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21

THE EFFECTS OF COLLABORATIVE LEARNING TOOLS ON STUDENTS' PERFORMANCE

Shahla Rezagholilalani, Othman Ibrahim

21.1 INTRODUCTION

In this study we focus on what conceptual understanding is necessary for the authentic implementation of communicative and collaborative online tools within higher education. The effective use of these tools implies that the user " the student " has a set of skills or literacy's that provide a skill set for effective use. In all sectors of education, Interactive digital technologies are playing an increasingly important role and as we are witnessing, almost all educational providers are integrating e-learning strategy. Many teachers are seeking to create interactive environments in which technology is used to support and improve learning processes [1] while students tend to seek active engagement with others because they see it as both useful and satisfying [2].

Since 1999 we are witnessing Wikis successful usage in education (Guzdial 1999) but now all fields of education and academia are starting to penetrate the wiki technology in almost every aspect of education. (Edington et al. 2005, Schwartz et al. 2004). Wiki technology supports the idea of revolutionizing collaborative projects in academia and beyond.

21.2 LITERATURE REVIEW

21.2.1 Knowledge Management

According to Carlson W. Floyd [3] and Davenport and Prusak, [4] Knowledge management is a formal process of determining what information a company has that can benefit others in the organization and making the information easily available for use by those who need it.

21.2.2 Collaborative learning

Online group work, computer-supported collaborative learning (CSCL), collaborative learning, and cooperative learning, are common terms found in research investigating online teaching and learning within the new educational paradigm focusing on interactive and student-centered learning. Among these terms, group work and CSCL can be easily distinguished. Group work is normally used as a general term refereeing to all sorts of tasks in which a group of people interact to achieve a same goal. CSCL has been used focusing on the use of computer technologies rather than on the use of an instructional strategy [5].

In this study, online collaborative learning is defined as an educational approach that emphasizes active and collective efforts of participation and interaction on the part of both students and the instructor primarily by communication via the Internet.

21.2.3 Learning Outcomes Generated From Online Collaborative Learning

The most comprehensive study was contributed by Johnson, Johnson, and Smith [6],[7] who reported overall benefits of collaborative learning over individual learning. In their studies, the researchers asserted that collaborative learning increased college students’ academic success.

The effectiveness of collaborative learning has been identified in online learning environments [8], although web-based collaborative learning differs from traditional collaborative learning in communication situation, message exchange, cognitive load and participations of the learners [9]. Many research related to online collaborative learning has been conducted through the investigation of student online learning satisfaction, senses of online learning communities, experiences of online interaction.

21.2.4 Educational benefits of wikis

The benefit of collaboration is required for the educational environment and wiki offer an online container for that purpose. By the Use of wikis, student will have history of the pages, the change that is made to any content by themselves or other users, as well as possibility to edit content without any extra knowledge of HTML programming or other software skills.

The usage of wiki also provide ability for interaction with evolving document over the time since teachers and learners can see the evolution of the content and their level of interaction can continue since they can always comment in the process of completion of a page rather than keeping their comments and opinions just for the final draft.

21.2.5 Use of Wiki in student Performance

Typical educational uses of Wiki include in-class collaboration, group projects outside of class, networks of collaboration for learning from peers, peer and teacher feedback and review, and assessment and management of team performance.

Wikis can be used to facilitate computer-supported collaborative learning, i.e., the development of collaboration by means of technology to augment education and research [10]. This enhances

peer interaction and group work, and facilitates sharing and distributing knowledge and expertise among a community of learners [11]. Wikis enhance a synchronous communication and cooperative learning among students, and promote cooperation rather than competition [12]. The instructor can easily and quickly distribute information to students between classes.

21.3 METHODOLOGY

In this research Wiki Media as a collaborative and sharing tool has been implemented in one class with 22 students. To examine the impact of wiki on students' achievements two exams as pre-exam and post-exam in class were done based on the course content. Also one questionnaire was distributed among students after post-test in order to gain students' opinions and perception from the impact of Wiki on their achievements. (Daniel A. Castaneda, 2011)

21.4 FINDING

21.4.1 Results of the First Exam

In this part, the result of the exam which was taken before the implementation of wiki is clarified. The exam marks were out of 20. Figure 21.1 shows how the students' marks were distributed.

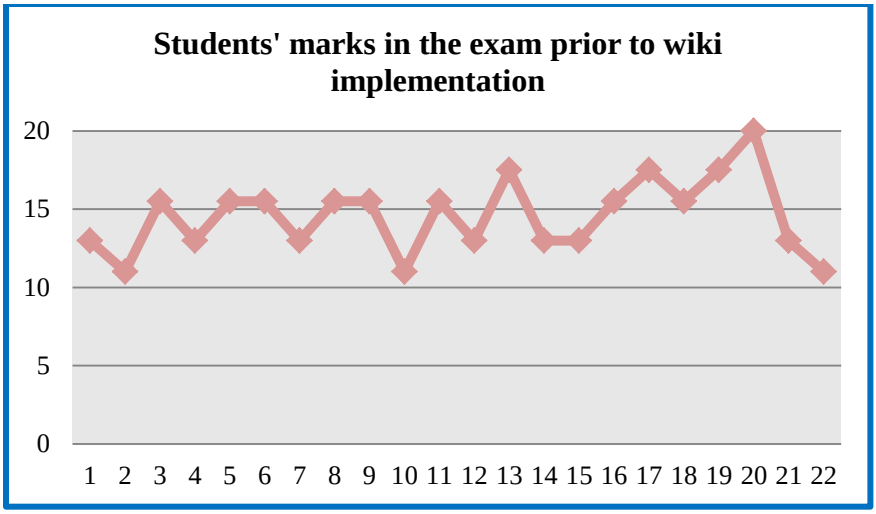

Figure 21.1 Students' Marks in the Exam Prior to Wiki Implementation

The statistical parameters about the marks are summarized in Table 21.1.

Table 21.1 Statistical summary of the first exam marks

Max	Min	Average	STDV
20	11	14.57	2.31

21.4.2 Results of the Second Exam

Figure 21.2 shows the results of the second exam, which was held after the wiki was implemented and used by the students. The exam marks are out of 20.

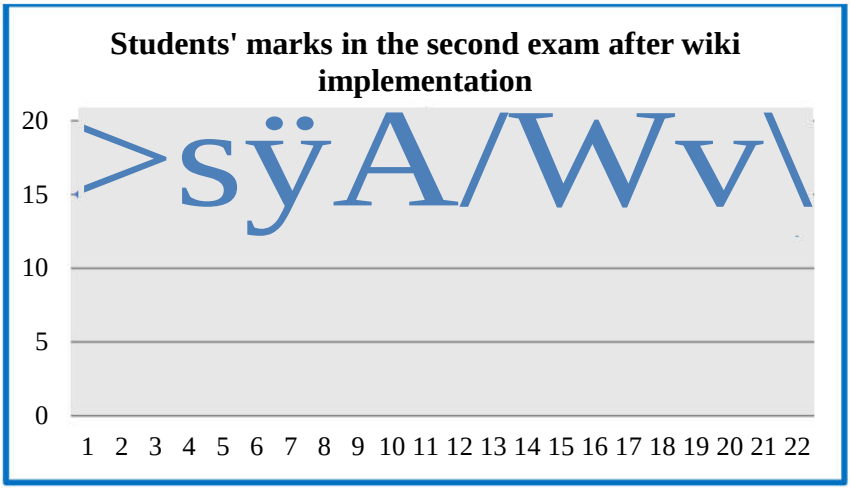

Figure 21.2 Students' Marks in the Exam after Wiki Implementation

The statistical parameters about the marks are summarized in Table 21.2.

Table 21.2 Statistical summary of the first exam marks

Max	Min	Average	STDV
20	13	15.6	1.75

21.4.3 Comparison between Results of the First and Second Exam

Although the exam marks cannot fully represent the effect of using wiki, it can be a good criterion to assess the result of the using wiki for enhancing and improving the status of learning among students. In order to have an overall view of the results the figure 21.3 shows the results of both exams.

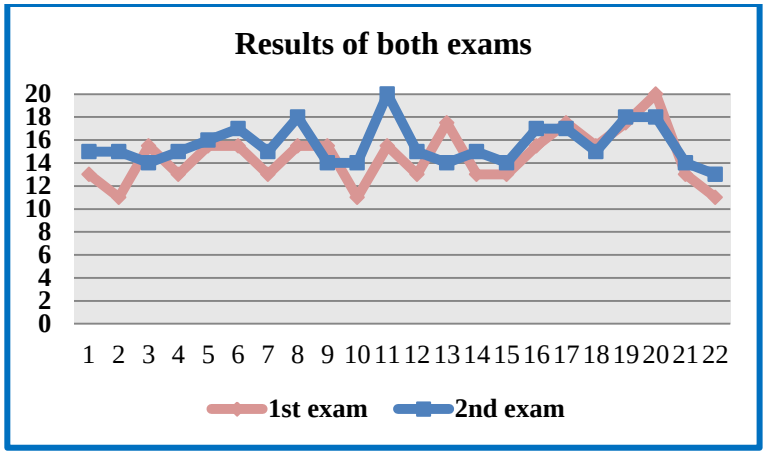

Figure 21.3 Results of Both Exams

The diagram along with the comparison of amount of the parameters in Table 21.1 and 21.2 drives us to some conclusions which may not only be restricted to:

- The average of the marks in second exams is higher (It is 14.5 for the first exam and 15.6 for the second one). This means that the wiki helped students learn better and gain better marks in the second exam.

- The standard deviation (STDV) for the marks of the first exam is far more than the one for the second exam (It is 2.31 for the first exam and 1.75 for the second one). This shows than the area in which the marks are scattered is smaller and the marks are nearer to each other in the second exam. One reason for this can be collaboration learning.

- The minimum of the marks is higher in the second exam (It is 11 for the first exam and 13 for the second one)

21.4.4 Quantitative Analysis from the Students

One questionnaire prepared and distributed among students in order to assess the efficiency and effectiveness of the wiki usage in the classroom. The questionnaire was designed in close-ended manner and the questions were from multiple choices types.

Table 21.3 Weighted Average of responses to each question

Question	Weighted average (1 to 5)
Better learning by using wiki	3.62
The extent of group members contribution in discussion	3.90
Learning from others through using wiki	4.10
Group members collaboration for doing the task	3.90
Effect of wiki in providing a way for discussion	3.81
Contribution is the criteria for evaluation	3.43
Wiki an easier way to learn	4.05
Wiki motivates students to participate and learn better	4.19
Wiki made second exam seem easier	3.91

As concluded from table 21.3 the most important effect of using wiki are motivating students to participated and learn better and also learning from others through using wiki and the least weighted average is for the question about considering participation as the criteria for students' evaluation instead of the right answer.

21.5 CONCLUSION

Analyzing the questionnaires shows that students are interested in wiki usage in their learning as collaborative tools. However, their enthusiasms to make benefits from this technology, such as breaking the limitations of time and place for educational processes, are very considerable. Finally, it is crystal clear that by doing more studies and solving the possible barriers, implementation of this type of collaborative tools will be more straightforward.

21.6 RECOMMEND

In order to enhance and improve the efficiency of the proposed framework in this research, some suggestions can be provided as:

- Providing a more detailed view of how the lecturer can monitor the progress and involvement of each team member and also each team's activities.

- Providing useful guidelines on how to divide students into teams to have the best outcome both from the collaboration process and the result of the assignment/project.

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