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Conference Paper · June 2013

DOI: 10.13140/2.1.2181.8881

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MODIFICATION OF COLLABORATIVE ONLINE LEARNING FOR SCIENTIFIC WRITING SKILLS ENHANCEMENT

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ABSTRACT

Internet becomes more effective to be used as a medium of learning, especially in the Web 2.0 as a tool to facilitate collaboration in learning. Wiki technology is the most popular tools in the Web 2.0 that allows communication, cooperation, and information sharing. Wiki is characterized by simplicity, accessibility, and easiness interoperability. The purpose of this class action research is to improve scientific writing skills in the field of physics education for students with international physical education using a wiki. Blended learning models that modify the group work in the classroom with a wiki (collaborative online) can improve students' ability in writing scholarly works well. The result shown on improving students' skills in language and ideas generated. There are some nurturing positive outcomes of implementing learning strategies. It will give good impact to the development of students' attitude: the ability to communicate, respect for others, and creativity.

Keywords: wiki, collaborative, online, learning, physics

1. Introduction

Over the last two decades, the learning environment has been changing so rapidly, driven by the development of information and communication technology. The revolution in this technology also produces an online learning technology that allows collaborative learning to take place, known as Web 2.0 technologies (Crampton et al. 2012; Chelliah and Clarke 2011; Sangra and Sanmamed 2010; Siritongthaworn and Krairit 2006). It is a new generation of learning that used in higher education institutions. With this technology can improve student learning and improve skills such as critical thinking and problem solving, collaboration, leadership, adaptability, and directing people as new skills in the current era (Chelliah and Clarke 2011; Chu and Kennedy 2011). On the other hand, the

current study used to be physical education teachers still tend to not taking advantage of Web 2.0 technologies to facilitate the learning process.

Today, the internet has been used extensively in the study. Consequently, there will be a shifting on how students learn and communicate, and how to improve the functionality of the technology (Chelliah and Clarke 2011; Chen et al. 2006). Internet becomes more effective to be used as a medium of learning, especially in the Web 2.0 as a tool to facilitate collaboration in learning. Wiki technology is the most popular tools in the Web 2.0 that allows going communication, cooperation, and information sharing (Chu and Kennedy 2011, Zywica et al. 2011; Hossain and Aydin 2011). Wiki is characterized by simplicity, accessibility, and easiness interoperability. Based on the background that has been discussed previously, the problem in this classroom action research is to improve scientific writing skills for students with international physical education using a wiki. The purpose of this class action research is to improve scientific writing skills in the field of physics education for students with international physical education using a wiki.

2. Theoretical Background

2.1. Characteristics of Web 2.0 and Wiki

Desilets et al. in Laughton (2011) defines a simple wiki for asynchronous activities, web-based system for collaborative work. A wiki is a web page or web site that one can directly change, renew, modify, or delete (Wang and Wei, 2011; Laughton 2011; Menkhoff et al., 2011; Frumkin 2005). Wikis can also be attributed to the collaborative word processor which allows many users at different locations to simultaneously collaborate in real-time (Liu et al. 2010; Frumkin 2005). Wiki allows users to create a space that brings knowledge together with instructional practices to exceed the limits of traditional learning (Chu and Kennedy 2011; Menkhoff et al. 2011; Sangra and Sanmamed 2010). Adopting wiki system, there are three important characteristic to be able to form an exciting learning environment. This characteristic refers to what is described as follows (Mason 2008; Laughton 2011, Zyl, 2009; Wang and Wey 2011; Keser et al. 2011):

- Authority openly collaboration (open editing), which refers to the permissibility of all people to easily and freely make improvements (editing) on the existing content on the wiki.
- Changes in control, which allows tracing all the changes that have been made and by whom done. The administrator can decide who can view, who can change the content of the wiki to ensure good quality.
- Linking and creating pages for structured knowledge, which allows clustering of web pages on the wiki containing different based on specific categories.

2.2. Collaboration

Sometimes collaboration distinguished with cooperative learning. In cooperative learning, the activity is done by dividing into several activities with any person who is responsible for some part of the problem solving (Lai 2011;

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Sahin 2010; Wasonga 2007). Collaboration, on the other hand, involves the participants to work together on the same task, not in parallel on separate parts of the task. Collaboration is an engagement with the participants in a coordinated effort to solve a problem together. Through collaborative learning, learners have the opportunity to equip themselves with stronger analytical skills to interpret information and gain further knowledge (Farajollahi and Moenikia 2011; Hossain and Aydin 2011; Cebeci, et al2009;. Wasonga 2007; Dabbagh 2007). In return, they contribute to build and share knowledge with each other in their learning communities. Construction and sharing of knowledge is one of the processes involved in knowledge management.

Challenges in online collaborative learning is a wide variation in the meaning of words such as "online" and "collaborative computer supported learning". In some online, research groups are sometimes gathered in face-to-face settings and in other studies is framed as a subgroup of the group of geographically distributed. Examination rare cases entirely online. Variations in socio-technical context is widely understood a material effect on the group experience, but consideration of effects glossed over a lot of work that examines the different constructions of "online group" (Persico and Pozzi Goggins et al2011; .2010). This challenge should be considered when group activities are used to improve the skills of new students.

3. Methods

This research was carried out by using the internet. Technology is the application used GoogleDocs, so that all students must have a gmail account first. Before enter to the activity, it is required that the students were given an introduction to the features of GoogleDocs as a medium to share information and interact with participants/ other students or with faculty learning companion. In this study, the model used in the classroom action research is Kemmis and Taggart model. With this model, action research carried out in 4 stages in each cycle that includes planning stages (plan), stage action (act), stage of observation (observe), and the phase of reflection (reflect).

To be the passage of the activity on each cycle, measures employed to meet some of the following stages:

- a) Preparation session. Students prepared with some tools to be able to develop the ability to think critically and creatively. The techniques learned are
 - mindmapping to increase creativity in befikir so it will be able to show up new ideas.
 - Gap analysis to improve critical thinking skills in order to perform a systematic problem solving.
 - Write a narrative based on mindmapping and gap analysis without standard constrained writing. The emphasis is to write as much as possible based on the idea found. This stage to improve the ability to brainstorming in writing, not as a text editor
 - Using the wiki on GoogleDocs to be able to share and collaborate in virtual activities. Any ideas which have subsequently written to

shared to all members of the group and faculty through the sharing menu in GoogleDocs.

- b) In groups session. Students divide into small groups of 4-5 students. This group is fixed for a particular topic and can change the group to another topic. This is done to ensure that every student can become an expert on a particular topic. Each group is responsible for determining the file with the task of initiating and managing file access to group members.
- c) Writing session. Provided file name of the document that can be identified each group that opened access for all members. At the appointed time together, all the members do online on a file that has been specified. Each student writes his presentation on a particular topic on the file. Provision is for the idea of writing the same thoughts written in a way to insert or regulatory re-phrase that is on file that has been opened and not add on another section. Scheduling to arrange each group adapted to the capacity of teachers to be able to be observed during the online activities of students.
- d) Enrich writing session. Is not scheduled, each member of the group find and fix concepts, facts provided in writing based on a clear reference source. Each student looking for a source of reference at least 4 pieces of money should not be the same as the other members. So it will be available for at least 16 references in each article.
- e) Editing and posting session. Using Indonesian language and writing handbooks, student edit and write on a scheduled. Each paper is divided into small parts according to the number of group members. Each student was assigned to edit it right on the part of each. Other members provide advice and comment on the work of other friends on the wall comments that the results obtained for the better. Obligations given advice is to do repairs.
- f) Lay out preparing session. The session to prepare the lay out and upload. Layout contains the paper size, margins, fonts, spacing script structure, pages, and references. Each group make sure that the posts are in accordance with the required layout for a scientific publication. Furthermore, lecturer combine all the work group as a scientific publication edition uploaded at a particular address.

3.1. Observation and Interpretation

Critical issues that need to be observed in this classroom action research are to make sure each member to actively participate in the activities. When online, lecturers need to monitor and encourage all active students. Lecturers would comment on the comments wall during online together or individually. If in an article need to be fixed then the lecturer would provide a direction through the wall or directly on the text. At each session lecturers need to make the observation sheet which records the level of activity (number of posts, number of comments on other friends, the number of ideas written down, the number of proposed improvements script). Exposure based on the implementation of the action, the action cycle is critically Write, Enrich, Fix, Set, Sunrise shown in the following

figure.

The success in this learning activity is depend on:

- a) Ability to collaborate seen in scientific texts as a result of the group,
- b) The active participation of students in the work seen on providing comments and suggestions to others,
- c) IT skills especially in operating features wiki on GoogleDocs,
- d) The ability to think critically, creatively that is seen in *mindmapping* made, and
- e) Ability to search another learning sources.

4. Results and Discussion

4.1. Observations Prior Research

At the beginning of the study is the first meeting of the research methodology course, the students mapped to determine the level of understanding associated with the use of GoogleDocs, learning strategies in high school physics. This observation results showed that 15 students have been using GoogleDocs and 14 had never used. Twenty students have obtained the subject of learning strategies. Mapping of the two because it will GoogleDocs is an invaluable tool in the wiki online interaction and learning strategies related to understanding the types of research in physics education midwives. Results of mapping these two things will be the initial prediction success rate in preparing the research plan. From preliminary observations also known Mahwa all students had never specifically learn some vital lessons to write scientific papers mainly for research.

Table 1 Competences Mapping

Competences	Ever	Never
Googledocs	15	14
Learning Strategy	20	4

Not to influence the perceptions of the research process, students purposely not told that its activity would be recorded as an observational study. It is expected that student activity is more natural. The research was carried out during the implementation of the course for 2 credits.

4.2. Description of Implementation Research

The research was conducted by implementing blended learning strategy, where at each class session aka tone assignment to perform online activities, especially using GoogleDocs. For this purpose, all students are required to have a gmail account. In this study cannot be said that every meeting is a cycle, because the characteristics of the different activities and always evolving according to the dynamics that arise in learning. Instructors can customize the demanded more competency development needs of students during lectures held in the case. Creative instructors in facilitating students to be passionate are very important.

4.3. Data Analysis

First cycle

From the results of the implementation of the first cycle, it was analyzed

by paired t test (between individual activities and group activities). This result cannot actually see the progress of individuals directly. However, it can only be used to see whether the group's activities have a positive impact on the achievement together. Values seen in the analysis is the average value of the individual members of the group while doing individual activities and value-group average when doing group activities. The results of this analysis are shown in Table 2 with a significance level of 5%.

Table 2 Result of Paired T-test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	TOTAL1 - TOTALK	.6207	1.23675	.22966	1.0911	-.1503	2.703	28	.012

From the above table it can be seen that the results (language skills and casting ideas) for activity group were significantly higher compared with individual activities. It means that the group's activities can improve work better than when the activity is done individually.

Cycle Analysis of Results II

From the results of the implementation of the second cycle was analyzed by paired t test (between group activities and individual activities). These results are used to see whether the results of the group's activities both in developing ideas through *mindmapping* in the group can improve individual outcomes in developing narratives activity significantly. Values seen in the analysis is the average value group during group activities and the average value of the individual members of the group while performing activities of individuals in making the first chapter research proposal. The results of this analysis are shown in Table 3 with a significance level of 5%.

From the above table it can be seen that the results (language skills and casting ideas) for individual activity has increased significantly compared with the results of the group's activities. Means an individual to get better after a group of students interacting in the next chapter I construct a narrative for research proposals.

Table 3 Result of Paired T-test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	TOTAL1 - TOTALK	2.9655	.86531	.16068	3.2947	2.6364	18.455	28	.000

Improved results of Individuals

From the analysis of the first cycle and second cycle, there is an interesting note i.e. comparing the performance between groups and individuals. Would also need to be viewed together to see how increasing an individual's ability to write scientific papers (especially in Chapter I of the research proposal) at the beginning of the term compared with the results of Chapter I of writing a research proposal after the 5th meeting. Table 4 shows the results of paired T test for individual results beginning with the final individual results. Logically, it is already known that from the first and second cycle there is an increase, so definitely benchmarking beginning and end there is also an increase in the overall activity.

Table 4 Result of Paired T-test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	TOTAL1 - TOTALK	3.5862	.73277	.13607	3.8649	3.3075	26.355	28	.000

In the implementation of this study, in general the lecture went well. The existence of a few students who are not fully presence study led to the possibility of a lower optimum performance. It just was not examined in this study are more in the absence of influence on the achievement of learning outcomes; were seen

more in the assessment or comparison between input and output activity. Learning to apply a combination of face-to-face meetings and the use of technology for interaction can be run better than expected due to a good ICT literacy in students besides of a positive response from students to engage in learning activities. Good motivation in both individual and group work is influenced also by the spirit level instructor in presenting the material and ensures each individual is working at its optimum. Giving examples of real cases in the writing of scientific papers, linking the importance of a good activity to another to another and learning in the community will be very helpful to give a boost of motivation to work better.

Activities carried out by dividing the group randomly structured groups, namely: the first calculated the number of students that result divided by five, the second student count from one to six in order to form 6 groups with a maximum of 5 students. At the time of sharing in a group activity, where every student must participate in the beginning, there is the awkwardness because its members are not necessarily from classmates / contemporary. To ensure the group runs smoothly, instructors around from one group to another in order to help provide an alternative that is more developed in preparing students *mindmapping* and make posts. It is important to prevent misbehavior in the classroom.

In the online collaborative wiki activity, each group is required to invite (invite) instructor in the wiki. This is to provide an opportunity for instructors to monitor activity and provide comments on the wiki text box so that there is activity going well. ICT literacy of students exert influence on the rate of interaction in the wiki. From the results of the first cycle there was already seen an increase. However, it still needs to be observed in the second cycle because that would be seen not only on the increase but also on the thoroughness of the lecture topics in accordance with SAP (units lecture event), and also to be able to compare the results of the individual before and after the whole activity.

From the overall results, a strategy that combines *mindmapping* learning, collaborative work both in the classroom with wiki-oriented products to enhance students' ability in writing scholarly works well. Internal factors and external factors motivated students. The motivational instructor was also decisive in the success of the learning process. As a classroom action research, this strategy can be used in some other learning activity. Several other outcomes can be obtained as an outcome nurturing the ability to appreciate others, creativity, communication skills both oral and written.

5. Conclusions and Recommendations

5.1. Conclusion

Based on the results of research and discussion, the conclusions that can be drawn are as follows:

1. Blended learning models that modify the group work in the classroom with a wiki (collaborative online) can improve students' ability in writing scholarly works well. This is shown on improving students' skills in language and ideas generated.
2. There are some nurturing positive outcomes of implementing learning strategies. That will give good impact to the development of students'

attitude: the ability to communicate, respect for others, and creativity. This capability cannot be expected immediately on learning of research methodology courses, but it is important for students.

5.2. Suggestion

Some suggestions for improvement, which can be considered the results of the study, are as follows:

1. The role of the instructor (lecturer, teacher) in managing learning, especially to encourage learners (student, students) will determine the level of interaction with others in the group.
2. Use of online collaborative activities with the wiki will become effective if the students already have a good ICT literacy. Instructor becomes important to monitor the activity of the wiki.
3. Further research to structure these strategies into a model, which is verified with experimental studies, will be able to produce a good model.
4. Assertiveness instructors on students to make sure to avoid misbehavior in individual and group activities will determine the course of the learning process.

ACKNOWLEDGEMENTS

The research was funded by a grant through the Higher Education Mathematics PGBI fiscal year 2011-2012. Acknowledgements are due to (1) Mr Muh. Joko Susilo as the chairman of a grant program that has provided opportunities for both of us in this study, (2) Mrs. Prof. Suharsimi Arikunto about providing our review of the proposal so that it can be more focused in its implementation.

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