The Impact of Cyber Group Work on ESL Learners of Writing Skills

Donghyun Kim
Delta State University

Hyeyeon Kang
University of Mississippi

ABSTRACT
The use of pair and group work in the second language classroom has frequently been proven to help learners improve their language abilities in theoretical and pedagogical perspectives. A number of studies on pair and group work find it to be a worthwhile technique in a language classroom. However, one of the challenges in L2 classrooms is what the impact of cyber group work is. This study intends to investigate the impact of cyber group work on the writing ability of ESL students comparing performances of groups of learners (individual work, traditional groups and cyber groups) on three tasks (cloze test, text reconstruction and composition). This study will confirm the improved writing ability by learners in cyber groups, comparison with traditional group work and individual work.

INTRODUCTION

As the world becomes more interconnected, perhaps now more than ever, it is important for people to learn a second language (L2). With increasing numbers of diverse learners, we are faced with the task of supporting these learners. Second language learning has been conducted under many different circumstances. Many researchers have studied the field of second language acquisition (SLA). In recent years, especially, there has been serious interest in how group and pair work relates to students' language learning (Long & Porter, 1985; Webb, 1989; Kinsella, 1996; Mishra & Oliver, 1998; Storch, 1999, 2001, 2007; Swain, 2000; McDonough, 2004; Le, 2007; Chang, 2010; Imai, 2010; Vyatkina, 2012; Kormos & Csizer, 2014; McDonough et al., 2015). Cooperative learning classroom processes offer benefits by taking advantage of students' strong peer orientation. Bromley & Modlo (1997) defined cooperative learning as "the instructional use of a small group so that students can work together to accomplish a common purpose and maximize their own and other's learning" (p. 21). Nesbit & Rogers (1997) referred to cooperative learning as "a verity of grouping structures that hold students accountable for their own learning as well as the learning of fellow group members" (p. 53). Cooperative learning is an effective tool for students to engage in academic interactions for better understanding. Recent studies on group work and pair work find them to be a worthwhile technique in language classrooms. Several researchers have supported this argument in L2 learning. Group work promotes interaction (Long & Porter, 1985; Pica & Doughty, 1987; Gass & Varonis 1994; Swain & Lapkin, 1998; Chang, 2010), increases negotiation of meaning (Long 1983, 1996; Ellis 1994, 1997; McDonough et al., 2015), facilitates knowledge transferring to learners in group (Vygotsky, 1978; Storch, 2002; Le, 2007; Kormos & Csizer, 2014), and improves learning tasks (Doughty & Pica, 1986; McDonough, 2004; Nelson & Murphy, 1993; Pica & Doughty, 1985; Storch, 2007).

Since the importance of group work was recognized, researchers have investigated its impact on student learning (Long & Porter, 1985; Webb, 1989; Kinsella, 1996; Mishra & Oliver, 1998; Storch, 1999, 2001, 2007; Swain, 2000; McDonough, 2004; Le, 2007; Chang, 2010Kormos & Csizer, 2014). However, many previous studies have not acknowledged the change of technology and learners. Relatively few researchers have identified the learning performance associated with pair and group work in cyber space even though *cyber group work,* defined as a teaching strategy in which students placed in small learning teams work in cooperation with each other via digital communication devices to solve a problem, or to perform a task presented by the teacher, may help L2 learners and teachers to implement group or pair work that facilitate increased opportunities for interaction within an alternate, more accessible environment cyber space (Kelm, 1992; Chun, 1994; Abrams, 2003; Akiyama & Saito, 2016; Barkaoui, 2016; Shintani & Aubrey, 2016). In order to address this gap, the present study seeks to determine the impact of cyber group work on the writing skills of ESL learners by comparing it to learners' performances of tasks completed in traditional group work.

In addition, few studies have recognized new learners who are the "Net generation (Net-geners)," who are the first generation to grow up surrounded by digital media and the Internet. Since birth, the Internet and e-commerce have been second nature to them. Twenty percent began using computers between the ages of five and eight, and all Net-geners were using computers by the ages of 16 and 18 (Oblinger & Oblinger, 2005; Alch, 2008; Evans & Forbes, 2012). They are significantly different from previous generation in terms of their thoughts, beliefs, life style and learning and thus previous research has argued the necessity of innovative teaching methods for the new generation (Tapscott, 1998; Oblinger & Oblinger, 2005; Skiba & Barton, 2006; Sandras & Morrison, 2007; McCarthy & Vickers, 2008; Tapscott, 2008; Salajan et al. 2010; Wang et al. 2014; Giurgiulescu et al. 2015; Kirk et al. 2015). Net-geners encourage teachers to change their teaching method to be more the technology-oriented (Worley, 2012). Thus, the study tries to find an efficient and effective teaching method to meet Net-geners' desire. Thus, the purpose of this study is to investigate whether Net-geners who participate in cyber group work show improved production of overall writing abilities in the target language. To do so, the paper examines the following research questions: Is there any difference among individual, traditional group work, and cyber group work on writing performance? By evidencing the shift in learning circumstances, this study provides information about cyber group work as an effective teaching strategy for new generation learners who are coming into our class with different thoughts, beliefs, lifestyle and learning strategies. It is our responsibilities as educators to develop effective and appropriate teaching methods for different learners. The second factor is that this study provides the empirical evidence to present the impact of cyber group work on writing skill, comparing the impact of individual work and traditional work. This study confirms and supports assertion of the impact of cyber group work on the new generation's writing skill. The third significance of this study is that the results may be useful for curriculum designers, teaching trainers and, most importantly, language teachers because the study provides an efficient and effective teaching method, which facilitates teachers in designing their class in which students have enough interaction with both teachers in class and colleagues out of class.

RESEARCH DESIGN

This study reports on findings concerning the impact of cyber group work. The following research questions were addressed in one general question (i.e., question 1) and two main questions (i.e., question two and three):

Q1: Is there any difference among individual, traditional group work, and cyber group work on writing skill?

Q2: Is there any difference in writing skill between cyber group work and individual work?

Q3: Is there any difference in writing skill between cyber group work and traditional in-class group work?

Participants

The participants in this study were intermediate ESL students in the Intensive English Program (IEP) course offered by a southern university from two sections of intermediate ESL classes. Twelve students were served as volunteers for participating in this. The students' ages ranged from 18 to 23. The students came from a rage of language backgrounds, including Chinese, Indian, Korean, and Spanish. The students were admitted to the intermediate level of IEP based on their placement test score. The scores were based upon a combination of grammar, reading, speaking and writing scores. The students took grammar and reading tests using revised version of Michigan test, wrote a short essay, and did oral interview. Therefore, their ESL proficiency level was thought to be fairly homogenous. All students in both the control groups and the treatment group reported the frequent use of computers and cell phones for communication. Students had general skills in using computers and cell phones.

Instruments

In the study three tasks are used: a cloze test, for measuring students' second language abilities or language proficiency by requiring learners to supply appropriate words in blanks (Abraham & Chapelle, 1992; Jonz, 1990), text reconstruction, an effective technique for paying conscious attention to grammatical accuracy as learners work collaboratively (Garcia Mayo, 2002; Storch, 1998), and composition, a measure of students' overall writing skills and required learners to produce written output eliciting their overall writing skills such as thinking, drafting and revising.

Procedure

The learners carried out individual and group work activities to complete three tasks (cloze test, text reconstruction, and composition). The participants are randomly selected for three teams: an individual group, a traditional in-class group and a cyber group. The three groups (two control groups: an individual group and a traditional in-class group and one experimental group: a cyber group) were given all three tasks.

The individual group performed all tasks and each member of the individual group was asked to do the tasks by him/herself. The traditional in-class group was asked to do the tasks that were assigned to the individual group. Each member of the traditional in-class group was seat together in a class and did three tasks. Each group completed the tasks in a separate classroom. The traditional in-class group discussed how to do the tasks in class with physical meeting. In addition, they weren't allowed to contact each other to discuss the task after the physical meeting. If they want to discuss the assignment after the first meeting, they have to contact the researcher and meet together again in class.

Each member of the experimental group was given the same tasks, however, students should have discussed how to accomplish the tasks through digital mediums, such as cell phones (text messages), messenger and e-mail.

Each group had a day to do the tasks in order to control the time variable. Students in traditional in-class group and experimental group were given three papers for three tasks but they were required to submit only one paper of each task in order to promote students' cooperative learning.

TABLE 2
COMPARISON OF CONTROL AND EXPERIMENTAL GROUPS

	Control group (Individual group &Traditional Group)	Experimental group (Cyber Group)
Treatment	No email or text messages through cell phones; students complete tasks during the physical meeting.	Email and text messages (cell phones); students allow communicating with each other via email and text message.
Participants	N= 16	N= 12

DATA ANALYSIS

The purpose of this chapter is to present and analyze data obtained from ESL intermediate students and international exchange students. To determine the effects of cyber group work on ESL students' writing performance, students' written output was analyzed according to gains in scores of three tasks. The statistical procedure, Analysis of Variance (ANOVA), was used to analyze students' performance on three tasks. Specifically, the study demonstrates procedures for running a one-way ANOVA, obtaining the Post Hoc test. The one-way ANOVA does not specifically indicate which pair of groups exhibits statistical differences. Thus, Post Hoc test is applied in this study to determine which specific groups are differently expressed. These analyses show which group means are significantly different from other group means. In this study, the level of confidence for all statistical analysis was .05.

Results for Research Question 1

There were three research questions in the study. The first question focused on whether there is any difference among individual, traditional group work, and cyber group work on writing performance. Writing performance is measured by three different tests: cloze test, text reconstruction and composition. To address research question one, first the descriptive statistics were calculated for the mean of scores from three tests (Table 3).

TABLE 3
DESCRIPTIVE STATISTICS FOR CLOZE, TEXT RECONSTRUCTION AND COMPOSITION TEST

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Cloze test	1.00*	4	7.2500	1.50000	.75000	5.00	8.00
	2.00**	4	12.7500	.95743	.47871	12.00	14.00
	3.00***	4	13.5000	1.29099	.64550	12.00	15.00
	Total	12	11.1667	3.12856	.90314	5.00	15.00
Text reconstruction	1.00	4	2.5000	1.87083	.93541	.00	4.50
	2.00	4	13.3750	2.17466	1.08733	11.50	16.50
	3.00	4	15.3750	1.03078	.51539	14.50	16.50
	Total	12	10.4167	6.11939	1.76652	.00	16.50
Composition	1.00	4	2.1250	.47871	.23936	1.50	2.50
	2.00	4	3.7500	.64550	.32275	3.00	4.50
	3.00	4	4.0000	.70711	.35355	3.00	4.50
	Total	12	3.2917	1.03261	.29809	1.50	4.50

* 1 = Individual, ** 2 = Traditional in-class group, *** 3 = Cyber group.
※ The mean for text reconstruction is mean of two different text reconstruction test. The mean for composition is mean of two different ratings.

Cloze test

The cloze test was composed of 25 blanks that the students had to fill out. Students were required to respond correct answers in each blank. Following an exact word scoring method marked all responses obtained from the students. The researcher evaluated the students' written output. On the basis of the

descriptive statistics shown in Table 3, the mean of cloze test completed by individuals is less than the mean of traditional in-class group and cyber group. In addition, the results of ANOVA support the hypothesis 1 by showing significantly statistical difference among three groups' performance on cloze test ($F (2, 11) = 28.914$, $p < .05$, Table 4). Thus, the result indicated that the differences found among three groups were statistically significant.

TABLE 4
RESULTS OF ONE-WAY ANOVA FOR CLOZE, TEXT RECONSTRUCTION AND COMPOSITION TEST

		Sum of Squares	Df	Mean Square	F	Sig.
Cloze test	Between Groups	93.167	2	46.583	28.914	.000
	Within Groups	14.500	9	1.611		
	Total	107.667	11			
Text reconstruction	Between Groups	384.042	2	192.021	61.998	.000
	Within Groups	27.875	9	3.097		
	Total	411.917	11			
Composition	Between Groups	8.292	2	4.146	10.855	.004
	Within Groups	3.438	9	.382		
	Total	11.729	11			

※ The mean for text reconstruction is mean of two different text reconstruction test. The mean for composition is mean of two different ratings.

Text reconstruction

Text reconstruction task elicits students' variable responses. Therefore, students could reconstruct the sentences in many ways. For example, some students inserted correct grammatical features or perceived the need for required items but added incorrect grammatical features or do not notice the missing items. Thus, the students' production of the text reconstruction task was analyzed all possible responses including targeted grammatical features and acceptable answer. The researcher employed two passages to achieve reliability because grading text reconstruction is more subject than cloze test (e.g., there is possibility of being multiple correct answers). Peter (1979) defines reliability as "the degree to which measures are free from error and therefore yield consistent results" (p. 6). In other words, reliability is internal consistency. Reliability can be assessed as to whether the measurements of the same instrument give the same results (test-retest reliability) or whether two split-haves measurements give similar scores (internal consistency reliability) (Peter 1979). Reliability can be evaluated by test-retest reliability involves testing the same persons or units on two separate measures (Singleton & Straits, 2005). Therefore, the researcher used two passages that have the same level of difficulty. Then, the researcher calculated the statistical correlation between the sets of scores obtained from the two measurements and the resulting value serves as an estimate of reliability. Based on the descriptive statistics shown in Table 5, the mean of text reconstruction passage 1 and passage 2 are similar. In addition, according to the t-test, they are not significantly different (Table 6). Thus, the researcher used the mean of scores from two passages to confirm hypothesis one. Based on descriptive statistics, the mean of score completed by individuals is less than the mean of traditional group and cyber group. In addition, the results of ANOVA support the hypothesis 1 by showing significantly statistical difference among three groups' performance

on text reconstruction test ($F(2, 11) = 61.998$, $p < .05$, Table 4). Thus, the result indicated that the differences from text reconstruction found among three groups were statistically significant.

TABLE 5
DESCRIPTIVE STATISTICS FOR SCORES FROM TEXT RECONSTRUCTION

	Type	N	Mean	Std. Deviation	Std. Error Mean
Individual	Passage 1	4	2.7500	2.50000	1.25000
	Passage 2	4	2.2500	1.50000	.75000
Traditional in-class	Passage 1	4	11.5000	1.29099	.64550
group	Passage 2	4	15.2500	3.30404	1.65202
Cyber	Passage 1	4	14.0000	2.16025	1.08012
Group	Passage 2	4	16.7500	1.25831	.62915

TABLE 6
T-TEST FOR MEAN OF SCORES FROM TWO TEXT RECONSTRUCTION TESTS

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Individual	Equal variances assumed	.343	6	.743	.50000	1.45774
	Equal variances not assumed	.343	4.912	.746	.50000	1.45774
Traditional in-class	Equal variances assumed	-2.114	6	.079	-3.75000	1.77365
group	Equal variances not assumed	-2.114	3.895	.104	-3.75000	1.77365
Cyber	Equal variances assumed	-2.200	6	.070	-2.75000	1.25000
group	Equal variances not assumed	-2.200	4.826	.081	-2.75000	1.25000

Composition

Composition task was given to students in order to demonstrate students' overall writing proficiency especially in the following areas: 1) to generate and organize ideas on paper 2) to support those ideas with evidence or examples 3) to use the conventions of standard written English. The Test of Written English (TWE) scoring guide (Appendix F) is used to grade students' composition tasks. TWE scoring was conducted under standardized procedures to ensure the accuracy and reliability of the essay scores. Readers for the TWE test are primarily English as a second language
(ESL) writing specialists affiliated with accredited colleges, universities in the United States. In order to be invited to serve as a reader, an individual must have read successfully for at least one other ETS program.

In this study, two evaluators who were experimental ESL teachers of IEP working independently scored each essay. The score assigned to an essay is derived by averaging the two independent ratings. For example, if the first reader assigns a score of 5 to an essay and the second reader also assigns it a score of 5, 5 is the score reported for that essay. If the first reader assigns a score of 5 and the second

reader assigns a score of 4, the two scores are averaged and a score of 4.5 is reported. This is to reduce evaluator's bias and improve reliability (see Table 7 and 8 for descri-ptive statistics and t-test).

TABLE 7
DESCRIPTIVE STATISTICS FOR SCORES FROM COMPOSITION TEST

	Type	N	Mean	Std. Deviation	Std. Error Mean
Individual	Rating 1	4	2.2500	.50000	.25000
	Rating 2	4	2.0000	.81650	.40825
Traditional in-class	Rating 1	4	4.0000	.81650	.40825
Group	Rating 2	4	3.5000	.57735	.28868
Cyber	Rating 1	4	4.2500	.95743	.47871
Group	Rating 2	4	3.7500	.50000	.25000

Based on the descriptive statistics shown in Table 3, performance for composition task differed significantly across the three groups. In addition, the results of ANOVA support the hypothesis 1 by showing significantly statistical difference among three groups' performance on composition task ($F(2, 11) = 10.855$, $p < .05$, Table 4).

In summary, hypothesis 1 is evaluated by three tests: cloze, text reconstruction and composition, to investigate the difference among three different education methods: individual work, traditional in-class group work and cyber group work. The results of the one-way ANOVA of mean supported hypothesis by showing that each test is significantly different among three education methods.

Results for Research Question 2

The second hypothesis stated that there is a difference in writing performance between cyber group work and individual work. To address research question two, the descriptive statistics were calculated for the mean of scores from three tests (Table 3) and Post Hoc Tests, especially Tukey's Honestly Significant Difference (HSD) test was utilized (Table 9). The Tukey's HSD test is used for comparison of three group performance, if there are three different means, all differences are tested as if they were three steps apart.

Cloze test

According to descriptive statistics shown in Table 3, performance on cloze test completed by individuals (M=7.25) is less than cyber group's score (M=13.5). To investigate group difference, Post Hoc analysis is followed by ANOVA, using Tukey's HSD test. The results showed that individual's work on cloze test is significantly different from performance by cyber group ($p < 0.05$, Table 9). These results, ANOVA and Tukey's HSD provided evidence to support hypothesis 2.

TABLE 8
T-TEST FOR MEAN OF SCORES FROM TWO COMPOSITION RATINGS

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Individual	Equal variances assumed	.522	6	.620	.25000	.47871
	Equal variances not assumed	.522	4.973	.624	.25000	.47871
Traditional in-class Group	Equal variances assumed	1.000	6	.356	.50000	.50000
	Equal variances not assumed	1.000	5.400	.360	.50000	.50000
Cyber Group	Equal variances assumed	.926	6	.390	.50000	.54006
	Equal variances not assumed	.926	4.523	.401	.50000	.54006

TABLE 9
POST HOC TEST FOR CLOZE TEST

Dependent Variable		(I) Type	(J) Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Cloze	Tukey HSD	1.00*	2.00**	-5.50000*	.89753	.000	-8.0059	-2.9941
			3.00***	-6.25000*	.89753	.000	-8.7559	-3.7441
		2.00	1.00	5.50000*	.89753	.000	2.9941	8.0059
			3.00	-.75000	.89753	.692	-3.2559	1.7559
		3.00	1.00	6.25000*	.89753	.000	3.7441	8.7559
			2.00	.75000	.89753	.692	-1.7559	3.2559

*1 = Individual, ** 2= Traditional in-class group, *** 3 = Cyber group.

Text reconstruction

As discussed above, based on the descriptive statistics shown in Table 3, the mean of text reconstruction passage 1 and passage 2 are close and according to the t-test, are not significantly different (Table 6). Thus, the mean of two text reconstruction tests are employed to evaluate hypothesis 2. The one-way ANOVA already showed that difference among three groups in text reconstruction test ($F(2, 11) = 61.998$, $p < .05$, Table 4). To examine the difference of only two objects (individual vs cyber group) in ANOVA, the results of Post Hoc test indicated that the writing performance of the text reconstruction task in the cyber group differed significantly from the writing performance of the text reconstruction task in individual groups ($p < .05$, Table 10). In addition, based on descriptive statistics (Table 3), the score of the cyber group from the text reconstruction ($M=15.3750$) is higher than score of individual work ($M=2.5$). Thus, the results also build a block to support hypothesis 2 by showing significantly statistical difference between cyber group and individual performance on text reconstruction test.

TABLE 10
POST HOC TEST FOR TEXT RECONSTRUCTION.

Dependent Variable		(I)Type	(J) Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Text reconstruction	Tukey HSD	1.00*	2.00**	-10.87500*	1.24443	.000	-14.3495	-7.4005
			3.00***	-12.87500*	1.24443	.000	-16.3495	-9.4005
		2.00	1.00	10.87500*	1.24443	.000	7.4005	14.3495
			3.00	-2.00000	1.24443	.292	-5.4745	1.4745
		3.00	1.00	12.87500*	1.24443	.000	9.4005	16.3495
			2.00	2.00000	1.24443	.292	-1.4745	5.4745

*1 = Individual, ** 2= Traditional in-class group, *** 3 = Cyber group.

Composition

The third test to evaluate writing skill, the composition test, is conducted to confirm hypothesis 2 and data from the test are analyzed through Post Hoc test. The Post Hoc test result carried out the fact that the cyber group was significantly different from the individual ($p < .05$, Table 11). For composition, the researcher assumed that the cyber group wrote significantly better than the individual group through Post Hoc test (Mean difference: Individual – Cyber group = -1.875).

Finally, these results of data analysis for three tests support hypothesis 2. That is, the results supported the fact that the performance of writing skills in the cyber group significantly outperformed the performance than in the individual group.

TABLE 11
POST HOC TEST FOR COMPOSITION

Dependent Variable	(I) Type		(J) Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Composition	Tukey HSD	1.00*	2.00**	-1.62500*	.43700	.012	-2.8451	-.4049
			3.00***	-1.87500*	.43700	.005	-3.0951	-.6549
		2.00	1.00	1.62500*	.43700	.012	.4049	2.8451
			3.00	-.25000	.43700	.838	-1.4701	.9701
		3.00	1.00	1.87500*	.43700	.005	.6549	3.0951
			2.00	.25000	.43700	.838	-.9701	1.4701

*1 = Individual, ** 2= Traditional in-class group, *** 3 = Cyber group.

Results for Research Question 3

The third hypothesis stated that there is a difference in writing performance between cyber group

work and traditional in-class group work. To address research question three, the descriptive statistics were calculated for the mean of scores from three tests and Post Hoc Tests were shown in Table 9, 10, and 11.

Cloze test

According to descriptive statistics shown in Table 3, the performance on cloze test completed by cyber group (M=13.5) is slightly higher than the traditional in-class group's score (M=12.75). However, Post Hoc analysis showed that the cyber group performance on the cloze test is not significantly different from the performance by the traditional group (p = .692, Table 9). Therefore, this result cannot support the hypothesis 3.

Text reconstruction

The results of Post Hoc test indicated that the writing performance of the text reconstruction task in the cyber group didn't differ significantly from the writing performance of the text reconstruction task in the traditional groups (p = .292, Table 10).

Composition

The Post Hoc test result carried out the fact that the cyber group was not significantly different from the traditional group on composition test (p = .838, Table 11).

In summary, these results of data analysis for three tests couldn't support hypothesis 3. That is, the results tell us that there is no difference on writing skills between the traditional group and the cyber group. This shows a number of implications. In addition, with hypothesis 2, the results tell us the value of cyber group work. The researcher proposes that the cyber group work improves performance on writing skills as much as traditional group work does and more than individual work. In next chapter, the researcher discusses more detail about the implications.

DISCUSSION

The goal of this study is to explore the impact of cyber group work on writing performance. With advances in information and communication technology and the emergence of new learners such as net generation, present class requires new education environment. One of the new education situations is cyber group work that is conducted via electronic channels such as email and text. To investigate the value of cyber group work, we understand the characteristics of cyber group work and compare cyber group work with individual work and traditional in-class group work.

This is the first empirical study to test the effect of asynchronous cyber group work on writing skills using a cloze test, text reconstruction, and a composition task. The results will contribute to ESL classroom success in a variety of ways. To date, cyber group work research is rarely conducted even though we have a new generation, which has distinct characteristics and desires new teaching methods. This study outlines the net generation's characteristics of preferring to communicate with others via digital technology and to work as groups. In addition, they actively express themselves and trust their peers' thoughts in cyber space. This tells us the fact that cyber group work is appropriate for new learners in new era. Thus, the research investigates the benefits of cyber group work in ESL classes.

The present study demonstrates that cyber group work is highly effective in improving students' writing performance. The analysis indicated that when students completed tasks within cyber group was more accurate and outperformed in all three tasks. For example, cyber group got 15 correct answers out of 25, which was the highest score of cloze test. The highest score of traditional group was 14, and individual was 8. This distinguished score may be due to time students spent on the tasks. The researcher allowed students to go freely when they finished the tasks and all three tasks should have finished within one day so students had enough time to take the tasks. However, individual and traditional group students tended to finish all three tasks within two to three hours so cyber group students may have more time to complete tasks. Indeed, results of task scores indicate that when students working in cyber group, students seemed more chance to discuss about tasks because of accessibility of medium technology.

There are three basic findings in this study. The first is that there is difference among cyber group work, traditional group work and individual group work. The written outputs found in three tasks in this study support the findings in studies comparing performance between group work and individual work by many researchers. All the students in groups tested in this study showed great performance of three tasks. In terms of the means of task scores, collaboration in group work was likely to led to more correct and accurate performance for the tasks. Therefore, this study indicated clearly that the students who worked collaborately during the tasks showed better writing performance than individual.

The second findings is probably the most important and rewarding for me as a researcher. It was hypothesized that cyber group work would show difference in writing performance between cyber group work and traditional group work. The data analysis revealed no significant difference between groups, however, the cyber group's mean score from the three tasks showed slight difference. The cyber group results indicated a mean score of 13.50 in cloze test, 15.37 in text reconstruction task, and 4.00 in composition task, in comparison to the traditional group who had a mean score of 12.75 in cloze test, 13.37 in text reconstruction task, and 3.75 in composition task. The cyber group showed difference in mean score, however, it didn't showed significant difference in statistic. Since no research to date has examined the effect of cyber group work comparing traditional group work, this may be a productive line of future research.

The third is that there is difference in writing performance between cyber group and individual. Based on the means for given three tasks revealed cyber group exceeded twice as much as that of individual's. For example, individual group mean score was 7.25 in cloze test, 2.50 in text reconstruction task, and 2.12 in composition task. This result is not surprising in light of the previous research about group work. This finding had been anticipated, due to the fact that group work usually showed improved task performance on students' writing reported by Nelson & Murphy, Pica & Doughty, Storch.

Implications

It is also important to apply digital technology in an ESL teaching context to reduce physical meeting time and improve productivity. In addition, even though cyber group work has a similar level of impact to traditional group work on students' writing skills, the research will imply the benefits of cyber group work because it is able to replace in-class group work to save class time under the conditions that cyber group have the same level of productivity in writing skills such that cyber group work enables for group members to learn from each other.

Cyber group work is conducted via electronic communication channels. Given the asynchronous nature of electronic medium, cyber group work hasn't required students to be in the same place and at the same time with teachers. This encourages student to participate in group study with group members at the preferred time. In other words, cyber group work makes students study when they want to study even though it is group activity. That is, cyber group work could improve productivity on writing skills without physical meetings. From that, our study contributes to understanding the impact of cyber group work in an ESL context.

Limitations and Future Studies

The results found the difference between cyber group work and traditional group work, but there are important limitations that should be addressed in future work. Perhaps the most significant limitation of the current study is that we will be not able to measure the impact of the Internet on cyber group work. We will record student test scores, but

participants aren't allowed to use Internet source even though they are able to use computers, because this research focuses only on the different type of group work. However, with computers or cell phones, students can access Internet sources and use them to provide answers. One possible study applies Internet sources to solve questions and compare group performance: the control group without Internet source and the experimental group with Internet sources.

Appendix A: Cloze test

Instructions: Please complete the following task on your own, or within your group. Fill in the blanks

with an appropriate word (e.g. noun, verb, preposition, etc.).

Chavez-Oller et al. (1985)

Nicholas Rizos was not a tourist; 1) _____ was in Athens to 2) _____. He had arrived from America 3) _____ day before on a Greek cargo 4) _____. During his last year in 5) _____ school, his uncle had invited 6) _____ to spend a year in 7) _____ and to help him in 8) _____ garage. Nicholas accepted the invitation 9) _____ he wanted to become a 10) _____; he thought that the 11) _____ would be good experience for 12) _____. He would also have an 13) _____ to learn more about the 14) _____ where his parents were born.

15) _____ several months he had studied 16) _____ Greek language at night school 17) _____ his home town. He wanted 18) _____ speak it as well as 19) _____ and to be able to 20) _____ signs, at least, when he 21) _____; but now he wished he 22) _____ have practiced it more with the 23) _____ on the ship.

That first 24) _____, Nicholas woke up and looked 25) _____at the unfamiliar room. Everything was strange to him. Everything was strange to him. From his window, he could see the Acropolis against the bright blue sky. Then he remembered; he was in Athens! How happy he was to be there!

Appendix B: Text reconstruction

Instructions*:* Please reconstruct the following texts to insert the words missing in the texts (e.g. articles, prepositions, linking words, etc.) and produce a meaningful and grammatically correct text.

Passage 1.

Bureau of Immigration and Population Research do major study of Australian emigration trends. Study investigate reasons emigration.
Study find since 1947 one in five Australia post-war immigrants leave country. Immigrants particular south Europe leave when retire. For example, until quite recent, over half all Australia pensions send Greece and Italy. Immigrants east Europe country Soviet Union usual stay Australia.

Passage 2.

Before 1949 Australia minimum involve education Asia students. Australia current draw international students over 80 countries major come Asia. Research findings present recent conference University of Melbourne show number international students slow down past twelve months. Decrease occur main first six months 1997. Students countries Korea, Singapore
Hong Kong now choose United States. United Sates attract particular post graduates. Indonesia one few country continue send many students Australia. Malaysia students continue come Australia throughout 1997.

Appendix D: Composition

Instruction: Read the following essay topic and write a short essay (3-4 paragraphs) on this page.

Topic: Some people prefer to live in a small town. Others prefer to live in a big city. In which place would you prefer to live? Use specific reasons and details to support your answer.

REFERENCES

Abraham, R. G., & Chapelle, C. A. (1992). The meaning of cloze test scores: An item difficulty perspective. *The Modern Language Journal,* 76, (4), 468-479.

Abrams, Z. I. (2003). The effect of synchronous and asynchronous CMC on oral performance in German. *The Modern Language Journal,* 87, (2) 157-167.

Akiyama, Y. & Saito, K. (2016). Development of comprehensibility and its linguistic correlates: a longitudinal study of video-mediated telecollaboration. *The Modern Language Journal*, 100, (3), 585-609

Alch, M. L. (2008). Get ready for a new type of worker in the workplace: the net generation. *Supervision*, 69, (6), 18-21

Alvermann, D. E. (2004). Media, Information Communication Technologies, and Youth Literacies. *The American Behavioral Scientist,* 48, (1), 78-83.

Barkaoui, K. (2016). What and when second-language learners revise when responding to timed writing tasks on the computer: the roles of task type, second language proficiency, and keyboarding skills. The Modern Language Journal, 100, (1), 320-340.

Beauvois, M. H. (1994). E-talk: Attitudes and motivation in computer-assisted classroom discussion. *Computers and the Humanities,* 28, (3), 177-190.

Beauvois, M. H. (1998). Conversations in slow motion: Computer-mediated communication in the foreign language classroom. *The Canadian Modern Language Review,* 54, (2), 198-217.

Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology,* 39, (5), 775-786.

Beyers, R. N. (2009). A five dimensional model for educating the net generation. *Educational Technology and Society,* 12, (4), 218-227.

Bromley, K., Modlo, M. (1997). Use cooperative learning to improve reading and writing in language arts. *Reading & Writing Quarterly,* 13, (1), 21-35.

Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy*. White Plains, NY : Longman.

Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics,* 1, (1), 1-47.

Chang, L. Y. (2010). Group processes and EFL learners' motivation: A study of group dynamics in EFL classrooms

Daughty, C., & Pica, T. (1986). "Information gap" tasks: Do they facilitate second language acquisition?. TESOL Quarterly, 20, (2), 305-325.

Denise, M. K. (1997). Using cooperative learning to improve and writing in mathematical problem solving. *Reading & Writing Quarterly,* 13, (1), 17-28.

Dong, Y. R. (1990). Literacy learning as reflection of language culture: Chinese elementary school education. *The Reading Teacher,* 44, (2), 110-123.

Evans, R. R., & Forbes, L. (2012). Mentoring the 'Net Generation': Faculty Perspectives in Health Education. College Student Journal, 46, (2), 397-404.

Foster, P. (1998). A classroom perspective on the negotiation of meaning. *Applied Linguistics,* 19, (1), 1-23.

Garcia Mayo, M. P. (2002). Interaction in advanced EFL pedagogy: a comparison of form-focused activities. *International Journal of Educational Research,* 37, (3-4), 323-341.

Gass, S., & Varonis, E. (1985). *Negotiation of meaning in non-native speaker-non-native speaker conversation*. In S. Gass & C. Madden (Eds.), *Input in second language acquisition* (p. 149-161). Rowley, MA: Newnury House.

Giurgiulescu, M., Pânişoară, G., Pânişoară, I. O., Sandu, C. M. (2015). Ways to Develop a Positive Attitude of Students –Digital Natives – To Reduce Disaster Risks. Advances in Environmental Sciences- *International Journal of the Bioflux Society*, 7, (2), 230-239.

Heinrich, E., Miline, J., Ramsay, A., & Morrison, D. (2009). Recommendations for the use of e-tools for improvements around assignment marking quality. *Assessment and Evaluation in Higher Education,* 34, (4), 469-479.

Imai, Y.(2010). Emotions in SLA: New insights from collaborative learning for an EFL classroom. *The Modern Language Journal*, 94, (2), 278-292.

Izumi, S., & Bigelow, M. (2000). Does output promote noticing and second language acquisition? *TESOL Quarterly,* 34, (2), 239-278.

Jang, S. J. (2007). A study of students' construction of science knowledge: talk and writing in a collaborative group. *Educational Research,* 49, (1), 65-81.

Jonz, J. (1990). Another turn in the conversation: What does cloze measure? *TESOL Quarterly,* 24, (1), 61-83.

Kelm, O. R. (1992). The use of synchronous computer networks in second language instruction: A preliminary report. *Foreign Language Annals,* 25, (5), 441-454.

Kern, R. G. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and characteristics of language production. *The Modern Language Journal,* 79, (4), 457-476.

Kormos, J., & Csizer, K. (2014). The interaction of motivation, self-regulatory strategies, and autonomous learning behavior in different learner groups. TESOL Quarterly, 48, (2), 275-299.

Kinsella, K. (1996). Designing group work that supports and enhances diverse classroom work styles. *TESOL Journal,* 6, (1), 24-30.

Kirk, C. P., Chiagouris, L., Lala, V., Thomas, J. D. E. (2015). How Do Digital Natives and Digital Immigrants Respond Differently to Interactivity Online? A Model for Predicting Consumer Attitudes and Intentions to Use Digital Information Products. *Journal of Advertising Research*, 51, (1), 81-94.

Le, H. H. P. (2007). The more knowledgeable peer, target language use, and group participation. *The Canadian Modern Language Review,* 64, (2), 333-354.

Leeser, M. J. (2004). Learner proficiency and focus on form during collaborative dialogue. *Language Teaching Research, 8,* (1), 55-81.

Leung, L. (2004). Net-Generation Attributes and Seductive Properties of the Internet as Predictors of Online Activities and Internet Addition. *Cyberpsychology and Behavior,* 7, (3), 333-348.

Lighter, N. J., Mehmet. M. Y., Ant. O., &Gavriel. Salvendy. (2002). Shopping Behavior and Preferences in e-Commerce of Turkish and American University Students: Implications from Cross-Cultural Design. *Behavior and Information Technology,* 21, (6), 373-385.

Long, M. H. (1983). Native speaker/ non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics,* 4, (2), 126-141.

Long, M. H., & Porter, P. A. (1985). Group work, interlanguage talk, and second language acquisition. *TESOL Quarterly,* 19, (2), 207-228.

McCarthy, F., & Vickers, M. (2008). Digital natives, dropouts and refugees: Educational challenges for innovative cities. *Innovation: Management, Policy & Practice,* 10, (2-3), 257-268.

McDonough, K. (2004). Learner-learner interaction during pair and small group activities in a Thai EFL context. *System,* 32, (2), 207-224.

McDnough, K., Crawford, W. J., & Mackey, A. (2015). Creativity and EFL students' language use during a group problem-solving task. *TESOL Quarterly*, 49, (1), 188-199.

Mishra, S., & Oliver, R. (1998). Secondary school ESL learners' perceptions of pair work in Australian classrooms. *TESOL in Context,* 8, (2), 19-23.

Napoli, J., Ewing, M. T. (2001). The Net Generation: An Analysis of Lifestyles, Attitudes and Media Habits. *Journal of* International *Consumer Marketing,* 13, (1), 21-34.

Shintani, N., & Aubrey, S. (2016). The effectiveness of synchronous and asynchronous written corrective feedback on grammatical accuracy in a computer-mediated environment. *The Modern Language Journal*, 100, (1), 296-319.

Nelson, G. L, & Murphy, J. M. (1993). Peer response groups: Do L2 writers use peer comments in revising their drafts? *TESOL Quarterly,* 27, (1), 135-141.

Nesbit, C. R, & Rogers, C. A. (1997). Use cooperative learning to improve reading and writing in science. *Reading & Writing Quarterly,* 13, (1), 53-70.
Neo, M. (2004). Cooperative learning on the web: A group based, student centred learning experience in the Malaysian classroom. *Australasian Journal of Educational Technology,* 20, (2), 171-190 .
Oblinger, D.G., Oblinger. J. L. (2005). *Educating the Net Generation*. EDUCAUSE press. Washington, DC.
Oblinger, D.G., Oblinger. J. L. (2005). Is it age or IT: First steps toward understanding the net generation. *CSLA Journal,* 29, (2), 8-16.
Ohta, A. (1995). Theoretical issues in examining learner-learner interaction. *Issues in Applied Linguistics,* 6, (2), 94-121.
Park, S. Y., & Lee, Y. M. (2005). Net Generation: the growing dominant consumer group in network society. *Asia Pacific Advances in Consumer Research,* 6, 239-243.
Payne, J. S., & Ross, B. M. (2005). Synchronous CMC, working memory, and L2 oral proficiency development. Language Learning and Technology, 9, (3), 35-43.
Pica, T., Young, R., & Doughty, C. (1987). The impact of interaction on comprehension. *TESOL Quarterly,* 21, (4), 737-758.
Pica, T. (1994). Research on negotiation: What does it reveal about second-language learning conditions, processes, and outcomes? *Language Learning,* 44, (3), 493-527.
Pfeil, U., Arjan, R. ,& Zaphiris, P. (2009). Age differences in online social networking - A study of user profiles and the social capital divide among teenagers and older users in MySpace. *Computers in Human Behavior,* 25, (3), 643-654.
Rivers, W. M. (1987). *Interactive Language Teaching*. New York: Cambridge University Press.
Roberts GR. 2005. *Technology and learning expectations of the net generation*, Educause.
Salajan, F. D., Schonwetter, D. J., Cleghorn, B. M., (2010). Student and Faculty Inter-Generational Digital Divide: Fact or Fiction. *Computers & Education,* 55, (3), 1393-1403.
Sandars, J., & Morrison, C. (2007). What is the net generation? The challenge for future medical education. *Medical Teacher,* 29, (2-3), 85-88.
Skiba, D., & Barton, A. (2006). Adapting Your Teaching to Accommodate the Net Generation of Learners. *The Online Journal of Issues in Nursing, 11, (2).*
Available: http://www.nursingworld.org/ojin/topic30/tpc30_4.htm.
Stevens, R. J. (2003). Student team reading and writing: A cooperative learning approach to middle school literacy instruction. *Educational Research and Evaluation,* 9, (2), 137-160.
Storch, N. (1999). Are two heads better than one? Pair work and grammatical accuracy. *System,* 27, (3), 363-374.
Storch, N. (2001). How collaborative is pair work? ESL tertiary students composing in pairs. *Language Teaching Research,* 5, (1), 29-53.
Storch, N. (2002). Patterns of interaction in ESL pair work. *Language Learning,* 52, (1), 119-158.
Storch, N. (2007). Investigating the merits of pair work on a text editing task in ESL classes. *Language Teaching Research,* 11, (2), 143-159.
Storch, N. (2008). Metatalk in a pair work activity: Level of engagement and implications for language development. *Language Awareness,* 17, (2), 95-114.
Swain, M. (2000). *The output hypothesis and beyond: mediating acquisition through collaborative dialogue*. In Lantolf, J. P., editior, *Sociocultural theory and second language learning*. Oxford: Oxford University Press, 97-114.
Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal,* 82, (3), 320-337.
Swain, M., & Lapkin, S. (2000). Task-based second language learning: the uses of the first language. *Language Teaching Research*, 4, (3), 251-274.
Tapscott, D. (1998) *Growing Up Digital: The Rise of the Net Generation.* New York**:** McGraw-Hill.
Tapscott, D. (2008). *Grown up digital: how the Net generation is changing your world*. McGraw-Hill, New York.

Wang, S. K., Hsu, H. Y., Campbell, T., Coster, D. C., Longhurst, M. (2014). An Investigation of Middle School Science Teachers and Students Use of Technology Inside And Outside Of Classrooms: Considering Whether Digital Natives Are More Technology Savvy Than Their Teachers. *Education Technology Research & Development*, 62, (6), 637-662.

Webb, N. (1989). Peer interaction and learning in small groups. *International Journal of Educational Research,* 13, (1), 21-39.

Williams, J. B. (2004). Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology,* 20, (1), 232-247.

Wilson, G. (2004). Online interaction impacts on learning: Teaching the teachers to teach online. *Australasian Journal of Educational Technology,* 20, (1), 33-48.

Wood, K. D., & Algozzine, B. (1997). Introduction: Cooperative learning across the curriculum. *Reading & Writing Quarterly,* 13, (1), 3-5.

Vyatkina, N. (2012). The development of second language writing complexity in groups and individuals: a longitudinal learner corpus study. The Modern Language Journal, 96, (4), 576-598.

Zaphiris, P., & Sarwar, R. (2006). Trends, similarities, and differences in the usage of teen and senior public online newsgroups. *ACM Transactions on Computer-Human Interaction (TOCHI),* 13, (3), 403-422.

CORRESPONDING AUTHOR:

Donghyun Kim: Computer Information Systems, College of Business, Delta State University, Cleveland, MS 38732. Phone: (662) 801-4322. Fax (662) 846 - 4193. Email: dkim@deltastate.edu