A Social Network Analysis of Weblogs in Collaborative College Writing*

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Many researchers claim that the interpersonal aspect of peer familiarity is important and has a crucial role in performing collaborative tasks. However, this factor has not been studied thoroughly until now. This paper seeks to analyze the relationship between the linguistic aspect (writing performance and written interaction) and the interpersonal aspect (writers’ familiarity among group members) in producing better writing performance on weblogs using Social Network Analysis (SNA). SNA is able to examine intangible aspects, like network or relationships among people, and it has been adopted by a wide variety of researchers. SNA shows relationships among people and calculates a writer’s written interactions and familiarity among group members in blogging that enables collaborative online weblog writing. This study asked and answered three key questions: how peer familiarity relates to written interactions in weblogs, what are the correlations between peer familiarity, written interactions and writing performance, and how students’ perspectives and attitudes toward peer familiarity differ in weblogs. The results of this research suggest that the interpersonal factor of peer familiarity plays an important role in fostering written interactions and improving writing ability.

I. INTRODUCTION

The use of weblogs in the language learning has been significantly increasing in popularity. A number of educators who use weblogs as a writing tool to encourage collaborative language learning have the goal of learning how to improve writing performance in computer-assisted language learning (CALL) contexts (Campbell, 2003; * The earlier version of this paper was presented at the 11th The Korea Association of Multimedia-Assisted Language Learning (KAMALL) Conference in Seoul National University of Technology, Seoul, Korea, October 11, 2008.)
Although blogging in a collaborative learning setting among writers includes social and interpersonal domains, the improvement of writing outcomes in blogging has mainly focused on the linguistic aspect. Little is known about the interpersonal aspect of peer familiarity\(^1\) that is significant and has an essential part in performing collaborative tasks (Bruffee, 1984; Plough & Gass, 1993; Zuengler, 1993). This result matches with the research about interlocutor familiarity performed by Ellis (2003). However, these findings were based upon, and limited to an oral research methodology only. Therefore, this research realized the need to address the relationships between them in an innovative and novel way by employing an online collaborative writing.

II. LITERATURE REVIEW

1. Collaborative Writing and Written Interactions in Weblogs

Many researchers’ studies concerning online communication tools were conducted in a writing environment (DiGiovanni & Nagaswami, 2001; Kelm, 1992; Jae-Kyung Kim, 2005; Lee, 2002; Matsumura & Hann, 2004; Min, 2006; Tuzi, 2004). According to Godwin-Jones (2003), online communication tools are classified as first-generation web and second-generation web based on the underlying communication technology and its recent innovations. The differences between first-generation web and second-generation web lie in using technology to support the individual and using technology to support relationships. The most important change is the ability to link automatically disparate documents of interest to individuals or groups. This change allows learners to discover new ways of interacting and new social relationships for helping each other in writing and editing which is really the most important aspect of collaborative language learning such as online weblog discussions (Jae-Kyung Kim, 2007). The new collaborative ways were supported by Yee's (2001) study. Yee clearly illustrated the differences between the first-generation web and the second-generation web.

The first generation web encompasses synchronous and asynchronous communication tools such as e-mail, discussion forums, and chat. The second generation web covers blogs, wikis, and RSS feeds\(^2\) (Godwin-Jones, 2003). Both of the tools have their own advantages

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1 "Peer familiarity" is a term used in this research to define "intimacy" or "closeness" between people in collaborative language learning settings. It was mentioned as "interlocutor familiarity" in Ellis' research (2003, p. 98).

2 RSS is a document type that lists updates of websites or blogs available for syndication. These RSS documents are also known as 'feeds' and may be read using aggregators, a program/tool,
and disadvantages. First generation tools are more familiar but less powerful, while second generation tools are less familiar but offer powerful opportunities for online collaboration for language researchers and learners. Therefore, blogs that belong to second generation tools have become a cornerstone for online collaborative writing and are worthwhile alternatives to traditional collaborative writing.

A weblog can be defined as a personal journal published on the internet. It is often referred to as a blog. People use blogs as an online journal, a web diary, a content management system, or an online publishing platform (Jae-Kyung Kim, 2007). Also, weblogs are intermediate modes between standard web pages and asynchronous computer-mediated communication (Herring, Scheidt, Bonus, & Wright, 2004). The computer-aided writing gets the additional features of novelty and audience through blogs that provides possibilities for communicative activities including written interactions and collaborative writing. Furthermore, weblogs are very effective writing tools as they allow students to post their writing and comments on their web pages for both teachers and students.

These characteristics make a weblog an appropriate tool for academic use and, in fact, some research on blog application in writing classes has been carried out (Campbell; 2003; Ward, 2004). The studies suggested that both teachers and students benefited from the use of blogs in writing class. For the teacher, blogs serve as a supplemental aid where teachers' notes could be published in chronological order. Also, all student writing samples are stored in one place and can be read from any computer connected to the internet at anytime. Additionally, individual feedback can be given on individual student blogs, allowing for active written interactions among students (Jae-Kyung Kim, 2007). Students can read peers' comments intended for the whole class and comments directed at them individually. Moreover, students can observe how they have discussed and have adapted peers’ comments over time.

Therefore, in L2, weblogs may be best suited for writing classes allowing teachers and students to benefit from the use of blogs (Campbell, 2003). Writing performance can be improved through opinion postings from an individual peer or group of peer learners using blogs. Ward (2004) points out that weblogs can be used to satisfy various need required for effective teaching writing in language classes and weblogs can offer two-way communications for written interactions. He cited Wrede's (2003) remarks on the benefits of blogs as compared to other CALL media such as e-mail, instant messaging, or using a Short Message Service (SMS). Wrede (2003) says:

which enables individuals to read blogs or site content updates using RSS feeds. The RSS provides a convenient way of viewing feedbacks whenever an update has occurred on writings.
Weblogs are monologues and dialogues and therefore can benefit from the advantages of both forms and they also intersect e-mail, discussion forums, instant messaging and conventional electronic publishing, they are continuous in the sense that they are not result oriented but process oriented (p. 2).

Constant blog updating based on peer writing similar to regular journal entry writing encourages students to compose writing through an ongoing process. In particular, the students may bring written opinions, comments, and different views on subject matter resulting in enhancement of the writing quality if the writer considers the comments of his peers and incorporates them in his writing.

Providing an easy way to write and giving some comments to writing is very crucial for a writing class. Since blogs are considered the effective and efficient computer-mediated communication (Herring et al., 2004), they provide a dynamic environment for writing and written interactions. Thus, blogs are media for dynamic interactive peer comments between writers and reviewers and tools that have the potential to increase student-centered learning (Foster & Tam, 2004). Therefore, this study decided to choose weblogs as the media for collaborative writing tools among students.

2. Peer Familiarity in Collaborative Tasks

There are complicated and profound factors in facilitating and improving electronic online discussions and writing performance beyond linguistic factors. It is not surprising to note that one of the most important social and interpersonal aspects in collaborative tasks which is largely disregarded is learners' familiarity. Ellis (2003) discussed the problem in investigating collaborative tasks as follows:

It should come as no surprise, then, to find that the nature of the interaction varies according to whether the interlocutors are familiar with each other (p. 178).

Ellis (2003) emphasized the importance of the interlocutor's familiarity during interaction which happened between peers in collaborative language learning. Plough and Gass (1993) observed something important about the interlocutor's familiarity. They found the same results regarding the influence of familiarity on interaction. Familiar dyads adopted more clarifying requests and confirmation checks than unfamiliar dyads because students with closer relationships showed a strong preference to be in the same group thereby encouraging peer support and cooperation.

Nelson and Murphy (1993) found that learners who interacted in a cooperative manner were more likely to use peer suggestions to revise their writing than those who interacted in a defensive manner. Similarly, Mullen and Copper (1994) mentioned that familiar
members desire to belong to the same group because they liked their peers and a collective group feeling was created by the binding force of the group's purpose. As for CALL context, Jae-Kyung Kim (2005) proposed that written interactions and peer familiarity among group members play an important role in the writing process and affect the quality of the writing. While her previous research was focused on elementary students, this current study sets out to explore the relevancy of the peer familiarity conclusions of the earlier research when applied to university students.

3. The Influence of SNA on Interactions and Relationships

More recently, the study of Social Network Analysis in collaborative learning environments has increased. In other words, the theoretical framework based on interaction and interpersonal relationships in collaborative learning theory promotes using SNA (Palonen & Hakkarainen, 2000; Scott, 2001; Wasserman & Faust, 1994). Also, the concept of a social network and the methods of social network analysis have drawn interest from social and educational researchers. Because of the appealing focus of social network analysis on relationships among social entities, it allows the recognition of the patterns and implications of these relationships (Wasserman & Faust, 1994). From the perspective of social network analysis, the social setting can be articulated as patterns in relationships such as peer familiarity among interacting units.

A crucial premise of collaborative learning theories is that learning is socially constructed among people. Papa and Tracy (1988) reported that highly connected individuals in an organization's communication network were the most productive. Based on the part of system theory (Buckely, 1967), social network analysis provided data to identify and measure network communication flow (Monge & Contractor, 1987). Examining the intangible aspects like network and relationships among people, SNA has been adopted by a wide variety of researchers (Jae-Kyung Kim, 2005; Palonen & Hakkarainen, 2000; Scott, 2001; Wasserman & Faust, 1994). This study proposes SNA as a methodology to analyze and clarify previously untested interpersonal factors such as peer familiarity involved in the writing process.

Based on the claims of Plough and Gass (1993), Nelson and Murphy (1993), Liu and Hansen (2002), Ellis (2003), and Jae-Kyung Kim (2005), this study investigates whether peer familiarity relates to written interactions and writing performance. It also examines the relationship between the students and the students' perspectives toward peer familiarity.

4. Research Questions

To investigate the relationship between the linguistic aspect (writing performance and
written interaction) and the interpersonal aspect (writers’ familiarity among group members) to produce better writing performance, the study is designed to explore the degree of the students’ written interactions and familiarity using SNA.

1) How does peer familiarity relate to written interactions in weblogs?
2) What are the relationships between peer familiarity, writing performance, and written interactions in weblogs?
3) How do students’ perspectives and attitudes differ toward peer familiarity in weblogs?

III. STUDY

1. Participants

The participants for the experiment were 13 Korean university students majoring in English. Among them, 5 students were female and 8 students were male. The mean age was 22.8. All participants were enrolled in an elective multimedia course. They were acquainted because they studied together for a couple of semesters. The pre-treatment writing was used as a diagnostic tool in order to determine the students’ writing proficiency. The post-treatment writing was used to measure the progress that each student had made.

The median score of the pre-treatment writing was 3 based on O’Mally and Pierce’s (1996) holistic scoring. For the holistic scoring, the numeric scale ranged from 6 to 1 reflecting the degree of composition quality. Furthermore, a score of 6 on the holistic scale meant that there were very few errors in the students’ writing. A score of 1, however, indicated relatively poor use of these constructs.

The students’ compositions were graded by three raters. The raters’ scores were collected and averaged to determine a mean for holistic categories. Eight participants acquired a score of 3 and two participants received scores above 3 (3.67 and 3.3). Two participants had scores below 3 (2.7 and 2.33). Therefore, most of the students enrolled in the course were not at the same level of English proficiency but were at the similar-level of English ability (below intermediate) to understand the sample essays related to the topic (cosmetic surgery) and write their ideas.

The students had a very good rapport with the researcher since she had taught them English for more than 2 years. When the students had difficulties in English, the researcher encouraged them eagerly and had coaching sessions individually and in groups. Sometimes, the researcher approached the students privately in order to discuss their weaknesses and reservations in expressing their opinions publicly both in class and on written assignments.

The researcher invited the students to lunch and started the interview by asking about
their general interests, such as their favorite TV drama, the type of food they liked, and the problems they were struggling with. The researcher prepared for these interviews by making questions for each student beforehand after reading their written interactions and studying their peer familiarity surveys. Accordingly, during the interviews, the researcher tried to show empathy upon the students' responses. And then, the researcher had the opportunity to understand their perspectives, in particular, their inner voice about their English learning. That helped students to feel comfortable and to begin to share freely and honestly their perceptions toward familiarity in writing.

2. Materials

Four data collection instruments were used in this research: a peer familiarity survey (Appendix A), written interaction text (Figure 1), students' essays, along with an interview that was administered after the student's collaborative writing on weblogs.

**FIGURE 1**
A Snapshot of Written Interaction Text on Weblogs

[Text of interaction text]

Data related to the three drafts and revised versions from each student for the course were collected but only the last essay was used as main source materials for the research. The reason for this was to avoid the bias because of some absentees in the other phase of writing essays. After the brief writing instruction on weblogs, the students were asked to read the article related to the topic and write the essay. To measure the participants’ writing,
the first draft was used as a diagnostic tool.

Regarding the collaborative writing tasks, it is important to choose an appropriate task in order to operate effectively. Pica, Kanagy, and Falodun (1993) supported the idea that teachers and researchers have to be careful when selecting tasks from other types of materials used in the classroom for the learners. According to So (2005), argumentative writing was selected as a task because it was interesting to the students. Likewise, the writing task chosen for this research was argumentative writing in which a point of view was stated and debated. Krashen (1989) suggests that empowering learners to choose their own writing topics resulted in more interest in writing. In this research, a focus group interview was given to the participants to allow them to choose the writing topics. During the focus group interview, they were prompted to select thirteen topics of interest. The students were then given a choice of current events that encompassed topics chosen during the focus group interview. The topic of the writing used in this research was “Are you for or against cosmetic surgery?” Web-based articles contained both text and pictures used to motivate the students and comprehend the writing topic of cosmetic surgery.

3. Procedure

The pre-treatment writing was conducted at the beginning of the research to ascertain the students' writing ability. The writing task was to write the first draft, discuss their writing collaboratively and then write the final version. The students wrote three journals and went through the same procedures and the third and final writing were used as research data. The final writing was also used as the post-treatment writing to measure the progress that each student had made. For the purpose of this study, the researcher wanted to make discussion groups in the beginning but because the participants were only thirteen, the experiment was conducted upon all participants without any groups.

To examine the participants' familiarity towards peers, the survey was administered at the beginning of the semester. The survey questions were given and consisted of four questions: one, “Do you have anyone in particular whom you want to have as your partner to discuss collaboratively? ; and two, “If so, is it related to peer familiarity?” ; and three, “Please rank five names on the name list (Rank five people you choose on a scale of 1-5 with 5 representing the person that you want to work with the most and 1 being the person that you want to work with the least)”; and four, “What was the reason you chose these five people?” (Appendix A).

The students were asked to rank the five people they chose on a scale of 1-5 with 5 representing the person that they wanted to work with the most and 1 being the person that they wanted to work with the least. Appendix B represents the numerical data of the choices that the students made based upon their preferences.
As a way of investigating how peer familiarity relates to written interactions and the differences between pre-writing and post-writing, correlation analysis was conducted with the data from SNA. The researcher added the numbers that each student received and those scores were used for the data analysis.

4. Data Analysis

A normality test (Shapiro-Wilk) was performed because of the small sample size. In the table of the statistical result of the normality test it was evident that significant differences existed in peer familiarity (p=.004), written interactions (p=.020), and writing performance (p=.002). Therefore, a normality assumption cannot be accepted and statistical analysis cannot be done on the data of this research due to those differences.

<table>
<thead>
<tr>
<th>Items</th>
<th>Sum of Squares</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Familiarity</td>
<td>0.916</td>
<td>13</td>
<td>0.004*</td>
</tr>
<tr>
<td>Written Interactions</td>
<td>0.954</td>
<td>13</td>
<td>0.020*</td>
</tr>
<tr>
<td>Writing Performance</td>
<td>0.893</td>
<td>13</td>
<td>0.002*</td>
</tr>
</tbody>
</table>

* = statistically significant (p < .05)

To analyze whether peer familiarity is related to written interactions and writing performance in weblogs, a software package for SNA was used. SNA is a tool for exploratory network data analysis and visualization for intangible aspects such as peer familiarity. It allows researchers to explore the relationship between people, organizations, resources, tasks and events. SNA delineates the amount and the degree of the students’ written interactions and familiarity as a whole along with the amount and the degree of the individual writer's familiarity in relation with the whole group to which they belong. Also the students' written interaction texts were analyzed to investigate the relationship between peer familiarity and written interactions and writing performance. The data set included the discourse of the written interaction, the transcripts of the interviews, and the completed writing. Each data source was analyzed separately. The written interaction texts completed by students were analyzed using both quantitative and qualitative measures. Quantitative measures of peer familiarity were administered by SNA measures.

A qualitative analysis of the written interaction texts was based on co-constructing ideas, which were taken into consideration when generating the appropriate expressions. In analyzing the completed writing, the six scale holistic evaluation scheme developed by O’Mally & Pierce (1996) was used. Students’ compositions were graded by three raters including the researcher. Inter-rater reliability on the holistic evaluation of compositions
was checked, and the differences among the three raters were small ($r = .778$, $r = .857$, and $r = .855$). A rater was a native speaker of English who finished her master course majoring TESOL. The other two raters were Korean professors who finished their doctoral course majoring in English Education and taught English at universities in Korea including the researcher.

For more detailed information on the participants' perception towards peer selection, an interview was administered at the end of the research. The researcher interviewed the participants and asked the question, "Why did you have particular friends with whom you wanted to discuss your writing ideas?", “Was it related to peer familiarity?”, and “Why do you want to have familiar friends while discussing your writing?” More in-depth analysis was conducted in order to gather more detailed information on peer familiarity.

IV. FINDINGS

1. The Relationships between Peer Familiarity, Written Interactions and Writing Performance

To reflect the familiarity of each student, a SNA graph and a table were created based upon the data of the students' familiarity survey. The data was calculated and visualized in Figure 2 and Table 2.

**FIGURE 2**

*SNA Graph on Peer Familiarity*

*Note:* Students are designated as “ST” and assigned a number.
In this research, SNA graph was presented based on "in-degree" scores of peer familiarity. "In-degree" could be used to measure the degree of familiarity between each student. The term "in-degree" means that one student is selected by his peers.

Therefore, if a student has a high in-degree score, that means he is popular as the partner among group members. In Figure 2, student type 1 (Students are designated as “ST” and assigned a number) was the center student who received high in-degree scores and in Table 2, ST1 had the highest in-degree score as well. That means ST1 was the most popular person in the group. Like ST3, 6, and 7, if students have low in-degree scores as in Table 2, it might mean that the students were isolated from the other students and thus lacked popularity within the group. Also Table 2 illustrates that ST1, 4, 5, 9, and 11 have higher in-degree scores of familiarity and are positioned relatively in the center of the circle in Figure 2. They were selected from many other students and were relatively popular as discussion partners.

<table>
<thead>
<tr>
<th>Participants</th>
<th>in-degree score</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST1</td>
<td>3</td>
</tr>
<tr>
<td>ST2</td>
<td>0.75</td>
</tr>
<tr>
<td>ST3</td>
<td>0.5</td>
</tr>
<tr>
<td>ST4</td>
<td>2</td>
</tr>
<tr>
<td>ST5</td>
<td>1.583</td>
</tr>
<tr>
<td>ST6</td>
<td>0.417</td>
</tr>
<tr>
<td>ST7</td>
<td>0.333</td>
</tr>
<tr>
<td>ST8</td>
<td>0.917</td>
</tr>
<tr>
<td>ST9</td>
<td>2.75</td>
</tr>
<tr>
<td>ST10</td>
<td>1</td>
</tr>
<tr>
<td>ST11</td>
<td>1.5</td>
</tr>
<tr>
<td>ST12</td>
<td>1.333</td>
</tr>
<tr>
<td>ST13</td>
<td>1.167</td>
</tr>
</tbody>
</table>

Note: ST stands for student type. Each student has his/her own different familiarity type and score.

Figure 3 shows the written interactions among the thirteen participants. It indicates the identity and the frequency of the students' written interactions. Each student gave and received comments to and from his fellow students. After this, the number of interactions was counted and used to form the SNA graph. On the graph, the thickness of the lines indicates the frequency of interactions between the students. A thin line represents at least one interaction while a thicker or darker line represents multiple interactions. The actual number of interactions between the students is also noted by their number. For example, if ST1 gave comments to ST2, a thin line would be made between ST1 and ST2. If ST1 gave multiple comments to ST2, a thick line would be made between ST1 and ST2. Figure 3
indicates that ST1 had the highest number of written interactions with his fellow students. ST3, 6, and 7 located peripherally, indicate that they had less interaction with the others. All students had different patterns of written interactions resulting in different widths of the connection lines represented on the graph. This can be explained because each of them had different partners with different frequencies when they discussed their ideas about the writing topic.

The results of the written interactions are integrated in Figure 4, Dendrogram of written interactions, which translates interactions into individual values and patterns.
ST1 had the highest score and the most written interactions among students. ST3 and ST6 had the lowest scores in Figure 4 along with the less interactions in Figure 3. The associated status values ranged from 1.732 to 7.348 for each student with 1.732 being the status values of students 2 and 3 and 7.348 being the status value of ST1. All students participating in the written interaction phase, had different status values corresponding to their level of participation.

In terms of peer familiarity and written interactions, Table 3 presents the descriptive statistics of peer familiarity, written interactions and writing performance and Table 4 clearly shows that a correlation exists among them. Each student’s scores were ranked on a scale of 1-5 and the calculated data transferred into the Peer Familiarity Matrix of Students (Appendix B). The total number of peer familiarity was used to determine the correlations among Peer Familiarity, Written Interactions and Writing Performance.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>Descriptive Statistics of Peer Familiarity, Written Interactions and Writing Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Peer Familiarity</td>
<td>1.33</td>
</tr>
<tr>
<td>Written Interactions</td>
<td>3.96</td>
</tr>
<tr>
<td>Writing Performance</td>
<td>3.49</td>
</tr>
</tbody>
</table>

Table 4 represents that a correlation exists between the score ($r = .793$) for peer familiarity and the score for written interactions. The higher the number, the greater the degree of peer familiarity and popularity of the students. Therefore the students with the lowest numbers were less popular among their peers and had a lower degree of peer familiarity. Correlations were found between the scores for peer familiarity and writing performance ($r = .706$) and for written interactions and writing performance ($r = .836$).

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Correlations among Peer Familiarity, Written Interactions and Writing Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peer familiarity</td>
</tr>
<tr>
<td>Peer Familiarity</td>
<td>1.00</td>
</tr>
<tr>
<td>Written Interactions</td>
<td>.793**</td>
</tr>
<tr>
<td>Writing Performance</td>
<td>.706*</td>
</tr>
</tbody>
</table>

*Note: Writing performance means the difference between the pre- and post-writing scores.*

If peer familiarity is higher, writing performance is higher and if written interactions are higher, writing performance is higher. This indicates that peer familiarity and written interactions had a stronger correlation than peer familiarity and writing performance. However, written interactions and writing performance had a strong correlation as well.
2. Comparing the Discourse of the Written Interactions

A closer analysis of the written discourse revealed that high familiarity peers tended to produce more useful and meaningful texts. High familiar peers' discourse included the profound and insightful input into the process of co-constructing ideas. Their discourse adopted a scaffolding approach. That is, they discussed the topic, read it to evaluate, and motivated and added some more ideas to generate the appropriate expressions. The following excerpts from high familiarity peer students illustrate clearly the incorporation of ideas. High familiarity peer students encouraged more effective and meaningful written interactions in the collaborative writing process.

Excerpt 1: Co-constructing ideas with peers (High familiarity peers)
<ST5→ST1> The definition of cosmetic surgery tends to change today. Double eye lid surgery is way too common nowadays and it is not even considered as a cosmetic surgery.
< ST1→ST5> Imagine 5 years later, for example, 9 out of 10 people cutting their chins off and inserting a silicon attached to their nose. It will be so hard to find a natural man~!
< ST5→ST1> It`s up to you whether you make a decision by your free will or not. You need to strengthen your supporting idea for it.

Excerpt 2 is an example of low peer familiarity. It also shows a process of co-constructing ideas. In contrast to excerpt 1, the text produced tended to include less detail. Also, the students provide input to the process but their discourse is shallow and superficial. They did not expose their specific ideas and they easily accepted peer's ideas without any consideration. Also, they did not provide much helpful input.

Excerpt 2: Co-constructing ideas with peers (Low familiarity peers)
< ST2→ST9> I agree with your opinion.
< ST9→ST2> I am still waiting for your response. Come and write your opinion plz.
< ST2→ST9> I agree with your opinion. Many people want more beautiful faces. You look at yourself in the mirror. Your will be realize that the man is very handsome...hee hee hee

The data of Expert 3 (ST1 and ST9) illustrates the other process of co-constructing ideas. They are very honest to express their opinions. During the written interactions, they encourage each other, adding to each other's ideas. ST1 incorporates ST9's suggestions but
adds his ideas. Also, ST9 contributes to this discourse not only by providing his ideas but also by encouraging ST1 in addressing his ideas with deliberation. Both students' contribution to each other is fairly much.

Excerpt 3: Co-constructing ideas with peers (High familiarity peers)
< ST1→ST9> Hey nasuri~ you want to do cosmetic surgery because you want to be seen better? I agree with your opinion. I had thought about cosmetic surgery before. Sometimes I'd like to have double eye lid surgery or make my nose higher.
< ST9→ST1> Alright...To be honest with you... I want to have a cosmetic surgery myself...
< ST1→ST9> I want to have a huge double eye lid, cut off my chin, make my nose look sharper, and so on... But I came to realize the fact that beauty does not last forever. It's just a temporary satisfaction of oneself.
< ST9→ST1> Thank you.

Excerpt 4 also demonstrates a process of co-constructing ideas. Excerpt 4 showed the reaction pattern that how low peer familiarity students received their peers' comments. When low familiarity peer students discuss the topic, they did not consider their peers' ideas deeply and they did not pay close attention to their peers' writing. They paid their peers just a high compliment without sincere consideration. Also, the students with low peer familiarity were not active and earnest about co-constructing ideas for producing highly qualified writing as those with the high peer familiarity.

Excerpt 4: Co-constructing ideas with peers (Low familiarity peers)
< ST13→ST10> Wow~~~ it's amazing.
< ST10→ST13> Good idea!
< ST8→ST7> I definitely agree with your opinion. You have a nice appearance.
< ST7→ST13> That's why you don't understand someone who has an ugly face!!!
< ST7→ST13> I think they are very beautiful but I am compassionate to them. I'm sure they have an obsession to look beautiful.

The examples of excerpts show the correlation between peer familiarity and written interactions. High familiarity peers were very actively involved in the collaborative process of co-constructing ideas while low familiarity peers remained relatively unengaged. Therefore, the writing quality rapidly improved for the high familiarity students who benefitted from more and better quality comments than available to the low familiarity students.
3. Students' Perceptions toward Peer Familiarity

To examine the participants' familiarity towards peers, a survey was administered at the beginning of the semester. The survey questions were given and consisted of four questions. The fourth question was, “What was the reason you chose these five people?” (Appendix B). From the survey answers, three main reasons could be found: Peer familiarity; English ability; and enthusiasm. Those factors were summarized as presented in Table 5. Peer familiarity was the most common reason (35), English ability was next (23), and enthusiasm (7) was last in choosing a friend as a partner. It was noted that the reason to choose a friend whom they wanted as their partners was due to intimacy, especially between close friends. In addition, a 60-minute or 90-minute interview was conducted with each student in order to obtain an in-depth understanding of their perceptions toward peer familiarity.

<table>
<thead>
<tr>
<th>Reason to Choose Partners</th>
<th>Specific reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peer Familiarity</strong> (35)</td>
<td></td>
</tr>
<tr>
<td>He/She is close and comfortable to work together (17).</td>
<td></td>
</tr>
<tr>
<td>He/She is the closest person I know (6).</td>
<td></td>
</tr>
<tr>
<td>He/She is my good friend and open-minded so it is good to work with (4).</td>
<td></td>
</tr>
<tr>
<td>We have known each other for a long time (3).</td>
<td></td>
</tr>
<tr>
<td>I like him/her very much (5).</td>
<td></td>
</tr>
<tr>
<td><strong>English Ability</strong> (23)</td>
<td></td>
</tr>
<tr>
<td>He/She is fluent in English (16).</td>
<td></td>
</tr>
<tr>
<td>He/She has great ideas and opinions when discussing something (5).</td>
<td></td>
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<tr>
<td>He/She is very diligent and hard working (2).</td>
<td></td>
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<tr>
<td><strong>Enthusiasm</strong> (7)</td>
<td></td>
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<tr>
<td>He/She is so energetic (2).</td>
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</tr>
<tr>
<td>He/She seems to be passionate (4).</td>
<td></td>
</tr>
<tr>
<td>He/She does not easily give up on things (1).</td>
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</tbody>
</table>

*Note: ( ) indicates the number of reasons when the students answered the question.*

Interviews with the students following the class produced some remarkable insights about the students’ perceptions toward peer familiarity. The interview data demonstrated that active and successful collaborative written interactions were closely related to familiar feeling between the students. Most students were positive about collaborative work on weblog with familiar peers. Among thirteen students, twelve students were positive about peer familiarity. However, one student felt that it doesn't matter to whether he works with familiar friends or not. What is noteworthy about the students’ interview comments was that the students were affirmative to peer familiarity for three general reasons: The likelihood of face-saving; the likelihood of comfortability; and the likelihood of receptivity. The student interview data overlapped for the same reasons and showed a similar tendency.
of peer familiarity. Some samples of interview data will be introduced in the next section.

1) Peer Familiarity: The Likelihood of Face-saving

Interestingly, the students were significantly nervous when their counterparts were better than them in English, and thought that they looked down upon them over their lack of English ability. The following excerpt is taken from the interview with a student designated ST9 who commented about peer familiarity and face-saving:

I do well in my other subjects but I struggle in English. Therefore, I feel much stress and inferiority to communicate in English because I don't think that I have much ability. I am open to give and receive comments upon my writing. However, I am hesitant to give and receive comments from someone I don't know well even though they may be good in English. I don't want to this type of person as a partner nor to be under his guidance and direction. I feel uncomfortable to work in that circumstance. If this were the case, I would feel very embarrassed and shamed. I am afraid my partner would look down on me or hurt my feelings. That's why I want to have a close friend as a partner to protect my pride. Therefore I prefer to interact with ST1 because I know he doesn't look down upon me.

The possible explanation for ST9’s comments in preferring ST1 as his partner lies in face-saving. ST9 suggested that if he had a student with better English than him as his counterpart, it would be a less favorable environment for the collaborative writing process. His comment indicates that face-saving between students may play an essential role in collaborative writing interactions.

To be more specific, the reasons the students did not want to have unfamiliar friends as their working partners were due to embarrassment over their mistakes. The students were afraid of making mistakes in front of their unfamiliar friends and losing face. Being corrected by someone not close to them could easily cause embarrassment. Nelson and Carson (1998) reported that this concern about hurting feeling was observed in their research particularly among Asian students such as Chinese. The following from ST7 demonstrated this tendency:

Usually classmates who are good at English don't care about the other classmates who are struggling. For example, a couple of weeks ago, when I asked a question about conjunction to one of the best students in my class, he wrote, "Why didn't you already know this easy grammar? Are you a university student?". I was very upset and I decided not to ask him any more questions even though it might have helped
my test scores. I'm not confident in my English ability. To be honest, I don't like writing in English with unfamiliar people because I make a lot of spelling mistakes. I feel embarrassed by their corrections. But ST1 is kind when he corrects my spelling errors even if they are small ones.

This student likely assumed that partners unfamiliar to one another could easily blame each other for their own mistakes and weaknesses. Furthermore, the question and answer during the writing process between the unfamiliar students may make the questioned student feel distressed. Therefore, pair or group work between unfamiliar students may have lowered the active collaborative writing interactions.

2) Peer Familiarity: The Likelihood of Comfortability

Another attitude was expressed by ST3 who was concerned about stressful and uncomfortable environments. ST3 thought that the student who had an unfamiliar counterpart tried to hide his mistakes and to veil his linguistic incompetence.

However, some students had reservations about collaborative writing through group activities like ST3. One such reservation stemmed from not only a lack of confidence in his language skill but also uncomfortable feelings. The exposure of his weaknesses to unfamiliar classmate could lead to feelings of inferiority. The student did not like to work with unfamiliar friends because sometimes it's harder to feel comfortable with them when they make mistakes in English. This was demonstrated clearly by the following supporting discourse.

When a professor put me into a group in order to prepare for co-work without any consideration of our interpersonal relationships, I was very quiet and I did not easily express my opinion, and even when I had a good idea, I did not share it. I was nervous and afraid of making any mistakes that might expose my poor English to the other group members. I would rather be with the people that I know even if they are struggling with English and our group moves at a slower pace. I want to study without the stress of trying to hide my weaknesses. That's why I rather work with close friends. If I have a familiar partner, I'm very comfortable even if I make many mistakes.

As illustrated in the above interview data, the students' collaborative writing results relied partially on whether or not they felt comfortable with their partners. The more comfortable the students felt, the more reflective and in-depth interactions occurred.
3) Peer Familiarity: The Likelihood of Receptivity

Other interview data suggested that the students' preference relied on receptivity. Receptivity means a mindset of openness toward the experience of becoming a speaker of another language (Allwright & Bailey, 1991). The concept of receptivity is intertwined with the classroom experience. The students said that they prefer to have partners who are nice and gentle in their corrections and who are concerned about their feelings. This type of classroom environment increased the likelihood of receptivity. The following interview excerpt from ST4 highlights the importance of receptivity:

Sometimes my professor told me, 'You are a university student and responsible for your studying.' Yes, I know she's right. But I am still a human who feels shame and a little immature even though I look like an adult. I don't want to risk working with someone unfamiliar. The reason why I preferred to work with ST1 is because he is my good friend and was always nice even when I made mistakes in English. He knows my English is poor but he doesn't ridicule me or put me down.

During interviews with the students, most of them were positive about working with familiar friends. Only one student felt comfortable working with anyone. He was very confident in his English ability. Among the students that felt negative about working with unfamiliar people, the predominant reasons expressed were related to face saving and comfortable feelings and receptivity to other students while collaboratively writing together.

V. SUMMARY AND PEDAGOGICAL IMPLICATIONS

The purpose of the study was to analyze the relationships between writing performance and written interaction and writers' familiarity among group members in producing better writing performance on weblogs using SNA. The approach of SNA appeared to supply useful tools for accessing not-so-tangible social aspects like peer familiarity in collaborative language learning. It provided a new kind of rational information of written interaction and peer familiarity. Studying the relations among students on weblog’s writing helps us to better understand and explain collaborative writing processes that affect actual written interactions and qualified writing. The study asked and answered three key questions: how peer familiarity relates to written interactions in weblogs, what are the correlations between peer familiarity, written interactions and writing performance, and
how students' perspectives and attitudes toward peer familiarity differ in weblogs.

There is a direct relationship between peer familiarity, written interactions and writing performance. It was presented in this study through a quantitative analysis of SNA peer familiarity graphs and tables and a qualitative analysis of collaborative written scripts and interview data. That means that the written interactions are higher for students with higher in-degree scores of peer familiarity than for students with lower in-degree scores of peer familiarity. The inherent link between peer familiarity and written interactions were also supported by interviews of the participants.

This result indicates that peer familiarity, written interactions, and writing performance had correlations. The number of written interactions tended to increase and writing performance was inclined to improve when peer familiarity was higher. This is also graphically demonstrated by the SNA statistical analysis. Thus, one can say that peer familiarity between the students in an online weblog discussion is a crucial factor in doing collaborative activity. This result confirms the research about familiarity performed by Plough and Gass (1993), Ellis (2003), and Jae-Kyung Kim (2005).

A comparison of the produced text of high peer familiarity and low peer familiarity showed that high peer familiarity produced longer and meaningful discourse about the topic, and it had linguistic complexity. They implemented the assignment more completely. The discourse of high familiar peer students included profound and insightful input into the process of co-constructing ideas. In contrast, low familiarity peer students did not consider their peers' ideas deeply and did not pay close attention to their peers' writing. Also, they easily gave compliments and they did not provide much in the way of constructive criticism. High familiar peer students produced the text that included more detail while low familiar peers' discourse tended to show less detail. Also, high familiar peer students read each other's writing carefully and provided insightful input.

The findings suggest that there is a significant difference between high peer familiarity text and low peer familiarity text. This difference is based on the advantages of high peer familiarity. High familiarity peers proved that high familiarity peers' written interactions were very effective and meaningful in collaborative writing as they encourage students to integrate the comments of their peers in their writings.

As for interviews with the students, most of the students were positive about working with familiar friends. They had specific reason to choose familiar people as their partners. Interestingly, peer familiarity can be classified into three main specific reasons such as the possibility of face-saving, the possibility of comfortability, and the possibility of receptivity. The excerpts demonstrate that the students were very concerned about who their partners were. They sincerely wanted to avoid embarrassing themselves which could lead to a crisis of confidence. They knew that a close friend was more likely to be
considerate of their feelings than someone whom they didn't know well. The researcher could deeply symphasize students' desire and thought by listening to students' true opinion. The students who wanted to have familiar friends as their counterparts gave specific reasons for their choices. Some of the reasons stated were that they did not want to expose their poor English, and that their peers' corrections were not helpful if it hurt their feelings. Moreover, the students found that written interactions with unfamiliar peers' were uncomfortable.

With reference to the interpersonal factor of peer familiarity, the SNA data showed that peer familiarity was not a “one-sided characteristic” but rather a “between-people characteristic”. This factor is inherently a component of collaborative context and may be difficult to amend. But before starting a collaborative writing session, teachers should coach how to discuss ideas and work collaboratively in order not to hurt people's feelings while working together.

Ellis (2003) commented that peer familiarity is a very important factor in working with others in collaborative tasks and Liu and Hansen (2002) pointed out that peer trust is effective in the peer work process. Also, group members were assigned randomly in numerous peer work studies without considering their relationships to one another led to poor peer writing work (Leki, 1990). In conclusion, a major contribution of this study is its discernment of peer familiarity related to the occurrence of successful written interaction on weblogs’ writing. By knowing peer familiarity, L2 researchers and teachers can lead their students into more focused and effective collaborative writing.

However, the current study has certain drawbacks that need to be stated. First, this was classroom-based research that the sample consisted of an intact group of thirteen students without random assign. Therefore, any practical suggestions should be applicable in a similar classroom context. To be more specific, the participants are not advanced students who are able to write English well. Therefore, the participants are somewhat less able students who have feelings of inferiority in English. If the participants were more advanced students in English, the results might come out differently. Still, this research is valid because it provides well-grounded guidance for less able students’ collaborative writing which closely reflects the current status of English education in Korea. Second, it should be considered that some of the findings may be limited to the local situation of the current study. Further study is recommended to determine to what extent peer familiarity is related to written interactions and writing performance.
VI. CONCLUSION

As a final statement, this research suggests that the interpersonal factor of peer familiarity plays an important role in fostering written interactions and improving writing ability. Practically speaking, during English writing sessions, writing groups are usually formed either randomly or based on the student ID numbers for collaborative exercises. The interaction factor is not considered. In that way, it is hard to predict the effective writing outcomes.

A more useful method for fostering greater peer familiarity which guarantees better writing is utilizing the peer familiarity survey found in this study and applying it in grouping for collaborative writing during the online English writing sessions. Therefore, L2 writing researchers and teachers should consider the interpersonal aspect of peer familiarity when grouping students in an online discussion in order to motivate students to produce more written interactions and improve writing. In addition, it is important to study further how to form effective motivational groups for isolated students that are not actively participating in the online discussion.

REFERENCES


APPENDIX A
Open-Ended Questions for Peer Familiarity

1. Do you have anyone in particular whom you want to have as your partner to discuss collaboratively?
2. If so, is it related to peer familiarity?
3. Please rank five names on the name list (Rank five people you choose on a scale of 1-5 with 5 representing the person that you want to work with the most and 1 being the person that you want to work with the least).

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<thead>
<tr>
<th>Name</th>
<th>ST1</th>
<th>ST2</th>
<th>ST3</th>
<th>ST4</th>
<th>ST5</th>
<th>ST6</th>
<th>ST7</th>
<th>ST8</th>
<th>ST9</th>
<th>ST10</th>
<th>ST11</th>
<th>ST12</th>
<th>ST13</th>
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</table>

APPENDIX B
Peer Familiarity Matrix of Students
Applicable levels: College/University (pre-intermediate)
Key Words: peer familiarity, Social Network Analysis (SNA), weblog, collaborative writing

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