The Effect of Blended Learning on Reading Abilities, Vocabulary Mastery, and Collaboration among University Students

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Abstract

This paper reports an experimental study aimed to determine if Blended Learning has a positive impact on reading comprehension skill, vocabulary mastery, and collaboration among learners. One experimental class consisting of 24 undergraduate EFL learners was taught with Blended Learning, while a control group was taught with conventional techniques. After a six-week period, their reading comprehension skills, vocabulary mastery, and collaborative patterns were measured with tests and questionnaires. ANCOVA was used to analyze the data with their initial differences being controlled as the covariate. The results showed that the experimental group gained a significantly higher rate in their reading skills and vocabulary mastery. Quite probably, the online sessions had promoted more exposure to other reading texts, which in turn promoted their vocabulary mastery. The sessions may have encouraged the kinds of attitude that was vital in increasing reading comprehension. Their collaborative patterns, however, did not change. The students tended to maintain their grouping and switched groups only when the lecturers instructed them. Implications for practical teaching that address the issue of students grouping and online sessions are then suggested.

Keywords: Blended learning, collaboration, group work, reading comprehension, vocabulary mastery

Introduction

Educational sphere is always a dynamic world. After decades of conventional teaching characterized by the teacher as a central figure in the classroom and a one-size-fits-all approach, educators have begun paying attention to alternative ways of managing instructions.This change was triggered by a dissatisfaction with conventional teaching approaches where lessons are mostly delivered in one-way fashion, with the teacher being

the source of knowledge and the ultimatejudge who determines what is correct and what is incorrect.Moreover, the *one-size-fits-all*promotes a discriminatorytreatmentagainst those students who do not learn as fast as their peers. In such environment, interpersonal skills, which should actually be an integral part of education, are subjugated to cognitive and academicachievements.

Recently, blended-learning (henceforth BL) approach to teaching and learning has gained currency.BL is a teaching technique that combines conventional face-to-face classroom session and out-of-class activities that mostly utilizes online facilities. It is claimed to have a positive impact on the learning experience and promote cost efficiency (Garrison & Vaughan, 2008). Guzer and Caner (2014), meanwhile, pointed out that since the advent of BL in the early period of 2000, the debates among educators have revolved around the effectiveness of BL and traditional instruction. The studies that they reviewed in the following years centered around the effects of BL on a host of factors such as drop-out rates, motivation, and critical thinking skills. Only two studies focused on learners' cooperativeness. Arguably, more studies that address the effect of BL on learners' social and affective dimension should be conducted. This opens up a wide opportunity to explore its potential for the teaching of language skills as well as for refining the learners' affective dimension. The need for such studies inspired the research, which aims to answer the following three research questions:

(1) Do students who are taught with BL have improvedEnglish reading abilities?
(2) Do students who are taught with BL have improved gains in their learning of English vocabulary?
(3) Do students who are taught with BL have more extensive collaboration than those taught with conventional method?

As a confirmatory research, it was necessary to present the hypotheses to be confirmed. The hypotheses draw on a body of theories and studies in BL that have been conducted. At least two studies by Alseweed (2013), Arancon, Barcena and Arus (2012) have generated results that indicate positive impact of BL on learning progress. It is also claimed to engage the learners in a wide range of activities that potentially could strengthen their bonds and cooperation. Hew and Cheung (2014) argued that BL opens up opportunities for the learners to intensify communication among themselves, thus promising a potential for encouraging collaboration. Therefore, it is hypothesized that (1) students who are taught with BL have higher English reading abilities than those taught with conventional method; (2) students who are taught with BL have higher gains in their learning of English vocabulary than those taught with conventional method, and (3) students who are taught with BL have more extensive collaboration than those taught with conventional method.

What follows below is a review of the theoretical background and empirical findings in the area of blended learning, reading comprehension, vocabulary, and collaboration among learners.

Review of Literature

Blended Learning

A number of scholars have conceptualized BL. According toDziuban, Hartman and Moskal (2004, p. 2) BL refers to a combination of face-to-face interaction in a classroom and online learning that may take place outside the class hours.They argue that the strength of BL lies in its flexibility and its complementary nature of its features.The online session compensate for the weaknesses of a classroom learning, which commonly are in the form of limited space and learning hours, in addition to typically rigid classroom procedures that hardly accommodate different learning styles (Kengwee and Kidd, 2010). BL, however, still require the face-to-face interaction because it allows for the sense of belonging to a community and for human interaction that is absent during online sessions.BL could harness further possibilities that will benefit the learning. It may have a certain psychosocialimpact on the course participants, too, including the teacher.

Reading Comprehension

Reading comprehension is a complex cognitive activity that involves a great deal of intertwined processes. Grabe (2014) states that comprehension of printed texts requires word recognition, sentence processing, strategic processes, relevant background knowledge activation, meaning interpretation, and constant monitoring of the ongoing comprehension. These are processes that can be refined through extensive reading. At least, as much as 5% of new words can be gained from reading a variety of materials in the target language. With the increasing number of reading materials, the percentage can be as high as 15%. It follows from here that a classroom reading is qualitatively different from out-of-class reading. Grabe (2009) maintains that the former typically focuses on the learning of sentence patterns and a few new words, while the latter not only widens the learners' perspective but also exposes them to more new words which they can eventually figure out after encountering the words several times. It is believed that as learners process words in their reading, comprehension networks are strengthened and associative patterns are established in the mind. In turn, this creates a sufficient space for memorizing new words as they are encountered over time and multiple exposures to many different texts. He cited a study on the impact of two-year extensive reading on learners' English proficiency, which found that extensivereading helped learners acquire vocabulary, reading skills, as well as listening and writing skills. In all, this review on extensive reading is necessary in the light of my research because it can explain the reading and vocabulary gains of the two groups in this study.

Previous Research

A number of empirical studies on BL have been conducted with various results that serve to deepen the understanding of its nature. Yilmaz and Saglam (2011) conducted a study on the effect of online discussion on learners' achievement. It involved 32 EFL

undergraduate Turkish students who were divided into an experimental group and a control group, with the former being assigned to engage in online discussion. Non-parametric analyses were used to analyze the data. They concluded that students who took active part in online discussion had better gains than their scores before engaging in online discussion. Also, these students had higher scores than those in the control group. It should be noted, however, that the statistical analyses were not rigorous, and the subjects' initial difference was not taken into account. My study delved into the same issue with more rigorous statistical analysis and control of the subjects' initial difference.

Alseweed (2013) completed a studyinvolving 34 male EFL students who were taught with three different methods: traditional, BL, and*Virtual Learning*. It was aimed to see the differences in listening skills among the students taught with those three methods and to identify their attitudes. He found that BL was favored more and turned out better results than the other two. His study, however, was limited by the small number of subjects and the short duration of teaching period. My study addressed the effect of BL on two other language skills, namely, reading and vocabulary, and took a longer period of time.

A project by Arancon, Barcena, and Arus (2012) used BL to develop communicative skills in English. They found that some disadvantages of online learning can be compensated for by conventional classroom sessions. It is interesting to note that they also found some kind of scaffolding among the learners. This is when the more able students help their less able peers to understand the lessons. Their study provides a reference point for my study in the area of collaboration among the students.

An even more recent investigation was conducted in the effect of BL on writing skill and oral proficiency skill in English language. Hew and Cheung (2014) found a positive effect of BL on EFL students' argumentative writing skills and oral proficiency. They also reportedly had a positive attitude toward BL. Despite two different research designs in those studies, they turned out similarly encouraging results that highlight the advantages of BL in the area of teaching English as a foreign language.

Group Work and Social Support

Group work has been a prominent feature in a student-centered learning. The arrangement of group work always poses a specific problem to the teacher. Generally, teachers find resistance from the students if they are assigned to classmates outside their preferred ones (Uden and Beaumont, 2006). Although the idea of having students mingle widely with various classmates has its own rationale, generally students resist the teacher'sinstruction to mingle with others different from their own circle of friends.

On the other hand, Uden and Beaumont (2006, p. 234) believed that "social support is anatural way to enhancepersonal growth for members of the group". The support may come from the tutor and peers who help with various problems that arise during the learning activities.

Studies on Asian students' attitudes toward group work is far from being

conclusive. As Schalkwyk and D'Amato (2015) noted, a few studies concluded that Asian students valued group work, but some others indicated the opposite. The students in the latter studies believe in individual efforts and perseverance. They had difficulties in adjusting themselves to the group work arrangement. This is an interesting issue that my study will look into more deeply.

Blended Learning at College Level

A study that investigated opinions on BL was carried out by Poon (2012). She gathered data by questionnaires and interviews with course directors and students of a vocational course. Their opinions were gathered over a period of 6 months. She found that BL offered flexibility which enhanced students' learning experiences, which in turn promoted their learning achievement. She also noted that an effective BL should "ensure a good mix of methods which are able to suit the needs of different learning styles and learning preferences" (Poon, 2012, p. 144). This includes the face-to-face interactions many aimed to reassure the students and provide them with on-going support. While her study was descriptive in nature, my study tried to put BL in a confirmatory framework by identifying its effect on learners' achievement.

A cautionary note regarding the potential of BL with online learning as its primary feature needs to be put forward. As Cortizo, Rodriguez, Vijande, Sierra, and Noriega (2010) stated, adopting BL does not necessarily guarantee successful learning. A host of other factors may play out their influence when students take on BL sessions. One of the most probable causes is the way they utilize their gadgets. Most of them are probably adept at finding various entertainment and gaming contents but are inept when managing the extent and pace of their own learning through the cyberspace.

Blended Learning and Collaboration among Students

An early study that investigated the relationship between BL and collaboration among students was conducted by Lim and Yoon (2008). Their study involved 222 college students who were split into online learning group and blended learning group, then compared the learning outcomes and opinions on collaboration of the two groups. They reported that although no difference was found in terms of learning outcomes, the blended learning group reportedly scored higher on team collaboration.

Another study that implied the value of BL on students' collaboration was conducted by Fearon, Starr and McLaughlin (2011). In addition to mentioning flexibility of BL that made it better than traditional teaching method or pure e-learning, the respondents also stated that they benefitted greatly from the motivation and sharing of ideas, class interaction and explanation of idea, communicating with peers and teamwork, and development of leadership skills. The finding may provide a form of support for my study since it implied the desirable effect of BL on students' collaboration in group work, something which my study intends to prove.

Agosto, Copeland and Zach (2013) focused specifically on maximizing collaboration among their subjects, and found the positive effect of using blogs to increase collaboration. They also emphasized the importance of peer interaction and equal participation by group members. Without these elements, collaboration among the learners in a group will not be solid. In fact, the lack of those elements could lead to students' resentment over group work as identified by Isaac (2012) in a survey among undergraduate students. It is interesting to note that this feeling of dislike was more keen among high achieving students.

Effect of Collaborative Work on Vocabulary Mastery

Shokouhi and Pishkar (2015) carried out an experimental study to investigate the effect of students' collaboration on their vocabulary mastery and the rate of participation in the groups.. They found that the group with collaboration performed better than the one without collaboration in a vocabulary test.Dobao (2014) conducted a comparison between learners working in groups and learners working in pairs when they studied vocabulary, and came to conclude that those working in groups gained more vocabulary items as they interacted with other members of the groups. The finding is to some extent corroborated by an earlier study by Moghaddam and Faruji (2013), who found that learners engaged in cooperativetasks scored better than those in conventional setting. However, these two encouraging results were not supported by another study by Storch (2013), who compared learners who engaged in pair work and those who did not in terms of their vocabulary mastery. The ones doing pair work reported that they gained assistance from their peers for their vocabulary learning. However, the post-test comparison of the two groups did not yield a significant difference. Thus, in Storch's interpretation, "how learners judge their experience of pair work may not necessarily be related to language learning gains evident in test scores but rather to their own perceptions of those experiences" (Storch, 2013, p. 100).

Thus, it can be said that the impact of group work on learners' vocabulary gains is still open to further research. My research is an effort to substantiate the widely held notion that group work is beneficial for assisting vocabulary gains.

Impact of Blended Learning on English Proficiency

A case study by Grgurovic (2011) on the blended learning for an ESL class revealed that motivation for learning was still an instrumental factor that determined the level of engagement in language learning. Some students who lacked motivation would not actively engage in pair work, group work, and anything related to the course. Nevertheless, some students who had difficulties of fitting into group or pair work favored and benefitted from doing individual speaking tasks on the laboratory. This could be an indication that interaction in group work may not work equally well for all learners; a few of them may prefer studying alone to learning together with their classmates, and still reap success.

Nistor (2014) used Blended Learning as an approach to teaching students of Romanian with varying levels of motivation. She indicated that difficulties in the areas of vocabulary, grammar, and pronunciation should be inevitably dealt with in a face-to-face interaction. She further underscored the importance of using all possible tools on the Internet that can help the learners overcome these difficulties. This study is of relevance to my study since both set out to find potential and difficulties in using BL for teaching language elements.

In a subsequent research, Nistor (2015) highlighted the different reasons of learners studying Romanian as a foreign language. The first group, driven by instrumental motivation to secure jobs and other external recognition, usually pushed themselves to learn the language and culture at a fast pace. The second group, who learnt the language to avoid problems when they went to their homelands, were usually keen on learning in a BL setting. They sought opportunities to engage in face-to-face sessions as well as from the cyberspace. The third group, who was least motivated, did not see the target language as vital and therefore comprised the group whom the teacher had to push the hardest. The points raised by Nistor could serve as an explanation for the results of my present study.

Stefan (2016) emphasized the flexibility and collaboration as the advantages of BL. Through BL, students can access the learning materials from any place, while the teacher also enjoys more freedom to adjust the learning materials. All of the advantages contribute to the efficiency of the instruction. She also stressed the importance of face-to-face sessions for introducing new concepts by the teacher.

Impact of Blended Learning on Vocabulary Mastery

Two recent studies in this area turned out different results. The first was conducted by Tosun (2015), who studied the effect of BL on the vocabulary gains of 20 college students. Compared to another group which received conventional vocabulary teaching, the experimental group did not achieve significantly higher scores on the vocabulary post-test. Thus, he concluded that BL did not make a significant impact on their vocabulary learning. Tosun ascribed the result to the short duration of the study, which was only 6 weeks.

The second study was conducted by Vasbieva, Klimova, Agibalova, Karzhanova, and Birova (2016). Their study used a pre-experimental design with only one class consisting of 23 students. The result showed that these learners could increase their vocabulary knowledge after having been taught with BL.

Thus, the two studies turned out mixed results. My study was another effort to put more certainty as to whether BL was really an effective approach for increasing vocabulary knowledge.

Method

The study used a non-equivalent control group design (Cohen, Manion and Morrison, 2007) because it involved two groups that were not equal at the outset in terms of language proficiency. It can be visualized as follows:

O_1 X O_2

O_1 O_2

Where O_1 = pre-test

O_2 = post test

X = the treatment, which in this study is the BL

Participants

The researchwas conducted in two undergraduate classes of EAP (English for Academic Purposes) at the Facultyof Economics and Business at Universitas Ma Chung. The experimental class was fromManagementDepartment, and the control class was from Accounting Department, each having 24 students. The students' native language is Indonesian, and they are on average aged 18 years old and estimated to be at the mid-intermediate level of English proficiency.Their TOEIC scores obtained at the beginning of their study in the university was 506. This was roughly equivalent to A2 level on CEFR.

One of these two classes was randomly assigned to be the experimental group, and was taught by the researcher himself. The other class, the control group, was taught with conventional face-to-face method by another lecturer who specializes in teaching EAP. The EAP itself was conducted twice a week in the course of a semester, each lasting 100 minutes, making a total of 32 sessions.

The Instruments

To construct the test instrument forthe pre-test and post-test, several texts were taken randomly from the main textbook ("Academic Encounters Life in Society" by Kristine Brown and Susan Hood, published in 2002 by Cambridge University Press). Those were text 3, 6, 10, 13, and 18. From text 3, 6, and 10 two paragraphs were taken from each, and they were immediately followed by comprehension questions. The questions were designed to represent a variety of comprehension types according to Barrett's Taxonomy. Of the 11 items, 2 measured recalling ability, 1 measured predicting ability, and the rest measured the abilities to infer various layers of information from the texts. Thus, although the test did not undergo a very rigorous procedure of construct validation, the matching of the test items with Bloom Taxonomy was considered sufficient

for the purpose of measuring the subjects' comprehension. The same test was used as the pre-test and post-test.

Then, from the 5 texts, academic words and some more lowfrequency but important words were taken and made into 20-item multiple choice test. So there were a total of 31 items in the test battery.

The try out of the reading comprehension and vocabulary test battery was conducted on 25 July 2016. The test was administered to 11 junior students from English Letters Department at Universitas Ma Chung. Cronbach Alpha analysis was used to determine its reliability. The index obtained was 0.714, which indicated adequate reliability of the instrument.

The second instrument was an open-ended questionnaire that elicited information about the classmates that the students regarded as the closest.

Data Collection

The pre-test data were of two kinds: (1) their reading comprehension and vocabulary scores; (2) their network of close friends. The first type of data was collected by administering a battery of tests to the two classes. The second type of data was collected by distributingquestionnaires asking them to name 3 friends they think are their closest friends. This data comprised the profile of their social network at the beginning of the semester prior to the treatment.

Afterwards, the treatmentwas started. Both classes were taught literal and inferential comprehension skills. The former covered the skills of recalling details, recalling comparison, recalling cause and effect, and recalling sequence, while the latter encompassed inferring main ideas, inferring cause and effect, inferring sequence, and predicting outcomes.

The control group was taught with the conventional method, which was defined as teaching-learning sessions led mostly by the lecturer in a classroom in which students read and do exercises from the pre-determined textbooks; the lecturer followed the course outline very closely, making sure that all of the learning activities were done in the classroom. The experimental group, in contrast, was taught with BL. The first two sessions took place in the classroom where the lecturer taught the class some fundamental reading skills. In the following sessions the lecturer began assigning the students to online sessions. These sessions drew on the previous in-class lessons but made the learners seek resources from the Internet and from other places (the library, or other books) in order to do the tasks given. They were encouraged to work in groups with classmates whom they had named in the questionnaires distributed previously.In the subsequent session after the first topics had been completed, a different topic and reading skill was taught in a face-to-face session, and then in the following meeting they engaged in online session. In every online session they were always instructed to find reading texts from the Internet and then practiced the particular skill that they had learned in the previous face-to-face session. Thus, the online session gave them opportunities to expand their reading experiences by

reading texts other than the ones in the textbook.

In the week after the assignment to out-of-class learning, these students came to the classroom to have face-to-face interaction with their lecturer and other classmates. The sessions were used to share the result of their out-of-class learning, to check on the outcome of their assignment, to clarify some concepts, and to check their understanding of new vocabulary. At this stage, their grouping was monitored. If a division between more able students and less able students began to form noticeably, the teacher would tell the more able students to mingle with the less able peers and assist them in theirefforts to improve their performance.

The grouping in both classes was monitored periodically to see if there were any changes of grouping among the students.

The course ran twice a week with each session lasting 90 minutes; thus, within six weeks it covered a total of 18 hours. By the end of the semester, the post-test was administered to both classes. The test measured their reading comprehension abilities and vocabulary knowledge.

Data Analysis

From the data collection procedures, three kinds of data were obtained: (1) the scores of both groups on pre-test and post-test of reading comprehension and vocabulary, (2) the scores of both groups on pre-test and post-test of vocabulary, and (3) the network profiles that showed the dynamics of the students' choice of peers in their groups throughout the semester.

To answer the first and second research question, the post-test scores werecompared with ANCOVA, with the pre-test scores being the covariate. ANCOVA was used because the two groups started from different abilities at the outset. The initial differences in the reading ability and vocabulary knowledge before the treatment began was considered as a factor that may influence the differential effect of the treatment. Therefore, this variable, called covariate, must be controlled in the statistical analysis, and ANCOVA was the appropriate procedure for such condition.

To answer the second research question, the network profiles were first of all converted into ordinal scores. Each subject received a score of 1 every time they worked with a different classmate. Then, the scores of the experimental group were compared to the scores of the control group with Mann-Whitney U test. The result indicated whether the students in the experimental group had more intense and expansive collaboration than those in the control group.

Results

The section answers the three research questions stated in the Introduction. To begin with, the baseline data is presented below.

The table below shows the reading comprehension and vocabulary mastery of the two groups before the treatment began:

Table 1. Pre-Test Scores of Both Groups

	Experimental (N = 24)	**Control (N = 24)**
Reading comprehension	Mean = 55.09; SD = 20.39	Mean = 72.02; SD = 10.27
Vocabulary	Mean = 47.39; SD = 23.05	Mean = 45.32; SD = 27.53

The table below shows the reading comprehension and vocabulary mastery of the two groups after the treatment was completed:

Table 2. Post-Test Scores of Both Groups

	Experimental (N = 24)	**Control (N = 24)**
Reading comprehension	Mean = 64.51; SD = 20.43	Mean = 79.05; SD = 10.07
Vocabulary	Mean = 74.37; SD = 25.34	Mean = 75.62; SD = 16.83

The following section answers the first research objective, namely to determine whether students who are taught with BL have improved English reading abilities.

The Effect of Blended Learning on Reading Comprehension

This section answers the first research objective, namely to determine if students who are taught with BL have higher English reading abilities than those taught with conventional method. The following null hypothesis was tested: there is no difference in reading abilities between students taught with BL and those taught with conventional method. The following table presents the result of ANCOVA run on XLSTAT:

Table 3. Analysis of Variance

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	8231.360	4115.680	29.684	< 0.0001
Error	45	6239.318	138.652		
Corrected Total	47	14470.678			

As the Table4above shows, after the initial difference in reading comprehension ability is controlled, there is a significant difference between the Experimental and the Control group in terms of the reading comprehension skills ($F = 29.684$, $p < 0.05$). Thus, the null hypothesis was rejected. Although the Control group still performed a little higher in the post-test, the Experimental group had a significant gain in their reading ability. The result shows 3 that BL apparently had assisted the learners in their effort to improve their 3 reading comprehension skills.

The Effect of Blended Learning on Vocabulary Mastery

The following section answers the second research objective, namely to determine whether students who are taught with BL have improved gains in their learning of English vocabulary.The null hypothesis to be tested isthere is no difference in gains of vocabulary learning between students taught with BL and those taught with conventional method. Table 4.7 below presents the result of the analysis of variance performed on the data:

Table 4. Analysis of Variance

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	3386.582	1693.291	4.254	0.020
Error	45	17913.418	398.076		
Corrected Total	47	21300.000			

As the Table above shows, after the initial difference in vocabulary mastery was controlled, there was a significant difference between the Experimental and the Control group in terms of the gains in vocabulary mastery ($F = 4.254$, $p < 0.05$). Thus, the null hypothesis was rejected. In other words, BL evidently helped the learners improve their vocabulary mastery.

The Effect of Blended Learning on the Dynamics of Grouping

This section answers the third researchquestion, namely whether students who are taught with BL have more extensive collaboration than those taught with conventional method. To attain this objective, first of all each of the students in both groups was scored according to their movement across groups. They earned 1 every time they moved to another group, and 0 if they remained in the groups they preferred at the outset of the study. Their scores were then compared by means of Mann-Whitney U test.

The result of Mann-Whitney U test showed a z score of 0.764 and p value of 0.447. Because the p value was higher than the probability level of 0.05, it was concluded that there was not any significant difference between the two groups in terms of learners' collaboration. In other words, learners from both groups exhibited a similar tendency in

cooperating with their friends. A further calculation revealed that in the Experimental group, 65% of the learners switched to other groups under the teacher's instruction, while 50% of the learners in the Control group did so voluntarily. It was apparent then that the willingness to expand their network was not really strong in both groups. They tended to stick to their own groups, switching to other groups only when the lecturer prompted them to do so.

A close observation of the grouping dynamics in the Experimental group revealed the following patterns. In the first session, when the students were instructed to mention classmates whom they thought were best for group work, several names appeared more than once. At least two students were mentioned by 5 of their classmates, and one student by 6 of his classmates as the most favorable students to work with in group work. This indicated that these students were popular in the class. It turned out that two of these popular students earned the highest scores on the pre-test.

After that, the students worked in groups for four different assignments. Up to the point of the fourth assignment, most of them remained in the groups they had formed, with only two students changing groups on the second assignment. It was obvious that the students tended to be intensive but not expansive in their grouping. Once they formed groups with the classmates they liked, they remained in their respective groups. This kind of behavior seems to corroborate the argument that students tend to stick to their preferred classmates and feel reluctance to switch groups. As Uden and Beaumont (2006) pointed out, even under the teacher's instruction, students still show reluctance to mingle with classmates other than the ones they are close with. Carroll and Ryan (2007) argued that it is understandable that students tend to group with classmates who share similar interests, sense of humor, ways of thinking and communication style.

The groupassignment on 3 October 2016 was preceded by the lecturer's announcement to the students that they may switch groups if they wanted. As a result, on that assignment, 15 of them (65.21%) of them switched groups by joining other groups or receiving new members.

A rather similar picture emerged from the Control group. Only 15 students (50%) were willing to change groups.

A further effort was made by distributing questionnaires to identify the reasons why the learners seemed to keen on maintaining their grouping. The responses to the questionnaires on why they remained with their groups are summed up in the following tables:

Table 5. Reasons for Staying with the Same Groups (Experimental Class)

No	Responses (N = 16)	Percentage
1.	I have been getting along well with other group members.	68.75
2.	I can learn from other group members.	31.25

Table 6. Reasons for Staying with the Same Groups (Control Class)

No	Responses (N = 18)	Percentage
1.	I have been getting along well with other group members.	72.22
2.	I can learn from other group members.	27.78

The pattern of grouping by both groups could be attributed to the rather elusive nature of Asian students' attitude toward grouping. As Schalkwyk and D'Amato (2015) stated in the previous section, some researchers found that certain Asian students gravitated toward group work while some others shunned group work. Whatever the cause was, it seemed that the arrangement of learning, be it BL or conventional method, was not the reason behind the preferential pattern of group work by the subjects in both classes.

Discussion

Reading Comprehension Ability

The finding showed that there was a significant difference in reading comprehension ability between the two groups. The result suggested that BL quite possibly made students in the Experimental group behave differently from their peers in the Control group. Quite probably, when they were allowed opportunities to engage in online learning, their practices to some extent had been in line with the requirements of a digital literacy, which is defined by Martin (2006, p. 155) as follows:

> The awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action, and to reflect upon this process.

The digital literacy itself, as Fang and Chaw (2016) argued, requires 4 criteria: underpinnings - the skills of reading and writing as well as of using software packages and computers; (2) background knowledge - an understanding of how digital and non-digital information is made from a diverse forms of resources and communicated; (3) central competencies - the ability to build knowledge from multiple sources; and (4) attitudes and perspectives - the ability to learn independently and behave well in a digital environment. Quite possibly, the Experimental group practiced these, albeit not fully. Their ways of learning when engaged in the online sessions in BL may have differed much from the students who had been learning in a classroom. They might have also utilized various resources available on the Internet such as online dictionaries or vocabulary practice. In addition, they may also have exercised the attitude of responsible independent learners

who are aware of their objectives and enhance their skills by practicing materials themselves without the teacher's constant guidance. As a result, their reading comprehension ability did improve markedly better than their own scores before they were taught with BL.

Vocabulary Mastery

The finding has shown that there was a significant gain of vocabulary in the Experimental group. There are at least two possible causes that can be offered. First, as discussed previously, this group apparently benefitted much from their additional reading in the online sessions. Having been given opportunities to expand their reading experience in the online sessions, these learners may have raised their level of reading much higher than their peers in the Control group. Their additional reading activities during the sessions may have exposed them to new words, which in turn activated their vocabulary learning mechanism. If this was the case, this was in line with Nadarajan's argument (2007) that learners' intensive interaction with different texts promotes incidental learning of new vocabulary. The Control group's reading experience, in contrast, was limited to their textbooks used in class, thus depriving themselves of additional reading which could have promoted their vocabulary learning, too. Indeed, they also made some improvement in their post-test scores, but as the analysis shows, the rate of learning of the Experimental group was significantly higher than this group.

It is important here to bring up again what other researchers have found in the same area. Dobao (2014) found that group work promoted vocabulary learning more than pair work. Similarly, Moghaddam and Faruji (2013) found that learners working in a cooperative task performed better in vocabulary test than those taught in a conventional fashion. In this respect, the two studies corroborated the finding in my study.

The Experimental group's significantly high rate of vocabulary mastery may also be a factor of effective mutual learning in the learners' respective groups. Given the fact that many of them (31.25% in Table 5 above) claimed to have learned from their group members, it seems reasonable to attribute their improvement in vocabulary learning to this within-group interactions. Not only did they get along well with each other but they also learned from each other. Quite possibly, the more able learners supplied the meanings of some difficult words for the less able ones.

However, Tosun (2015) found no significant difference in vocabulary mastery between learners taught with BL and those taught with conventional method. He ascribed this result to the short duration of the study. In fact, my study here also lasted more or less the same time, i.e. 6 weeks. The different results may have been caused by different statistical analysis, or different experimental designs.

In contrast, the study by Vasbieva et al. (2016) turned out a similar finding to my study. She found that her subjects could increase their vocabulary mastery after having finished BL sessions. Despite the similarity, however, it should be noted with caution that her study used a pre-experimental design, which is more vulnerable to threats of internal

validity. Taken as a whole, the studies reviewed here have yet to generate a conclusive finding that comprises a solid evidence of the effectiveness of BL in vocabulary learning.

Group Cohesiveness

As shown in the previous section, there was apparently no effect of BL on the grouping pattern of the Experimental group. The students decided from the beginning on their preferred classmates and then remained with them for the rest of the semester. The mode of the instruction did not make them change their grouping, nor did the variety of tasks given. They only switched groups when the lecturer hinted at that possibility. Apparently, the groups were very cohesive. This result was similar to Lim and Yoon's study (2008), in which the group taught with BL earned a higher score on team collaboration than the group without BL. As Fearon, Starr and McLaughlin stated (2011), students are more inclined to maintain their groups they feel most comfortable with because they feel the benefits from the interaction, sharing, and communication. Likewise, Levi (2010) stated that when a group enjoys success in their accomplishment of a task, its level of cohesiveness increases. This might explain why the groups in the Experimental class were so cohesive they never considered joining different groups.Breckler, Olson, and Wiggins (2005) supported this view, stating that some forces make members of a cohesive group stay in the group: they like each other, the membership is prestigious, or they enjoy benefits from being the members of the group. Apparently, these were the factors that made the students in the Experimental group tend to stick together in theirrespective groups and never movedto another group.

The fact that students in the Control group behaved differently in their networking also warrants a discussion. As shown in the previous section, these students did not mind switching groups as they engaged in a series of group assignments. One probable cause of this is the class as a whole might have been cohesive, so many of the members did not feel any psychological barrier to switching to other groups or receiving members of the other groups.

Since working with different people is deemednecessary even in a small community like a class, it is the duty of the teachers to have the students mingle and work with different classmates. The teacher's instructionto switch groups can be applied equally well to both BL and a conventional class. In other words, the type of learning does not necessarily determine the patterns of grouping. The extent to which students expand the network by working with different classmates hinges on the teacher's keen observation and willingness to rearrange the grouping rather than on the type of instruction.

In order to be able to suggest different groupings, the teacher may take advantage from a sociometric pattern identified by means of a simple questionnaire. Knowing who are the outstandingstudents and the less competent students, the teacher can have the former assist their weaker classmates. Thus, not only does the teacher encourage more learning but he or she also promotes a collaboration among the students and prompts the

more able students to share their knowledge and skills.

Still, the cohesiveness may have been caused by another less positive factor, that is, the big discrepancy of language proficiency among the students. The Experimental class seemed to have students with mixed abilities. The initial pre-test and the first quiz showed a standard deviation of 20.39 and 23.05 (see Table 2 above), respectively, indicating that some of them were far below the others while a few were very advanced. With this kind of varied levels of proficiency, the students may have been inclined to gather with classmates who were more or less at the same level. They may have felt reluctant to work with different classmates who were higher or lower than they were in language proficiency. If this was the case, it should be not surprising that they hardly felt the urge to work with different classmates.

Having presented the above discussion, the writer was cautious enough to realize that the research may have been limited in some ways. First of all, since the two groups were taught by different lecturers, the individual teaching style of each lecturer may have contributed a little to the groups' final achievements. Second, it is also possible that the improved performance was a natural result of the learners' progress in their studies.That is to say, irrespective of the BL, all learners in the Experimental groups would have eventually reached a more or less the same level of mastery at a certain point in the course of their learning.

Conclusion

The study set out to determine the effect of blended learning on the reading comprehension ability, vocabulary mastery, and collaboration among college students. Two classes studying English for Academic Purposes were taken as the subjects, one being the experimental group and the other being the control group. In a period of 6 weeks, the control group was taught with blended learning in which face-to-face sessions was conducted alternately with online sessions. The experimental group, meanwhile, had only face-to-face sessions. The grouping patterns in both groups were also recorded to identify their collaborative tendencies. At the end of the semester, the scores of their reading comprehension, vocabulary mastery, and grouping pattern were analyzed with ANCOVA and Mann-Whitney U test. The results showed that the group who was taught with blended learning had significant gains in their reading comprehension and vocabulary mastery. The grouping patterns, however, remained the same.

The control group's significant gains were thought to be the result of their attitudes when doing the online sessions. The may have performed behavior that accord with digital literacy. Their extended reading during the sessions might have exposed them to wider vocabulary, promoting better vocabulary mastery by the end of the semester. Meanwhile, the tendency to maintain their groupings may be explained by the fact that they had been comfortable with classmates that suited them best and thus felt no need to switch groups. Their mixed ability level was also the reason why they would rather work with classmates

of a similar level of ability.

Having completed the experimental study on the effectiveness of BL for reading comprehension ability, vocabulary mastery, and collaborative work among learners, the writer would like to propose a few suggestions for the practical teaching based on the findings.

First of all, cohesive and effective groups should be formed with a more definitepurpose, that is, to encourage positive interactions that would give equal chances to succeed in their learning efforts. It is recommended that the teacher let the learners form their own groups because implied in the finding of this study is that learners enjoyed learning with classmates with whom they got along best.

Secondly, the online sessions of BL should make the learners expand their reading experiences by reading different texts. The online tasks should be aligned with their reading tasks, i.e. the tasks should hinge on what the learners have read in the texts. In addition, this online reading should be done in groups so that they can get the most out of the interaction within the groups.

Finally, the BL method should consists of at least two major types of sessions, each with a different purpose. In the face-to-face sessions, the teacher should teach the students techniques to read effectively, including explicit teaching of some important vocabulary items. This should be followed-up by online sessions where the learners can deal with more varied texts which they comprehend using the techniques previously trained during the face-to-face sessions.

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