

Wikis in Classroom Participation:

Results From Preliminary Experiment

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Abstract— Wiki systems encourage students' collaboration and participation in course content. This paper reports on an experiment carried out on a group of students studying a course in Operating Systems, at the Information Technology department – King Saud University, to leverage their research and writing skills in classroom participation using wikis. The methodology used to conduct the experiment and the results of the students' feedback are discussed.

Keywords- *Web 2.0; Wiki; Classroom Participation; Collaboration; E-Learning*

I. INTRODUCTION

In the era of so-called 'Web 2.0TM', a new family of social applications is currently emerging. Wikis, blogs and social bookmarking services, to name a few, are all signatures of the Web 2.0 phenomenon. As these technologies are gaining more popularity overtime, many educators are trying to develop new techniques to utilize them in the classroom. Among the well-know Web 2.0 technologies, is the use of wikis in teaching and learning.

Wikis are social software that enable many people to write, edit and share content collaboratively. The term 'wiki' was first used by Ward Cunningham; the originator of the wiki technology, and its meaning reflects the rapid nature of the technology; "wiki wiki" means quickly in Hawaiian language [1].

Recently, many educators embraced wikis technologies for their classroom interactions (see section 2). Collaboration, networking, active learning and peer reviewing, to name but a few, represent potential pedagogical objectives that wiki environments provide for each student [2, 3]. Thus, we believe that wiki publication environments provide students with learning opportunities that cannot be found using other technologies for classroom interactions e.g. blogs [8].

In this paper, we aim to answer four questions about potential benefits of using wikis in classroom participation, namely:

1. To what extent does wiki participation affect the students writing and research skills?
2. To what extent do students benefit from their peers contributions in the wiki?

3. How does commenting on students' writings (either by the course instructor or peer students) affect their participation in the wiki?
4. Are students satisfied with the experience of using wikis in classroom participation?

This paper is based on our experience in using wikis in classroom participation, and the primary goal of this experiment is to help students improve their reading and writing skills.

The organization of the paper is as follows: in section 2, we review some recent research on using wikis in classroom interactions. Then in section 3, we describe the methodology used to conduct our experiment. Finally, sections 4 and 5 respectively, report on the evaluation of the usefulness of our approach and conclude the paper with some observations and lessons learned from this experience.

II. RELATED WORK

Many studies that address the use of wikis in the classroom have focused on both the technological and the pedagogical aspect of the technology e.g. [9],[10].

For instance, O'Neill [4] developed a wiki tool called slides2wiki, to share lecture notes collaboratively among students. The tool enables students to elaborate on the content of the slides by adding their own notes. O'Neill tool was used by several classes at his institute and early students reactions showed positive acceptance of the technology. Likewise, Wang and Turner [1] extended the wiki platform to include new features that help in collaborative writing (such as improving page editing and locking mechanism).

On the other hand, Puente [5] used wikis and forums to evaluate individual students contributions within a group. He asked his students to participate with a topic to one of the courses he teaches, and the grades were calculated based on the type and size (in bytes) of the contribution. At the end of the semester Puente found that his methodology of evaluating students' participation allowed him to have qualitative data to characterize individual contributions. One drawback of Puente's method is that it does not take into consideration the intrinsic quality of the student contribution.

Raitman and Augar [6] investigated the use of wikis platforms as means of online collaboration in tertiary education environments. Their investigation showed that students liked the idea of the wiki and they are willing to embrace the technology in future activities.

Similarly, Forte and Bruckman [7] investigated the links between wiki publishing experiences and writing-to-learn in an undergraduate government course. Their results showed that perceived audience plays an important role in helping students monitor the quality of writing.

From the previous studies we can observe that the aim of using wikis platforms is to enhance teaching and learning and also to create a space for students to practice their writing and evaluation skills. To build on the previous studies, our experiment is conducted to further investigate the benefit of using this collaborative platform in improving students writing and research skills and to measure students' satisfaction on using such a technology.

III. METHODS AND PARTICIPANTS

The experiment was applied on a group of 105 female students studying a course in Operating Systems at Information Technology department in The College of Computer and Information Sciences, King Saud University, Riyadh. The experiment was carried out over the course of a complete semester.

The students were asked by the course instructor to participate to the course wiki with an article written in Arabic about the topics covered in the course. The students were divided into three sections; each section manages its own wiki site¹. Students were also notified at the beginning of the semester that the wiki participation will constitute 5% of the course final grade, and they have a semester-long to complete their contributions.

Rules and regulations were posted to the students to tailor the type of contributions allowed in the wiki. Among these rules: contributions must address the covered topics in the course, students were allowed to translate topics from English to Arabic and students must cite the references used to write the article. Unrelated, plagiarized and articles without citation were forced to be removed from the wiki by the course instructor.

The students were asked to review their peers work and comment on them (a screenshot is shown in Figure 1). The course instructor also visited the three wikis periodically and comment on the students work.



Figure 1. A screenshot showing a student participation and her peers comments on the topic (as marked in red in the bottom left corner)

The service used to host the course wikis was a free wiki service² with basic functionality sufficient to monitor students' participations.

The instructor evaluated the students based on the following criteria:

- Number of contributions.
- Quality of contribution (i.e. proper citation, well-formatted, correct language, etc.).
- Commenting and revising other contributions.
- Type of contribution and its relation to the course content.

Approaching the end of the semester a survey consisted of 10 questions was distributed among the students to provide the course instructor with a conclusive feedback on the usefulness of the methodology used to leverage their participation. The initial sample consisted of 105 students of whom 12 did not complete all of the survey.

IV. RESULTS

Following are the results extracted from the statistics of the three wikis and from the students' surveys.

A. Wiki statistics

Quantitative measurements of students' participations on the course wiki are shown in Table I. The table shows the average statistics of the students' activities in the three wikis.

TABLE I. AVERAGE STUENTS ACTIVITIES

Average number of pages for all wikis	220
Average number of page edits (revisions) for all wikis	1014
Average number of comments per page	0.2

¹ The address of the three wiki sites: <http://os1h.pbwiki.com>, <http://os2h.pbwiki.com>, <http://os3h.pbwiki.com> [Last accessed Dec 15, 2007]

² www.pbwiki.com

We can observe from the numbers presented in Table I that on average each student contributed with about 2 articles to her section's wiki. However, the average number of comments per page was very low compared to the average number of page edits. This may be attributed to the student need to quickly modify the article without waiting for the original contributor permission. We have also seen that most comments were actually complements to the contributors by their peers (see Figure 1).

B. Survey analysis

Investigating students' prior experience with wikis, the survey showed that around 79% of the students have never used wiki environments before. Knowing this fact about the students derived us to ask them about the problems they encountered during their wiki participation. Table II summarizes the difficulties encountered by students while participating in the wiki. The most common problem was the difficulty of editing wiki pages. Since the technology was very new for some students, their peers have offered an online tutorial on how to create, edit and link wiki pages.

TABLE II. DIFFICULTIES ENCOUNTERED DURING WIKI PARTICIPATION

No problem encountered	27%
Page Editing	44%
Page linking	13%
Adding comments	5%
Other problems	11%

To address the first research question “*To what extent does wiki participation affect the students writing and research skills*”, Figure 2 shows that around 92% of the students' answers (i.e. yes and somewhat likely) have agreed on the benefit of using the wiki in improving their writing and research skills.

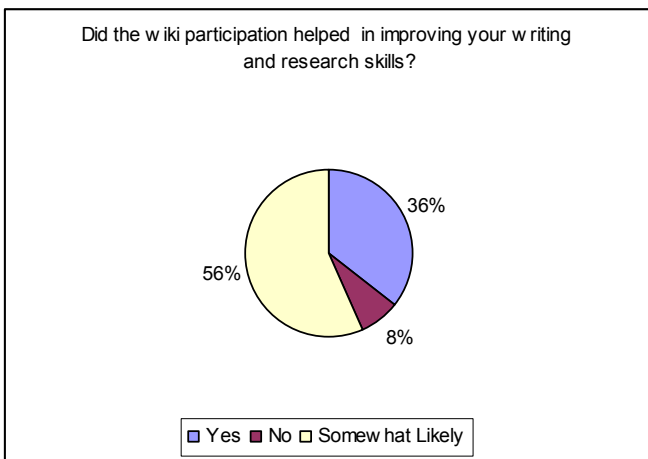


Figure 2. Percentage of Students that benefited from wiki participation in improving their writing and research skills

Moreover, the result of our second research question “*To what extent do students benefit from their peers contributions in the wiki*” is shown in Figure 3. Figure 3 shows that 38% of students have benefited from the articles contributed by their peers, i.e. in comprehending the lectures. Yet, 42% have somehow benefited from their peers contributions, while 20% did not see any benefit.

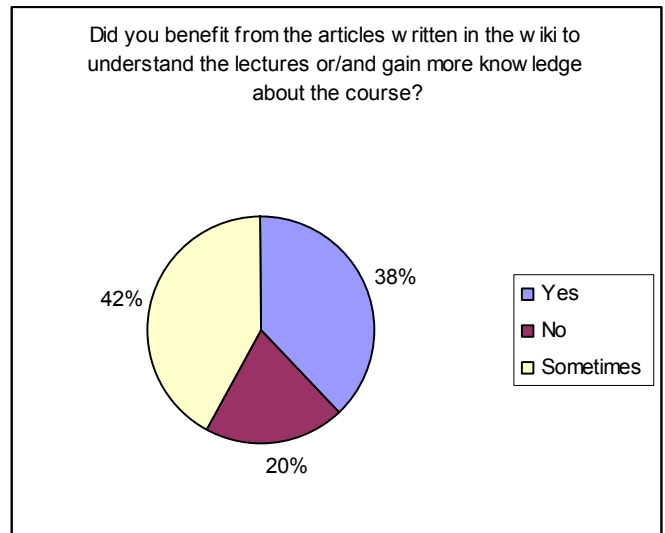


Figure 3. Percentage of Students that benefited from the course wiki

Figure 4 answers the third research question “*How does commenting on students' writings (either by the course instructor or peer students) affect their participation in the wiki*”. Unsurprisingly, 33% of the students said that comments affected their wiki participation; 42% found that comments provided by their peers or by the instructor helped in one way or another in improving their writings.

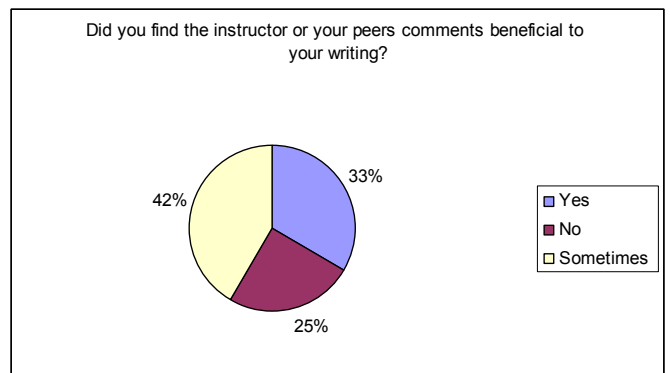


Figure 4. Percentage of Students that benefited from the instrcutor and peers comments

The overall wiki participation experience was fairly acceptable. Figure 5 actually mirrors the answers of two questions that we asked about the benefit the student gained from the wiki participation and the student enjoyment in writing. Both answers were positive. For the first question 41% answered with yes and 42% with somewhat likely. However,

for the second question 19% answered with yes while 43% answered with somewhat likely.

Generally, more than 50% of the students that answered with 'Excellent' and 'Good' to the overall wiki experience question (shown in Figure 5) found that their wiki participation experience was worthwhile. However, 36% found the experience satisfactory while 10% did find it unsatisfactory.

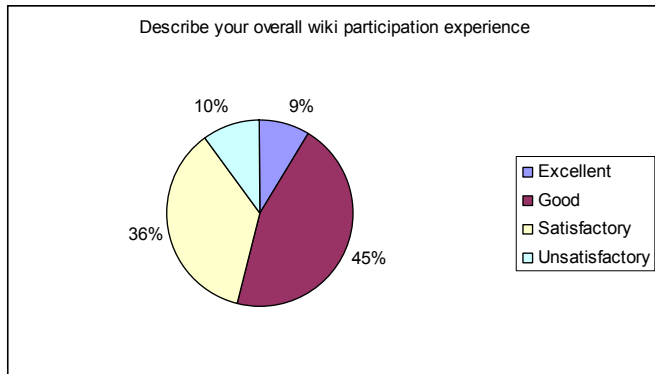


Figure 5. Overall rating for wiki participation experience

Contrary to expectations, in a final question in the survey, we asked the students whether they recommend the use of wiki in classroom participation for other courses. The results showed that 48% agree while 52% disagree to use the wiki participation in other courses. This unexpected disagreement may be attributed to the overload of assignments given to students by other courses at the same semester, which made them resistant to any extra work.

V. DISCUSSION AND LESSONS LEARNED

Using the methodology we have proposed for classroom participation allowed students to participate in their own pace and using their own learning process, this gave them greater opportunities for innovation (as we have witnessed from some students' participations) and self-regulation (by commitment to class participation).

Also, a sense of peer-reviewing was a vital part of the wiki participation. Thus, students actively participated in their peers' articles by adding illustrative diagrams or/and by formatting the text or editing the language or making content corrections. This active participation would not be possible if the instructor did not regularly talk about the importance of the wiki participation and weekly announce the best articles contributions on the course blog. These two factors made the students take the wiki participation very seriously and also revealed students talents in writing and diagramming.

Another benefit for asking students to write their participations in Arabic is to fill the void in finding reliable resources on the web that discusses Operating Systems in greater depth.

One major drawback of our proposed methodology was in the time required to monitor students' participation. The course instructor was committed to check her students' participation in a daily basis to ensure that the quality and the quantity of

participations were up to the instructor expectations. Moreover, the free wiki environment used to host the course wikis offered limited functionality. The service did not provide an easy and intuitive interface to record each student's participation and log their activities; also it did not provide advanced statistical analysis. The absence of such features has played a great impact on the accuracy of students' evaluation. Finally, some students reported that the wiki service does not correctly support bilingual writing. This forced some students to overcome this problem by implementing their own hacks.

VI. CONCLUSION

In this paper we have demonstrated and discussed the results of a pragmatic experiment using wiki platforms to leverage students' classroom participation. It is evident from the results that most students accepted the idea of using wikis in classroom participation. However, some of them suggested considering the wiki participation to be a bonus instead of making it part of the course final grade.

The wiki system used in this experiment was not capable of effectively and accurately monitoring students' participation. This drawback has increased the burden on the course instructor. Therefore, to exploit the potential of wikis, further technological and pedagogical research need to be carried out to improve the features provided with the technology and to find innovative ideas to push the technology to its potential.

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REFERENCES

- [1] Wang, C.-m. and D. Turner. (2004). *Extending the Wiki Paradigm for Use in the Classroom*. in *Proceedings of the International Conference on Information Technology: Coding and Computing (ITCC'04) Volume 2 - Volume 2*. IEEE Computer Society.255
- [2] Bruns, A. and S. Humphreys. (2007). *Building collaborative capacities in learners: the M/cyclopedia project revisited*. in *Proceedings of the 2007 international symposium on Wikis*. ACM.1
- [3] Guth, S. (2007). *Wikis in education: is public better*. in *Proceedings of the 2007 international symposium on Wikis*. ACM.61
- [4] O'Neill, M.E. (2005). *Automated use of a Wiki for collaborative lecture notes*. in *Proceedings of the 36th SIGCSE technical symposium on Computer science education*. ACM.267
- [5] Puente, X.d.P. (2007). *New method using Wikis and forums to evaluate individual contributions in cooperative work while promoting experiential learning: results from preliminary experience*. in

Proceedings of the 2007 international symposium on Wikis. ACM.87

- [6] Raitman, R. and N. Augar. (2005). *Employing Wikis for Online Collaboration in the E-Learning Environment: Case Study.* in *Proceedings of the Third International Conference on Information Technology and Applications (ICITA'05) Volume 2 - Volume 02.* IEEE Computer Society.142
- [7] Forte, A. and A. Bruckman. (2006) *From Wikipedia to the classroom: exploring online publication and learning.* in *Proceedings of the 7th international conference on Learning sciences.* International Society of the Learning Sciences.182
- [8] Ferris, S., and H. Wilder. (2006). *Uses and Potentials of Wikis in the Classroom.* *Innovate* 2 (5). Online <http://www.innovateonline.info/index.php?view=article&id=258> (accessed December 16, 2007).
- [9] Notari, M. (2006). How to use a wiki in education: Wiki based effective constructive learning. *Proceedings of the 2006 International Symposium on Wikis, Odense, Denmark: August 21–23, 131-132.* Online <http://www.wikisym.org/ws2006/proceedings/p131.pdf> (accessed February 11, 2008).
- [10] Parker, K. and Chao, J. (2007). Wiki as a teaching tool. *Interdisciplinary Journal of Knowledge and Learning Objects*, 3.