IMPROVING STUDENTS' SUMMARY WRITING ABILITY THROUGH COLLABORATION: A COMPARISON BETWEEN ONLINE WIKI GROUP AND CONVENTIONAL FACE-TO-FACE GROUP

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ABSTRACT
Wikis, as one of the Web 2.0 social networking tools, have been increasingly integrated into second language (L2) instruction to promote collaborative writing. The current study examined and compared summary writing abilities between students learning by wiki-based collaboration and students learning by traditional face-to-face collaboration. The experimental research was conducted with students enrolled in EN 111 course in the first semester of academic year 2011. The instruments employed in the study were summary writing tests, a questionnaire, and products of summary writing. Data were analyzed by using means, standard deviations, percentages, and t-tests. The results indicate that the post-test scores of both groups were significantly higher than the pre-test scores. ($p < .05$). However, no significant difference was found between the two groups' writing mean scores and satisfaction with the learning methods. In addition, the writing products which students in both groups submitted were not different in quality. Although there were minor drawbacks, a lot of advantages were identified, showing students' positive attitudes towards learning through wiki.
Keywords: wiki, online collaboration, summary, writing ability

INTRODUCTION

Summarization skill is deemed important in higher education level because students always use it to condense information from journals, textbooks and other bibliographical sources in their fields. Summarizing is the best way to see whether students understand the whole reading passage or not since they have to use their own words to display the main ideas. Even if the ability to summarize information is an essential skill, not many students can do well in summary writing with some reasons. First of all, they have difficulty determining which information was relevant and necessary for inclusion in their summaries (Wehmeyer, 2011). So, they cannot gain an accurate summary with the main ideas and several major supporting details. In this case, the summary usually contains unimportant points, and copied text is included in many of the sentences they wrote. Second, students who do not know much about summary writing rules tend to express their own opinions into a summary. Third, students are not able to organize the ideas with suitable connections (Nguyen, 2011). The negative feedback which students get from the teacher in summary writing may discourage their learning motivation. Therefore, there should be a good teaching technique to develop students' learning ability and to make instruction more interesting.

Basically, learning in a small group is one of the choices the teacher makes for increasing students' motivation. Learning in collaborative setting is a significant factor in students' learning because it promotes active learning and student-reliance in community college classrooms (Foote, 2009). Collaborative learning is a social interaction involving a community of learners and teachers, where members acquire and share experience or knowledge. Students tend to take more ownership of their material and to think critically about related issues when they work as a team. The collaboration process enhances students' learning and develops their social skills like decision-making, conflict management, and communication (Smith &MacGregor, 1992). Banerjee (2000) explains that in the collaborative learning process, a student must formulate ideas about the material assigned to him, test his assumptions, clarify them, come to a conclusion and then assimilate that material within himself. Once he feels that he "owns" the material he must explain it to his group so that his knowledge can be pooled together and shared among all his group members. Each student, thus, is a dynamic contributor to both the learning and the teaching process. When questions are raised, different students will have a variety of responses. Each of them can help the group create a product that reflects a wide range of perspectives and is thus more complete and comprehensive (p.1).

According to Goodsell et al. (1992), collaborative learning represents a significant shift away from the typical teacher-centered or lecture-centered to learner-centered. In collaborative classrooms, the lecturing/ listening/note-taking process may not disappear entirely, but it lives alongside other processes that are based in students' discussion and active work with the course material. Teachers who use collaborative learning approach tends to think of themselves less as expert transmitters of knowledge to students, and more as expert designers of intellectual experiences for students as coaches of a more emergent learning process.

Collaborative learning has, as its main feature, a structure that allows for student talk: students are supposed to talk with each other and it is in this talking that much of the learning occurs (p.23). This mutual exploration, meaning-making, and feedback often leads to better understanding on the part of students, and to the creation of new understanding for all of them (Smith & MacGregor, 1992, p. 12). Collaborative learning is therefore, the approach which should be used to make summary writing easier. Teaching students to write good summaries is no longer a big burden for language teachers. In a collaborative learning environment, students can work together to find out the main ideas and important support details. Also, they help one another to complete a task or create a product. In terms of learning motivation, students who work in collaborative groups appeared to be satisfied with their classes, and their learning motivation improved respectively (Kowal & Swain, 1994; Swain & Lapkin 1998).

Collaborative learning takes on a variety of forms in an active process including the use of computer technology as a medium and tool. Many institutions have attempted to make use of technology in collaborative activities. Apart from chat rooms, forum, learning logs, wikis are a kind of web-facilitated instruction which can accommodate the collaborative discussion of ideas well. Wikis are collective websites where a large number of participants are allowed to create or modify pages using their Web browser. The wiki students can share multimedia presentations about what they perceive. This concept is in accordance with what Godwin-Jones (2003) states, "Wikis are intensely collaborative. Such a system only works with users who are serious about collaborating and willing to follow the group conventions and practices" (p.2). Such responsibility is representative of characteristics associated with autonomy among language learners. The final product is the work of several students. Therefore, collaboration is necessity as they have to learn from each other. In order to accomplish this goal, Weimer (as cited in Lending, 2010) suggests that the role of the teachers must change. The teachers should guide and facilitate learning, empowering students to discover knowledge and learn from each other in a controlled learning environment.

To facilitate language learning, wikis can be used to get students engaged in collaborative writing. While working together, students generate online materials that reflect what they have learned and show connections between their prior knowledge, the course content, and their personal experiences. By so doing, the role of the teacher has been changed to be a facilitator. In a study, Matthew & Felvagi (2008) explain the impact of wikis on students' learning that as students contribute to the wiki pages, their reflections on the process and their interview comments reveal that they spent time reading and rereading the pages. As they research content to add to the pages, they make connections to their prior knowledge and experiences, to the content they are learning in other classes, to their tutoring sessions with elementary students, and to a variety of Internet resources. Reading and rereading the wiki pages results in students building on each other work. Unlike individual writing assignments, posting to the wiki pages requires students to be cognizant of their peers' contributions. Mackey (2007) strongly believes that this kind of learning builds online communities where students work together to achieve common goals and objectives related to the assignments. Each group will produce shared knowledge that benefits everyone. The advantages of wikis are prominent when structured for collaborative coursework; they promote peer interaction and facilitate the sharing and distribution of knowledge and expertise amongst a group of learners (Lipponen, 2002). The exercise becomes a meaningful task that cannot be done by a single student; it has to be done by many students working together.

When wiki is applied, student satisfaction should be considered in evaluating the effectiveness of this learning tool. Student satisfaction in web-based learning environments is a critical issue and has been questioned in some research (Santhanam, Sasidharan, & Webster, 2008; So & Brush, 2008; Wu, Tennyson, & Hsia, 2010). In wiki-based learning, teachers cannot diagnose students' satisfaction by observing their facial expressions and postures like they can do in a face-to-face classroom. Student learning achievement may result from whether they like to use systems or not and how learners work together, and whether there is a good working atmosphere among learners (Guuawardena, Nola, Wilson, Lopez-Islas, Ramirez-Angel, & Megchun-Alpizar, 2001). Previous studies showed that students were satisfied with wiki collaborative learning (Chao & Lo, 2009; Wichadee, 2010) and had greater learning motivation (Turgut, 2009).

Undergraduate students at Bangkok University, in the nine faculties: Humanities, Business Administration, Accounting, Communication Arts, Fine and Applied Arts, Sciences and Technology, Laws, Economics, and Engineering, are required to take at least three English courses. Each course consists of four skills: speaking, listening, reading, and writing. It is found that most students always get low scores in the writing tests, especially in their summaries. As mentioned earlier, among various teaching techniques, collaboration among peers is an interesting alternative in terms of creating helpful and active learning. Nevertheless, there is a limitation of collaboration in classrooms. Students may not have much time to read and build on each other's work; however, in collaborative online environments, they are given this opportunity (Hewitt & Scardamalia,

1998). In online learning communities, students can create, share information, practice critical reflection, negotiate meaning, test synthesis, and build consensus as much as they wish. Through online, collaborative written assignments, group discussions, debates and critiques of arguments, students can enhance knowledge construction (Zhu, 2012). Therefore, the current study was conducted to examine the effects of English summary writing through wiki on undergraduate students' summary writing ability, satisfaction, attitude, and summary writing accuracy. It is necessary to find out whether wiki can produce satisfactory outcomes in learning. If wiki is effective in facilitating learning, it will be a solution for language teachers who don't want to spend too much time on collaborative learning activities in class. This study was guided by five research questions:

1. To what extent did the students improve their English summary writing ability after learning through collaboration?
2. Is there a difference in students' writing ability between those using wiki-based collaboration and those using conventional face-to-face collaboration after the intervention?
3. Is there a difference in satisfaction of students learning via wiki-based collaboration as compared to those learning via face-to-face collaboration?
4. What are students' attitudes towards learning through wiki in terms of its advantages and disadvantages?
5. Is there a difference between wiki-based group and face-to-face group in terms of summary writing accuracy of the final product?

LITERATURE REVIEW ON WIKI

There are many researchers conducting the studies to provide the implications on the use of wikis in second/foreign language classes. Highlighting students' interaction and engagement in collaborative writing, Mak & Coniam (2008) examined authentic writing through the use of wikis by Year 7 ESL learners in a secondary school in Hong Kong. The wikis were used as a collaborative writing platform to produce a school brochure that describes the different facilities and features of their school. Over a period of two months, as an integral part of their ESL homework, groups of students designed and put together, through a series of successive drafts, a description of their secondary school which they had joined from primary school a few months previously. This study presented the overview of how wikis function in terms of editing and revision. Samples of the students' intermediate and final drafts were provided, as well as snapshots of the amount and the types of writing produced at each stage. The students' final draft became a printed brochure of their "new" school to be distributed to parents. To investigate how wiki could help develop their students in terms of cooperative skill and language proficiency, Franco (2008) used wiki for peer correction, in a group setting and found that students had positive perceptions of wiki activity, and the pre-/post-peer correction data indicated progress in language acquisition. Similarly, Lee (2010) used wikis with 35 university students at the beginning level who contributed to wiki pages over a period of 14 weeks. The affordances and constraints of using wikis for collaborative writing were drawn from data triangulation: group wiki pages, student surveys, and final interviews. The results showed that creating wikis had a positive impact on the development of students' writing skills through collaborative engagement. Scaffolding through peer feedback played a crucial role in the L2 writing process through which students not only helped each other organize the content but also made error corrections for language accuracy. In addition, the results indicate that task type affected the amount of writing produced by each group.

In addition, many studies were conducted to compare student learning between wiki group and face-to-face group. The first research study compared online wikis collaboration with more conventional face-to-face group collaboration in report writing (Colye, 2007). Following completion of the reports, professional subject matter experts rated the quality of the reports according to specified content and format criteria. Results indicated there was no difference in the quality of reports related to the method of collaboration, suggesting that wikis are an effective collaboration method; face-to-face collaboration is more efficient in terms of communication among group members and is sometimes preferred because it is familiar; wikis collaboration allowed students to work at their own pace and to easily see the work of other group members; students adapted wikis capabilities to their previous methods of group work; and there was not a significant difference in students' experiences of learning and community between the two methods. Chen (2008) examined the effectiveness of applying wikis in terms of students' learning outcomes, investigated the changes regarding students' attitude towards language learning, and explored the communication channels in wikis that facilitate students' interaction in the e-learning environment as well as students' experience of using wikis. Results showed that there existed statistically significant difference between the group with and without wikis, which means the group applying wikis performed better in listening and reading abilities. When compared with the non-wiki group, the wiki group had a more favorable attitude towards the class, their English ability improvement, and cooperative learning. Moreover, the students

agreed that wikis helped them complete their assignment. They felt comfortable in the wiki environment, and it was easy for them to use wikis. A previous study confirmed that student involvement is more intense and equally distributed among group members in computer-supported learning environments compared to face-to-face sessions (Angeli, Valanides, & Bonk, 2003).

RESEARCH METHODOLOGY

Participants and the Setting

The participants of this research were students from two sections, each of which contained 40 students, got from cluster sampling since students were already assigned to their sections by the university. One section was prepared for face-to-face collaborative learning while the other section was for wiki-based collaborative learning. The research was conducted in the first semester of academic year 2011. The students were enrolled in the Fundamental English I course. This course aimed to enhance students' skills in reading and writing logical responses to texts. The students met in class once a week – two periods (70 minutes per period). The length of the semester was 14 weeks.

Instruments

The impact on students' learning was evidenced by four instruments including summary writing tests, a questionnaire surveying satisfaction with the instruction, an open-ended questionnaire on the use of wiki, and summary writing products.

First, the English summary writing tests designed in parallel form were administered as pre-test and post-test. Both tests required the students to read three short articles and write a summary in about 5-7 sentences. Time allowed for both tests was 120 minutes. The total score was 30 points. The items of the tests were constructed, verified for content validity by three experts and piloted with one class in the previous semester.

Second, to learn how well collaborative learning through wikis and face-to-face was accepted by the students, a questionnaire containing 10 items with a choice of five rating scale responses (1= strongly disagree, 2= disagree, 3 = neither agree nor disagree, 4= agree, and 5 = strongly agree) was created based on the theoretical framework of Vygotsky's social constructivism with his emphasis on the role of social interaction in learning and on the concepts underlying the communicative approach in L2 learning (Vygotsky, 1978). The draft questionnaire items were checked for content validity by three experts in the English teaching field. The items with IOC index higher than 0.6 are acceptable. All of the items passed the criteria, and the overall index of the questionnaire was .87. Then the questionnaire was piloted with 30 non-subject students and calculated for proper reliability value by using Cronbach's Coefficient Alpha. The reliability value was .85, implying that the questionnaire is reliable. The questionnaire was distributed to both groups after the posttest.

The third instrument was an open-ended questionnaire asking students in the wiki group to identify advantages and disadvantages of learning through wiki. The responses were coded in accordance with content analysis and identified to find major issues.

The last instrument was 100 pieces of summary writing got from two groups; they were checked based on the six rules of accuracy.

Data Collection and Analysis

This empirical study was carried out in two classes where the researcher was the teacher. The data collection was done for 14 weeks. For the pre-instructional period, the subjects in two groups were pre-tested to determine their summary writing ability. Then the intervention period took place during weeks 2-14. Then the first group worked together on wiki-pages while the other group worked collaboratively in class for 12 weeks. The intervention was followed by the post-test and a questionnaire. Two teachers checked the summary writing tests using the same criteria. The writing scores were calculated for mean. The inter-rater reliability coefficients of the two teacher raters in pre-and post-test using Pearson Correlation were 0.89 and 0.92 respectively. To get the mean score of each participant, the scores got from two raters were combined and divided by two. To reveal any changes in performance of summary writing, mean scores of pre-and post-tests were compared using paired samples t-tests. In addition, mean scores of the writing tests of the two groups were compared using an independent samples t-test. P values < 0.05 were considered statistically significant. Data got from the questionnaire were calculated by using mean and standard deviation to indicate how much students in the two groups were satisfied with collaborative learning. A mean score of 1-1.50 indicates having an opinion at a very low level, 1.51-2.50 at a low level, 2.51-3.50 at a moderate level, 3.51-4.50 at a high level, and 4.51-5.00 at a very high level. Independent samples t-tests were employed to check any significant differences in all items between the two groups. Apart from that, the assignments submitted by students were analyzed for quality in

terms of accuracy and presented in form of percentage. The scores of writing accuracy of the two groups were compared using an independent samples t-test.

Teaching and Learning Procedure

On the first two weeks, students in both groups were taught how to summarize the story in the classroom through "Mind Mapping" technique in order to find out the topic and important details. On the third week, students were asked to form a team of 4 members to work together. Students in wiki group constructed wikis pages within a safe password-protected environment for students to work together. Then they were assigned to read five articles from Chapter 1-5 in the textbook *American English File* (Student Book 3, Oxford University Press) and write a summary of 3-5 sentences on wiki pages. Each group of students was responsible for the construction of knowledge. The process started with a member's posting his/her summary, followed by a revision by other members. Once any information was corrected, students needed to state reasons for changing it. Other than that, each member could give suggestions to their group through wiki pages. At the end of each task, the teacher gave the feedback or suggestions for writing improvement. In each writing task, students would reach an agreement of a final product. All final products included five pieces of summaries written from what they had read in the textbook throughout the course (weeks 3, 5, 7, 9, and 11). Students in the face-to-face group had to perform the same tasks, but worked together in class. However, they had limited time (30 minutes) in writing a summary. Beside this activity, other types of input such as speaking, reading and writing paragraphs were exposed to them.

RESEARCH RESULTS

Research Question 1 - To what extent did the students improve their English summary writing ability after learning through collaboration? This research question explored the effects of collaborative learning technique on summary writing ability.

Table 1 A Comparison of Pre-test and Post-test Mean Scores of Students in Both Groups

Groups		Pre-test (n=40)	Post-test (n=40)	t	p
Face-to-face group	Mean	9.05	17.27	13.46	.001
	SD	3.05	4.66		
Wiki group	Mean	9.07	18.15	15.95	.001
	SD	3.41	4.50		

To investigate whether the students improved significantly in their writing ability, the pre- and post-test mean scores were compared by using paired samples t-tests. Before the intervention, the writing mean scores of students in face-to-face group and wiki-based group were 9.05 and 9.07 from 30 points, and those scores increased to 17.27 and 18.15 respectively after the intervention. It is noticed that standard deviation of the two groups also increased. From a t-test analysis, the post-test mean scores of students in both groups were significantly higher than the pre-test mean scores. This means that the students in on-line and face-to-face groups improved their summary writing through collaborative learning. However, it is noted that students who were taught by wiki-based collaboration improved their writing ability more than those who studied with traditional face-to-face collaboration.

Research Question 2: Is there a difference in students' writing ability between those using wiki-based collaboration and those using conventional face-to-face collaboration after the intervention?

In order to confirm the participants assigned to both groups were not initially different but homogeneous, an independent samples t-test was run. From a t-test analysis, the pre-test mean score of students in the face-to-face group (M = 9.05, SD = 3.05) was a little bit lower than that of the wiki group (M = 9.07, SD = 3.41), but the result shows no significant difference between the two groups. Therefore, it was concluded that the two groups were homogenous at the outset of the study.

Table 2 A Comparison of Post-test Mean Scores of English Summary Writing between Conventional Face-to-Face Group and Wiki Group

Group	Mean	SD	df	t	p
Face-to-face group (n=40)	17.27	4.66	78	-.85	.396
Wiki group (n=40)	18.15	4.50			

The result indicated that the post-test mean score of wiki group (M = 18.15, SD = 4.50) was higher than that of the face-to-face group (M =17.27, SD = 4.66). To find out whether there was a statistically significant difference between the two groups, the post-test mean scores were compared by using an independent samples t-test. However, it was found that there was no statistically significant difference at the level of .05 as shown in Table 2.

Research Question 3: Is there a difference in satisfaction of students learning via wiki-based group collaboration as compared to those learning via face-to-face collaboration?

Table 3 Mean and Standard Deviation of Student Satisfaction with Collaborative Learning

Statement	Face-to- face	Wiki		
	Mean	**Mean**	**t**	**p**
1. Satisfaction with the environment of collaborative learning (on-line/face-to-face)	4.20	4.43	-1.81	.075
2. Satisfaction with suggestion or advice received from peers	4.08	4.00	.57	.569
3. Satisfaction with peer interaction within the group	4.13	4.20	-.55	.582
4. Satisfaction with time spent in working together	3.90	4.05	-1.06	.294
5. Satisfaction with the opportunity that group members can work together on assignments	4.05	4.05	.000	1.00
6. Satisfaction with equal group member contribution	4.00	4.40	-2.91	.005
7. Satisfaction with social skill development	4.15	4.10	.40	.692
8. Satisfaction with the increased ability in summary writing	3.95	4.05	-.66	.511
9. Satisfaction with gaining a deeper understanding of the summary writing content.	3.80	4.00	-1.21	.229
10. Satisfaction with the final results on the group assignment	4.08	4.25	1.12	.267
Total	**4.03**	**4.15**	**-1.94**	**.056**

The students were asked to express their attitudes towards collaborative learning through face-to-face and wiki. Table 3 showed the overall satisfaction at a high level with the two learning methods. Although there was no statistically significant difference in the overall satisfaction between the two groups, students working together in the wiki group seemed to have more satisfaction than those in face-to-face group (M = 4.15, M = 4.03). It is noted that a statistically significant difference existed between the two groups in item no. 6 only (satisfaction with equal group member contribution, p = .005).

In face-to-face group, it was found that the highest mean score was on no. 1 (satisfaction with the environment of face-to-face collaborative learning, M = 4.20), followed by no.7 (satisfaction with social skill development, M = 4.15) and no. 3 (satisfaction with peer interaction within the group, M = 4.13). However, the item that had the lowest mean score was no. 9 (satisfaction with gaining a deeper understanding of the summary writing content, M = 3.80).

Students in wiki group expressed their satisfaction on no.1 the most too (satisfaction with the environment of on-line collaborative learning, M = 4.43), followed by no. 6 (satisfaction with equal group member contribution, M = 4.40), and no. 10 (satisfaction with the final results on the group assignment, M = 4.25). The lowest mean score was on no. 2 and no. 9 equally (satisfaction with suggestion or advice received from peers/ satisfaction with gaining a deeper understanding of the summary writing content, M = 4.00)

Research Question 4: What are students' attitudes towards learning through wiki in terms of its advantages and disadvantages?

The advantages students identified could be grouped into two main issues. The first issue was the extent of knowledge. Many students stated that they gained extensive knowledge from learning through wiki. They learned to create the wiki website, add profile, read and correct other members' work, as well as exchange ideas/ opinions with others. They viewed wiki as a medium of expressing opinions on-line and a tool to enhance English writing ability. The second issue was the increased motivation and confidence in writing. Since all of them had no prior experience of wiki use before undertaking the course, they were rather excited to know more about it; collaborative learning through wiki increased their motivation to learning. Wiki is deemed a new channel of communication or of meeting with other classmates, and on wiki pages, they could write more freely.

Two students mentioned that they developed critical thinking skills when expressing ideas and sharing knowledge more often.

Out of 40, only 9 students identified disadvantages of learning via wiki. Four of them mentioned the waste of time while three of them disliked working through wiki owing to the delay of team members' posting. The rest listed limitations of wiki use comprising Internet access and language proficiency problems.

Research Question 5: Is there a difference between wiki-based group and face-to-face group in terms of summary writing accuracy of the final product?

Table 4 Summary Writing Accuracy

Rules for Writing Summaries	Face-to-face		Wiki-based	
	Accuracy	Percentage Correct	Accuracy	Percentage Correct
1. Mention the source and the author at the beginning of the summary.	48/50	96 %	47/50	94 %
2. Give the right main idea.	36/50	72 %	37/50	74 %
3. Give correct supporting details.	38/50	76 %	39/50	78 %
4. Provide all supporting details.	35/50	70 %	33/50	66 %
5. Use their own words/ do not copy sentences from the passage.	34/50	68 %	39/50	78 %
6. Correctly interpret the original.	46/50	92 %	48/50	96 %

To find out the quality of summary writing products, each team was required to submit 5 pieces of writing to the teacher for checking. 10 teams working through wiki had to post the final products on wiki pages while 10 teams of face-to-face group were to hand in the final products after they helped one another to complete the last drafts in class. So, a total of 100 final products were taken for analysis. After that the teacher graded the products with six summary writing rules as demonstrated in Table 4. For face-to-face group collaboration, among all 50 pieces, students were able to conform to the rule no. 1 (96%) the most, followed by no.6 (92 %). When students worked face-to-face, they failed to follow the rule no. 5 (68 %) the most. When the wiki-based learning group was considered, it was found that students could do well with the rule no. 6 (96 %) Also, they were rather accurate in mentioning the source and the author at the beginning of the summary (94 %). Out of 50 pieces of summary writing, 39 pieces or 78 % were proved there was no evidence of copying sentences from the passage. However, when working together on-line, they did not succeed in providing all supporting details the most (66 %).

Table 5 A Comparison of English Summary Writing Scores between Conventional Face-to-Face Group and Wiki Group

Group	Mean	SD	df	t	p
Face-to-face group (n=50)	4.74	1.08	78	-.578	.565
Wiki group (n=50)	4.86	.99			

After each group submitted 50 final products, the teacher examined their quality based on the rules in Table 4. The full score obtained in each product was 6 points. Then the graded scores of the two groups were compared using independent samples t-test. Although the wiki group (M = 4.86, SD = .99) gained higher mean score of accuracy than the face-to-face group (M = 4.76, SD = 1.08), there was no statistically significant difference between the two groups (t = -.578, p = .565).

DISCUSSION

First, the increased writing score in both groups provides sufficient support that the use of collaborative learning can help students improve summary writing skills. This might be because students realized that their written work was read, reviewed, and corrected by all team members. Collaboration plays an important role; it encourages them to learn from others and write more carefully. Furthermore, the working process helps them to raise their awareness of creating a good summary. Obviously, collaborative learning encouraged the students to help one another in learning, hence improving their motivation. The finding is also supported by a high level of satisfaction students demonstrated in both wiki and face-to-face learning (M = 4.03, 4.15). It suggested that they accepted collaborative learning, and there was no statistically significant difference in the overall satisfaction between the two groups at the level of .05. In other words, both groups were satisfied with the environment of collaborative learning. However, the finding was not in accordance with the previous study which found that students who participated in online collaborative tasks expressed a higher level of satisfaction with their learning process compared to students who didn't participate in online collaborative learning (Jung, Choi, Lim, & Leem, 2002). This might be because collaborative learning in class could help them feel more comfortable and relaxed because they had an opportunity to work with their peers. This reason can be supported by Pattanphichet (2010) explaining that the less anxious and more relaxed the students are, the better their language acquisition proceeds. So, the satisfaction with collaborative learning in class was not much different when compared with that in wiki-based learning.

Second, it is interesting to see that although students in wiki-based collaborative learning group gained higher scores than those in face-to-face collaborative learning group, there was no statistically significant difference between the two groups. This result contradicts the conclusion of Chen (2008) who found that there was statistically significant difference between the group with and without wiki. In that study, the group applying wiki performed better in listening and reading abilities. This was probably because collaborative learning provided them with useful suggestions or explanation from the team members no matter what learning environment they would be in. In addition, the finding revealed that the students using wiki were more satisfied with the collaboration in terms of the equal contribution. This is probably because working together on wiki pages required them to plan exactly when and how to work. In order to complete the given tasks, it is necessary for all students to be responsible for the construction of knowledge equally. In addition, the working process, which started with a member's posting his/her summary followed by a revision by other members, will be clearly seen on web pages where the teacher can detect their performance. Even though students in a face-to-face classroom also had to work together to write summaries, they knew that it was rather difficult for the teacher to evaluate their personal performance. As such, all students in the wiki group were likely to commit themselves to the work. This fact was consistent with Godwin-Jones (2003) stating that working through wikis will never be successful if users were not serious about collaborating and willing to follow the group conventions and practices. In contrast, it is rather difficult to investigate how much effort students in face-to-face environment put in terms of equal contribution. However, since these two methods did not produce different result, wiki-based collaborative learning might be a new choice for language teachers who would like to apply technology to facilitate students' learning when time in classroom is limited. Moreover, teachers might consider using an on-line wiki based on students' background. For example, students from the Faculty of Science and Technology seem to appreciate the method more than others.

Additionally, students in wiki group specified more advantages of learning than drawbacks. The emphasis was mostly placed on the knowledge received, increased motivation, and confidence in writing. However, few drawbacks should not be ignored. There might be some possible confounding variables that could affect the students' improvement such as inconvenience of using computers, language proficiency problems and time limit. In spite of these obstacles, the effectiveness of wikis tool for writing improvement was justified by higher mean score and the degree of student learning satisfaction with an on-line environment which plays an important role in the adoption of wiki-based learning. So, the findings of the study supported the use of wikis as part of English learning.

Regarding the quality of summary writing products, it was found that students in the wiki-based collaborative learning group could do a little bit better than those in the face-to-face collaborative group. The result of writing accuracy was not much different. The finding was found to be similar to what Colye (2007) concluded in that there was no difference in the quality of products of two learning methods. This can be assumed that learning through wiki promotes peer interaction and facilitate the sharing and distribution of knowledge as well as expertise amongst a group of learners (Lipponen, 2002). Wiki collaboration allows students to work at their own pace and to easily see the work of other members. Meanwhile, learning collaboratively in face-to-face environment is also useful for students as its structure allows for student talk; students are supposed to talk with

each other and it is in this talking that much of the learning occurs. This mutual exploration, meaning-making, and feedback often leads to better understanding on the part of students, and to the creation of new understanding for all of them (Goodsell et al, 2009). A surprising finding that should be taken into account is students' copying sentences from the passage. When two groups were compared, we can see that students working in face-to-face classroom copied more than those in wiki group. This might be because they had to complete their summary in limited time. It might take long to think of their own words to convey the main idea and important details, so they tended to copy the sentences from the passage. To avoid these copying behaviors, the teacher may emphasize on the basic rule of writing a good summary again. That is, students are supposed to use their own words. In addition, the problem of copying sentences from the reading text should be discussed before they start working together. They should be reminded that these behaviors result in the quality of final product (see Table 4) and their learning achievement evaluated by the final examination. Furthermore, copying behaviors tend to occur especially when they are assigned to summarize difficult or longer reading texts. So, the teacher can solve this problem by selecting the passages which are not too hard or too long.

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