieve higher-level work, Pink said, is to build more on autonomy, the desire of students to be self-directed; on mastery, the desire to get better and better at something that matters; and on purpose, the desire to be part of something larger than ourselves.

Zoltan Dörnyei (2005) offered a complex perspective in which the foreign language learner envisions an idealized English-speaking self. This person the student hopes to become is based in part on real-life encounters (or lack thereof) with speakers of the target language, Dörnyei said, and in part on the way the students imagine themselves functioning in a diverse international society. Therefore, instructional designs and teachers are most successful when they appeal to and foster this idealized self and future functioning in international society.

Second language learning, however, represents a complex, dynamic system that is in constant interaction with the learning environment. De Bot et al. (2007) saw the language learner interacting as a dynamic subsystem within a larger structure. The learner, de Bot said, has his/her own cognitive ecosystem consisting of intentionality, cognition, intelligence, motivation, aptitude, L1, L2 and so on. Motivational factors that affect better or worse outcomes, therefore, are also highly complex, according to de Bot.

Motivated students are most likely to achieve their expected goals, thus producing satisfaction with the learning experience, while confidence is also a reflection of motivation because the motivated student will feel better prepared and more ready to engage in the target language. Indeed, Yashima, et al., found that social interaction with people from other cultures promotes intrinsic motivation in students (Yashima, Zenuk-Nishide & Shimizu, 2004). EFL textbooks, however, have not always kept up with this new understanding, with information
provided about the target culture remaining largely at the traditional knowledge-oriented level that does not engage learners in deep levels of reflection (Shin, Eslami & Chen, 2011).

**Disconnects between self-esteem and actual ability**

Research has shown that students sometimes have a higher self-evaluation than warranted of their own ability, sometimes causing them to be misled about the amount of time and effort required to achieve a goal (Covington, 1994; Martin, Marsh, & Debus, 2001; Tagashira, Yamato, & Isoda, 2011). As a result, such students tend to blame others, criticize test difficulty, and make other excuses (Martin, Marsh, & Debus, 2001). Thus, demotivation may result from these excuses for failure, because students can mislead themselves into feeling less in control, and more helpless, triggering the relationship between anxiety and motivation (Covington & Omelich, 1991).

**Importance of peer learning – scaffolds from peers**

In a Constructivist classroom, learners are encouraged to learn by research and experimentation, but are not told what outcome to expect (Williamson, 2006). In fact, the goal of the learner is to discover results and to generate inferences and conclusions. It is therefore important that teachers constantly assess their students’ knowledge to ensure that the students’ perceptions of the new knowledge are within the allowable range of what the teachers intended that they learn and are not based on invalid assumptions or false conclusions (Ormrod, 2003). One way to avoid such errors of interpretation is the use of peer learning, in which information is shared among peers and checked back and forth. Furthermore, learning stemming from peer interaction often results in more conceptual links between new information and the learners’ previous knowledge (Bruch & Saye, 2001).
One of the most common techniques of fostering active learning and peer interaction is scaffolding, a teaching and learning model for classroom interaction in which the teacher initially gives a high level of support to the student, such as availability to translate during interaction in the foreign language, with support slowly withdrawn to help the student become more independent (Beed, Hawkins, & Roller, 1991; Van de Pol & Beishuizen, 2010).

The central concept of scaffolding is that learners are at a certain place in their development and can be led into a higher level of development through appropriate help from others, such as teachers or peers (Simpson, 2005). In the EFL classroom, scaffolding may include cueing/hinting to help students find a path to a conclusion, coaching comments, providing feedback and advice on performance, and stimulating reflection (Cagiltay, 2006). Scaffolding, therefore provides timely support when it is needed, enabling learners to both succeed and enhance their proficiency. The benefits of scaffolding dovetail well with Krashen's widely known and well accepted theory of second language acquisition (1988), which holds that second language learners can benefit if they are constantly challenged with tasks just beyond their current level of mastery of skills and knowledge.

Positive social interactions, therefore, including student-to-student collaboration and student/teacher interaction, lead learners to evolve their own knowledge foundations (Brandon & All, 2010). Scaffolding fosters collaboration, respect for one’s own and others’ ideas, and a growing ability to construct meaning from previous experience (Lee, 2003) as well as greater autonomy on determining learning behaviors (Chang & Ho, 2009). As a result of successes in these incremental challenges, motivation, confidence, and satisfaction are all enhanced (Brownstein, 2001).
The role of CMC

CMC interaction has benefits compared to face-to-face interaction when teachers employ Constructivist instructional designs. Nguyen (2011) found that CMC interactions yielded more equal participation than face-to-face interactions for collaborative language learning. Butler-Pascoe (2011) presented a detailed history of the growth and development of Computer Assisted Language Learning. Her conceptual analysis offered twelve needs of language learners that today’s CALL needs to address, including facilitating communicative activities, collaboration and interactions; fostering interaction within the language; promoting a Constructivist, student-centered learning environment, supporting development of critical thinking skills; using authentic audiences and materials; and meeting the affective needs of the student, including motivation, self-esteem, and low anxiety. The above literature review led the researchers to formulate the current study that addressed the needs of EFL students for interaction and critical thinking skills using authentic materials in the form of CMC interaction with a native speaker in a way that fostered the students’ motivation and self-esteem while keeping anxiety low.

Methodology

This study used Computer Mediated Communication (CMC) to allow the students in Taiwan to interact with the American author of this study from his home in the United States. After each lesson about American culture delivered by the American, the Taiwanese students used critical thinking to develop presentations back to the American on a related aspect of culture in Taiwan. For example, after the lesson on weddings in America, the students developed presentations about weddings in Chinese culture, allowing them to compare and contrast the two cultural traditions. In keeping with the purposes of the study, the researchers employed a student-
centered instructional design intended to strengthen student learning and foster improved motivation, satisfaction, confidence, and actual ability.

The specific methodology of this study was inspired by the concept of a learning cycle (Loertscher & Rosenfeld, 2007) and particularly the concept of the Learning Spiral for Constructivist learning (Dever & Hobbs, 1998). Based on the research design of Clark, DiBiasio, & Dixon (1998), the spiral curriculum of this study was peer-assisted and project-based to increase motivation of learners and retention of basic English skills and concepts.

The plan of this study was to use a recursive learning cycle (Hobbs, Dever, & Tadlock, 1995) to cultivate students’ critical thinking skills within groups; promote their level of motivation, confidence, and satisfaction; and improve their level of actual performance as peer interaction increased. The peer interactions served as motivational scaffolds (Lee, 2003), enabling group members to self-decide their individual participation and the contributions that should be explicitly elaborated within their group thinking process as part of creating the group presentations. Group members could also self-determine how much assistance they needed to seek from peers.

![Learning Spiral](image)

**Figure 1.** Learning spiral – The use of peer interactions as scaffolds.
The focal point of the peer interactions, and of the overall course, was the series of “live” Internet videoconferences between the native English speaker in the United States and the EFL class in Taiwan. The American prepared advanced video presentations on a series of three American cultural topics, including American national parks and vacations, American food, and American weddings. During the “live” videoconference, small groups of students presented back to the American on a related topic, and then engaged in conversation with the American. Past studies by the authors have shown that students consider such interactions to be highly authentic cultural source material, and welcome the use of the technology (Author, 2008; Author, 2007).

The learning spiral concept was used in a training workshop held for students that set the stage for the group thinking process that would lead to successful creation of the actual student presentations in this study. Each group was expected to determine a topic and the procedure by which the presentations would be prepared. The overall process included learning by preparing, learning by doing, learning from research and sources, and learning from follow-up critical thinking and feedback. Figure 1 presents a conceptual model of the process.

Training with Constructivist strategies

Before beginning the preparation of their first presentations, students attended a training workshop to equip them with strategies to take advantage of the peer-learning spiral. The following detailed steps were used:

The fundamental phase – prerequisite knowledge. Fundamental training covered the following specific skills:

- Learning by preparation: Students were trained in preparatory strategies, including outlining potential presentation topics, research, and organizing the relevant references in order to select a topic.
• *Learning from sources:* Students were trained in specific strategies and techniques for research using library and Internet sources in order to acquire needed information for their presentations.

• *Learning by doing:* Students were trained in how to actually deliver a presentation via PowerPoint in the context of a videoconference.

**The second phase – brainstorming ideas and receiving feedback.** The second phase of training focused on critical thinking as related to the student group presentations:

• *Learning by critical thinking:* Students were trained in brainstorming in order to generate ideas for the details of their presentations.

• *Learning from feedback:* Students were trained in applying teacher and peers feedback from completed tasks to the next cycle of presentations in the semester.

**Procedure**

The participants were instructed to use the following procedure as a guide to prepare and perform their presentation.

• *Preparation and discussion* – Peer groups discussed what materials should be researched and used. They discussed the research materials and decided what should be used in their presentations.

• *Write a presentation draft with peers* – After the materials were determined, the group members were responsible for the final preparation of the selected materials.

• *Revise grammar errors and receive feedback from peers* – Participants received feedback from peers in and outside the classroom. One of the researchers, the local Taiwanese teacher, also provided grammatical feedback on the drafts.
- **Rehearse a presentation** – When the final version of the presentation was complete, the groups were expected to rehearse the presentation as many times as necessary.

- **Receive feedback from the native speaker, the instructor, and the classmates** – Feedback was immediately provided by the native speaker during the videoconference, as well as from the instructor and classmates. The instructor also gave each student two grades for each presentation, a teamwork grade the applied to the entire group, and an individual performance grade. The teacher’s grades included the quality of the PowerPoint file, linguistic ability, facial expressions and other body language, actual content, and cooperation and teamwork within the group.

Figure 2 illustrates the procedure followed by the groups.

![Figure 2. Procedure of preparing and performing a presentation.](image)
Data Collection

The Taiwanese students in this study were informed at the beginning of the semester that they would be participating in three videoconferences with an American. The students were divided into nine small groups, each of which prepared independent presentations to the American. Five students were invited to participate voluntarily in qualitative interviews about their experiences during the semester. One, a male, had reported decreasing motivations during preceding quantitative data collection and four females had reported increasing motivation.

Quantitative Data Collection

A single-group interrupted time-series design (Creswell, 2009) was used to investigate research question one, about how students perceived changes in their learning motivation, satisfaction, and confidence, as well as changes in their actual performance, measured by grades, during the three iterations of the learning spiral during the semester. Repeated measures analysis was used to examine whether the participants’ motivation, confidence, and satisfaction changed over time. If there was a significant effect of repeated measure analysis, repeated contrast analysis was used to examine whether the participants’ motivation, confidence, and satisfaction changed between two periods.

Although thirty-seven students would be a small sample for statistical analysis, it represents the entire population of this study, and thus the researchers judged that it was reasonable for parameter analysis. However, given that the population size was limited, the data collection was conducted three times, after each iteration of the peer group process.

The quantitative research design used a questionnaire with three sections, plus demographic information. The three sections were answered via Likert-like scales. Section A asked students about their motivation to study English for a series of reasons, such as “get a job
that requires English”, “meet your family’s expectations”, and “be part of the global society that uses English.” Answers ranged from 1, “not at all motivated” to 5, “very strongly motivated.”

Section B asked students about their confidence in using English for a series of reasons such as “speaking English with other classmates”, “speaking English with English-speaking foreigners”, and “use of multimedia facilities on the Internet.” Answers ranged from 1, “not confident at all” to 5, “very confident.” Section C asked students about their satisfaction with various factors, including “the amount of effort you have had to put forth in English study”, “your test scores”, and “how much your level of English is recognized by others.” Answers ranged from 1, “not satisfied at all” to 5, “very satisfied.”

**Qualitative Data Collection**

The five students participating in the qualitative interviews were asked a series of questions to explore their experiences in more detail in order to answer research question two about factors stemming from the methodology in this study that affected the students’ perceptions of changes of in their own motivation, satisfaction, and confidence in learning English. Although the interviewer was free to explore ideas as needed, the initial protocol for the interviews included questions about student fear or anxiousness about making mistakes, motivational variables such as self-esteem and willingness to work hard for better grades, peer variables such as material preparation and organization with peer assistance, and teacher variables, such as mentoring and inspiring of confidence.

**Results**

**Quantitative Findings**
Table 1 shows the means and Standard Deviations of the students’ instrumental and integrative motivation, confidence, satisfaction, and actual performance for time 1, time 2, and time 3, i.e. presentation one, presentation two and presentation three.

Table 1. *Means and Standard Deviations of confidence, satisfaction, integrative, and instrumental orientation for time 1, time 2, and time 3*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrative orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3.79</td>
<td>.53</td>
</tr>
<tr>
<td>Time 2</td>
<td>3.76</td>
<td>.48</td>
</tr>
<tr>
<td>Time 3</td>
<td>3.86</td>
<td>.51</td>
</tr>
<tr>
<td>Instrumental motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3.58</td>
<td>.52</td>
</tr>
<tr>
<td>Time 2</td>
<td>3.68</td>
<td>.51</td>
</tr>
<tr>
<td>Time 3</td>
<td>3.85</td>
<td>.48</td>
</tr>
<tr>
<td>Confidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3.06</td>
<td>.59</td>
</tr>
<tr>
<td>Time 2</td>
<td>3.33</td>
<td>.51</td>
</tr>
<tr>
<td>Time 3</td>
<td>3.47</td>
<td>.39</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>2.86</td>
<td>.55</td>
</tr>
<tr>
<td>Time 2</td>
<td>3.03</td>
<td>.44</td>
</tr>
<tr>
<td>Time 3</td>
<td>3.08</td>
<td>.45</td>
</tr>
<tr>
<td>PPT actual performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>65.38</td>
<td>8.98</td>
</tr>
<tr>
<td>Time 2</td>
<td>76.78</td>
<td>6.48</td>
</tr>
<tr>
<td>Time 3</td>
<td>77.92</td>
<td>5.36</td>
</tr>
</tbody>
</table>

Figures 3 through 7 depicted the trends of all variables. There was a visible increase of the measured variables except for integrative orientation at time 2, which saw a decrease. The findings revealed that the students’ instrumental orientation, satisfaction, and confidence all grew as their experiences of preparing and performing the presentations progressed during the learning process.
Figure 3. Trend of student instrumental orientation at time 1, time 2, and time 3.

Figure 4. A trend of student integrative orientation at time 1, time 2, and time 3.

Figure 5. Trend of student satisfaction at time 1, time 2, and time 3.

Figure 6. Trend of student confidence at time 1, time 2, and time 3.
Figure 7. Trend of student actual performance at time 1, time 2, and time 3.

Table 2. Repeated measure result of instrumental orientation, confidence, satisfaction, and actual presentation grade

<table>
<thead>
<tr>
<th>Source (Sphericity Assumed)</th>
<th>Sum of Square</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental orientation</td>
<td>1.43</td>
<td>2</td>
<td>.732</td>
<td>5.89</td>
<td>.004</td>
</tr>
<tr>
<td>Confidence</td>
<td>3.24</td>
<td>2</td>
<td>1.62</td>
<td>14.82</td>
<td>.000</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.94</td>
<td>2</td>
<td>.47</td>
<td>4.18</td>
<td>.019</td>
</tr>
<tr>
<td>Actual presentation grade</td>
<td>3559.86</td>
<td>2</td>
<td>1779.93</td>
<td>59.47</td>
<td>.000</td>
</tr>
</tbody>
</table>

The repeated measure results (see Table 2) indicated that the participants’ instrumental orientation, confidence, satisfaction, and actual performance changed over time. Repeated contrast results (see Table 3) indicated that there were significant differences of confidence between presentations 1 and 2, and between presentations 2 and 3. There was a significant difference in the measured variables, satisfaction and actual performance, between presentation 1 and 2. There was also a significant difference of instrumental orientation between presentation 2 and 3.

Table 3. Repeated Contrast Results of Instrumental Orientation, Confidence, and Satisfaction

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Square</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumental motivation</td>
<td>.394</td>
<td>1</td>
<td>.394</td>
<td>1.39</td>
<td>.246</td>
</tr>
<tr>
<td>Time 1 vs Time 2</td>
<td>1.13</td>
<td>1</td>
<td>1.13</td>
<td>5.45</td>
<td>.025</td>
</tr>
<tr>
<td>Time 2 vs Time 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>2.68</td>
<td>1</td>
<td>2.68</td>
<td>11.75</td>
<td>.002</td>
</tr>
<tr>
<td>Time 1 vs Time 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2 vs Time 3</td>
<td>.76</td>
<td>1</td>
<td>.76</td>
<td>4.57</td>
<td>.039</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.973</td>
<td>1</td>
<td>.973</td>
<td>4.58</td>
<td>.039</td>
</tr>
<tr>
<td>Time 1 vs Time 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2 vs Time 3</td>
<td>.108</td>
<td>1</td>
<td>.108</td>
<td>.705</td>
<td>.407</td>
</tr>
<tr>
<td>PPT actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Students indicated that integrative orientation was an important factor correlating to confidence and satisfaction following presentations 1 and 2. However, the result of presentation 3 revealed that the students were more concerned about their course grades (instrumental orientation), indicating that instrument orientation was also a factor influencing their satisfaction and confidence (see Table 4).

<table>
<thead>
<tr>
<th></th>
<th>Confidence</th>
<th>Satisfaction</th>
<th>Integrative orientation</th>
<th>Instrument orientation</th>
</tr>
</thead>
</table>

Qualitative findings

Three students participating in qualitative interviews, identified as students one, two, and three, described their best efforts to work hard for their presentations, their enjoyment in working with peers and communicating via CMC with the native-speaker professor, and their adjustment of their study habits in order to achieve the higher grades. However, student four expressed lack
of motivation, passiveness, and lack of will to work hard with other students for the presentations. The following section explores themes in the qualitative interviews.

**Learner factors - Affective variables**

- **Fear or anxious of making mistakes.** Lack of confidence about speaking to a native speaker via CMC was an affective variable that was clear in the student comments, and particularly the fear of making mistakes while communicating with the American professor:

  [Student One] When we spoke to [the American professor] the first time, we felt nervous and excited because we actually don’t have many opportunities to speak to a native speaker.

  [Student Two] I was quite worried about my English that might not be understandable.

The anxiety resulted, in part, from peer pressure. Comments suggested that invisible competitions among group members explain why some participants preferred to stay in their comfort zones and communicate with peers in Chinese in lieu of English.

  [Student One] I feel anxious when chatting with my classmates in English because they are so wonderful and speak English so well.

This qualitative theme dovetails with the quantitative finding that confidence increased after each iteration of the learning spiral. This suggests that the instructional design of interacting “live” with a native speaker via CMC did, indeed, bolster the confidence of students. Indeed, the American teacher worked hard to provide positive reinforcement to the efforts of the students during the videoconferences, so as to give them a feeling of success at the conclusion of their CMC interaction.

- **Lack of motivation, passiveness, and personal laziness.** One participant expressed his carelessness and his lack of anticipation in preparing for, and presenting, the presentations:
[Student Three] I live far from the university, so if there is only one class in a day, I’ll be lazy about going to school. In fact, I don’t look forward to the classes, and I think the teaching contents should all be decided by the teacher.

Another student commented about the lack of attention by students who were not presenting.

[Student Three] When doing the presentation to [the American professor], we didn’t have any interaction with the classmates because they don’t even listen to what we were talking about. I think maybe it is because we have all done the same topics, and our contents are also almost the same.

In large part, the role of CMC in this study was to add novelty in order to give students a feeling that “we’ve never done this before.” Clearly other influences were also at work that affected the level of engagement of individual students.

- *Self-efficacy variables* – self-esteem, working ethic, opportunities to practice, self-confidence. Some participants showed their higher level of self-efficacy in the wake of lower-than-expected presentation grades by asking for the teacher’s help and seeking additional peer assistance.

[Student One] We felt OK about knowing our grades for the first time presentation because we all knew that our individual grades were higher than average. However, we all thought that we could have done it better. Therefore, we asked our teacher about how to improve our future presentation. We also discussed our strategies to improve our presentation next time.

[Student Two] After practicing English with [the American professor] these times, I feel more confident with my English.

In addition to the feelings of success and novelty, mentioned above, the American professor interacting via CMC provided students with a reality check about their skills. While he gave positive reinforcement as often as possible, he sometimes had to ask the student to repeat or clarify a statement, and he also sometimes felt the need to correct a pronunciation. Thus, the repeated interaction via CMC allowed the students to gauge their actual ability and compare it to their self-perception of their own ability. Because the actual ability of the students improved in each turn of the learning spiral, the CMC interactions led to improved self-efficacy.
Peer factors – Material preparation and organization with peer assistance

Participants in different groups used different strategies to prepare and organize their materials for their presentation drafts. The CMC presentations, therefore, served as a stimulus to foster learning via peer factors. Their strategies included learning by preparing, learning by doing, learning by thinking ahead, learning from sources, and learning from feedback in order to prepare their presentation topics. Student One’s group decided to search for sources for materials first, then meet with each other to brainstorm what they should put down in their drafts, seek feedback from peers, and write the drafts.

[Student One] If any of us met some problems with the contents of the drafts, we helped them. Because we were each responsible for different parts of the presentation, we didn’t need to worry about the contents that could overlap while helping others. We only met with each other two times for putting down things together, discussing how to prepare our materials and how to put down our responsible parts related to the presentation drafts. We didn’t have a leader in our group.

In Student Two’s group, their decision-making was quite different from Student One’s. They thought ahead about how to search and prepare the materials when they first met. Student Four, the leader of the group, called the meeting to discuss what they should put down. Student Four decided and organized the searching for materials in the group. Student Four called the final meeting for the rehearsal of the presentation.

[Student Two] Student Four was our leader to organize our schedule and also she was the decision-maker about what to put down. We got together to discuss what to do with the presentation topic. Then, each one of us first looked for materials from the Internet, which could be used in our draft of the presentation topic. We got together one more time to decide what materials we were going to use in our writing drafts. While we finished our parts of the draft, we sought feedback from peers and the instructors. Then we corrected grammatical errors for our drafts before we turned in the final draft.

In Student Three’s group, there was no interaction, preparation, and organization in preparing the presentations. They made no effort, with each member giving excuses for being absent from meetings.
[Student Three] That is because I didn’t prepare for the presentation, and I didn’t do the rehearsal. This is because of several reasons. The first reason is because one of us is a transfer student, so his courses are quite different than ours, so it is hard for us to find the same breaks. The other reason is that all of us live outside of campus. It is not easy for us to get together because we commute. Therefore, we didn’t have any regular group discussion, and we just wanted to combine the each part we collect without altering it. Anyway, we will be satisfied with our grades that passed 60 out of 100.

**Teacher factors – Courage**

Some participants expressed their higher level of courage, improvement, and confidence in using English for communicating with foreigners. The students suggested that their confidence stemmed from their local teacher, who they perceived cared about their learning progress and was willing to help them in all aspects of the class.

[Student Two] [The instructor] was concerned about most of us, taught us seriously, and kept an eye on us while we were doing our presentations.

[Student One] I have learned a lot from [the instructor]. Her class was quite different from my other teachers’ classes.

[Student Two] I felt courageous in using English for communication because of [the instructor’s] class.

**Discussion**

This study used Computer Mediated Communication (CMC) to provide authentic learning materials to students, and to stimulate their motivation to learn. As one of the two overall purposes of the study, use of CMC benefitted students in two ways. CMC, first, provided direct information to students in video and live lessons designed to intrigue them and inform them about the culture of the language they were learning. Moreover, CMC was used as the justification for the student groups to develop their own presentations. This paved the way to address the other main purpose of the study, to use a Constructivist model of student-centered learning with extensive and relatively independent peer interaction.

The constantly growing body of CMC literature about use of the Internet and technology to provide authentic enrichment of EFL instruction (Liu & Chen, 2007; Payne & Ross, 2005;
Tudini, 2003) contains the general theme that such channels of communication provide authentic, interactive experiences that are much-desired by students. In the current study, the use of CMC to connect students with a native speaker was a novel experience for the students, and provided incentive for the students to strive to perform well, as opposed to doing the minimum to get by, an attitude that might result from more prosaic assignments. In effect, this provided an environmental dimension to the use of CMC not often explored in studies that focus solely on outcomes tied directly to the use of technology for communicative interaction. This dual role of CMC addresses several elements in the overall research framework of this study.

**Correlation to conceptual framework**

The conceptual framework, outlined in the literature review, shows clearly that learning outcomes and student satisfaction are directly related. The literature review for this study showed that stronger learning outcomes generally result in higher student satisfaction, whereas students who are more satisfied with a course tend to be more motivated to work, thus producing better outcomes, and that motivation, confidence, and ability are interrelated and change in direct relationship to each other. In this study, CMC both provided direct educational experiences through the content of the native speaker’s instructional materials and also through the sense of accomplishment of having presented to a native speaker in a novel setting. Part of this accomplishment was the videoconference nature of the interaction and part was the result of the strong critical thinking skills taught in the class that were employed in developing the students’ presentations.

In this context, the instructional design also made extensive use of the research framework about scaffolding, including cueing/hinting to help students find a path to a conclusion, coaching comments, providing feedback and advice on performance, and stimulating
reflection. Much of this scaffolding was done by the local English teacher, and by peers, but the American also provided scaffolding, as appropriate, during the videoconference sessions, prompting appropriate words, coaching about pronunciation, and expressing positive feedback to reinforce proper English usage.

These multiple dimensions of scaffolding, including that delivered by CMC, also addressed research that has shown that students sometimes have a higher self-evaluation than warranted of their own ability, sometimes causing them to be misled about the amount of time and effort required to achieve a goal. The findings showed that some groups faltered in their first presentations back to the native speaker, revealed in the level of scaffolding they found that they needed, and in the teacher and peer assessments of their outcomes.

The instructional design used in this study, blending CMC and critical thinking, also resonated with Dörnyei’s ideas about students imagining an idealized version themselves functioning in a diverse international society. The American in this study was certainly not the only native speaker the students had ever met; some of their English faculty members had been native speakers. The live interaction with a native speaker in another country, however, dovetailed perfectly with recommendation that teachers are most successful when they appeal to and foster this idealized self and future functioning in international society. The CMC system in this study, Skype, was a standard free Social Media platform that is commonly available. The study, therefore, gave students the practical experience of using technology that most already used in their private social interactions with friends, but in a way that connected them with the broader world English-speaking community.
Answers to research questions

In answer to research question one, about change in integrative and instrumental motivation, satisfaction, confidence, and actual performance as a result of using Constructivist student-centered learning to address CMC tasks, figures 3 through 7 make clear that all of these factors did change. Generally they changed to the positive; however integrative motivation faltered after the second presentation because the students had been using less-than-optimum collaborative strategies.

Research question two asked about factors stemming from the Constructivism/CMC methodology in this study that affected the students’ perceptions of changes in their own motivation, satisfaction, and confidence in learning English. The qualitative findings show that various affective variables, such as anxiety, motivation, and self-efficacy, coupled with positive peer dynamics and teacher support, all improved the students reported motivation, confidence, and satisfaction.

Relationship between affective factors and motivation

The finding from Clèment and Kruidenier’s study (1985) reported that motivation was the main factor promoting satisfaction and confidence. The quantitative and qualitative findings in this study aligned with Clèment and Kruidenier’s findings, indicating that motivation was the main determinant of the students’ willingness to communicate (Yashima, 2002; Yashima, Zenuk-Nishide, Shimizu, 2004). Thus, the willingness of the students to persist in active study of English lies in their level of motivation. The qualitative findings, however, confirmed other research findings that students often decline to use English because they are embarrassed about their lack of fluency (Shamsudin, & Nesi, 2006), a concern resulting from lack of practice and
interaction using English. Quality interaction via CMC with a native speaker, as in this study, can address this lack and make students more willing to interact in English.

Dissatisfaction with lower than expected grades on the first presentation and anxiety about the CMC presentations appeared to be affective. However, unhappiness with the low grades on the first iteration of the learning spiral was temporary. Most of the students attempted to apply new strategies in order to improve their subsequent CMC performance. Their self-efficacy resulting from successful CMC interactions with the native speaker gave them confidence that they could do better on the next presentation, i.e., made their level of expectations more realistic and helped them understand the level of effort that would be required.

**Effect of self-deception on integrative and instrumental orientations, self-confidence, and satisfaction**

The qualitative findings showed that the participants in each group made their own decisions about use of peer scaffolding in preparing their CMC presentations, but in some cases they misjudged or even deceived themselves about the level of interaction and effort that would be required. In effect, they made a mental calculation of how they could get the best grade for the least effort, but then were surprised by the lower than expected grade they received. Most then worked with their peers to reevaluate the level of effort and strategies then needed to employ to get a higher grade on subsequent CMC presentations. As a result, the autonomy of the peer groups, coupled with peer interaction, helped the students better set their expectations for subsequent CMC interactions, an example of critical thinking. Student motivation, satisfaction, and self-confidence all tended to be higher when students had a positive rapport with their group members, making them more motivated to cooperate with their group members to perform their CMC tasks and improve their performance. Similarly, students learned the lesson about how
much effort it took to succeed much more effectively through critically thinking about their previous CMC presentations to the American than they would have from teachers nagging them to make the required effort.

**Conclusion**

The typical college English course in Taiwan, the site of this study, remains largely a teacher-centered lecture-memorization environment (Wu, 2006) even though world-wide research and practice are dominated by Constructivist approaches. The methodology in this study used CMC as the justification for a peer-scaffolding process that repeated in three iterations and showed that as positive rapport in the peer learning group improved, so did the other factors, including actual performance on the CMC tasks, as measured by the assignment grade. It is implicit in this Constructivist/CMC instructional design that stronger rapport translates into the group exercising more autonomy in preparation, use of sources, doing, critical thinking, and use of feedback. This is much more effective than learning via lecture-memorization because the students are active rather than passive in the instructional activities centered around the CMC interaction. Of course, in addition to peer scaffolding, the teacher must also provide appropriate scaffolding in order to monitor and keep the students headed in the right direction.

This study suggested, then, that the use of proper learning strategies combining both a peer-learning spiral and Computer-Mediated Communication can be beneficial to EFL learners and that student/group autonomy, when properly monitored and channeled by the teacher, can lead to improved learning.

This study examined the learning and reactions of only a single class of students as its population, due to the difficulty of selecting a sample randomly from a larger population, given the methodology. Several avenues of further study suggest themselves. The study could be
replicated with multiple classes representing multiple universities. With more classes, control groups could be used to vary certain elements of the instructional design, such as inclusion or exclusion of the pre-training. Other iterative tasks than CMC interaction with a native speaker could be employed.

It is also fair to ask whether the role of the American professor interacting via CMC was critical to the overall success of the students in the study. Would student motivation, satisfaction, and self-confidence have increased equally if there had been no native speaker in the mix? What if the native speaker had been there in person, as opposed to interacting via CMC? These are questions that were beyond the scope of the current study, but which the researchers intend to explore in future academic years.

The true benefit of this study is the model it presents in which relatively independent peer interaction resulted in improvements in motivation, confidence, satisfaction and actual performance, and the way that CMC can contribute to this dynamic. In the 21st century, the importance of English as a Foreign Language means that learners around the world require authentic, active learning environments, such as delivered via the CMC interaction in this study, in order to reach their full potential.

**Acknowledgements**

This research study was funded by National Science of Council of Taiwan under the Grant NSC 98-2410-H-126-033 to the contributors.

**References**


