2nd International Conference on E-Learning & Knowledge Management Technology. April 2012. Malaysia, Kuala Lumpur.

The Potential of Wiki Technology as an E-Learning Tool in Science and Education; Perspectives of Undergraduate Students in Al-Baha University, Saudi Arabia.

Authors:
Ibraheem Alzahrani *
University of Al-Baha
Al Baha, Saudi Arabia
I.AlZahrani@southampton.ac.uk

And
John Woollard
University of Southampton
Southampton UK
J.Woollard@southampton.ac.uk

*corresponding author

Abstract

This paper examines the potential of wiki technology as an e-learning tool in Al-Baha University, Saudi Arabia with a random sample in two colleges: science and education. 24 male students participated in this survey. The data is collected through interviewer-administered questionnaires with 16 questions divided into four axes. The data is analysed to reveal the students' perceptions of using wiki technology in learning. The results indicate that, students prefer to learn collaboratively with positive perceptions of wiki. These results lead us to determine the possible potential of wiki technology as an e-learning tool for undergraduate students in similar contexts.

Keywords:

wiki; interviewer-administered questionnaires; perceptions; collaborative; knowledge building.

Introduction

Wiki is an example of a Web 2.0 technology which is having a significant influence on the higher education sector around the world (Arif & Mahmood, 2010). The term 'Web 2.0' was officially coined in 2004 by Dale Dougherty, during a discussion on a potential future conference about the web (Anderson, 2007). There are a number of web-based services and applications that demonstrate the fundamentals of the Web 2.0 concept whereby the content of the internet is authored and changed by the every-day user of the internet. The best known are examples include: video sharing, blogs, wikis and social networking sites (Reynolds, 2007; Hart, et al., 2010). In the field of education, these applications may enable both learners and teachers to achieve the aims and objectives of education through building knowledge, developing self-learning skills and enhancing collaborative learning skills. Wiki is one of the applications that can achieve some of the educational advantages, for example, wikis can be used in class projects, and are particularly suited to the incremental accretion of knowledge by a group, or the production of collaboratively edited material, including material documenting group projects. Learners can flag areas of the Wiki that need attention, and provide feedback on each other's writing (Franklin and van Harmelen, 2007). According to Neumann and Hood (2009); Ebersbach *et al*, (2008) wiki allows the quick and easy change of the content that can be saved, viewed, edited, and commented on by other people through a web browser. In the field of education "wikis enable instructors to create interactive activities for their students, and to present course information such as resources, external links, project information, and frequently asked questions" Schwartz *et al* (2003, p.

2). Furthermore, through wiki based collaborative learning, communities of practice can establish a collective repository of expertise in a subject area which is refined over time by the contributions and problem-solving of interested individuals (Jones, 2003; Parker and Chao, 2007). Wikis make the learners act as an editorial team and this can help students overcome shyness or uncertainty about their opinions (Ozok and Zaphiris 2010). Franklin and van Harmelen (2007) pointed out the use of wiki for both teachers and students for the creation of annotated reading lists, incremental accretion of knowledge, and the documentation of group projects. Wikis can be used by teachers to supply scaffolding for writing activities and then provide feedback on student generated content. They provide the opportunity for feedback on each other's writing (peer appraisal) through asynchronous communication and online group collaboration (Pegler et al, 2007). Whilst the use of wiki as an educational method is still comparatively new (Wang and Beasley, 2008) "wikis have become an integral part of education, especially in secondary and higher education" (Ozok and Zaphiris, 2010, P. 472). In conclusion, wikis are powerful teaching and learning devices, enabling collaboration, peer appraisal and teacher assessment by utilising the potential of the Web 2.0 aspects of the internet.

Research Questions

This study seeks to answer the main question: what is the potential of wiki technology as an e-learning tool through the perspectives of undergraduate students? through a number of sub-questions querying the extent of students' access to the technology, the students' understanding of wikis, the students' desire to use e-learning and the students' perceptions of the availability of technology.

Context

The University of Al-Baha was established in 2006 (The MOHE Portal, 2011), located in Al-Baha city, in the middle of Sarawt mountains in the southwest of Saudi Arabia. As a new university, it is establishing a wide range of academic departments based on older colleges. A significant challenge is accommodating a quickly growing, large student population often being taught in less than good educational environments. According to Albalawi (2007, p. 7), "The challenge to Saudi universities to meet the educational needs of a growing student population who desire to attend universities increases from year to year". A practical outcome of this study is to identify the possibility that online learning can alleviate

accommodation issues. The main focus is to identify the students' perceptions of online learning and its potential to offer opportunities for cooperative and collaborative learning.

Most of the attention in using online learning opportunities in Saudi higher education institutions concentrate on the use of distance learning through commercial virtual learning environment (VLE) or learning management system (MLE) applications such as Moodle, Jusur and Tadarus. Tadarus (Harf Information Technology) is characteristic of most in that it offers teaching and learning functions to present and manage courses via the internet including admission, registration, course content, communications and learner assessments. The focus of this study is to identify the unique potential and role of wiki within such provision.

The respondents in this study are 24 male students studying in the academic year 2011/12, a convenience sample of science and education students in their second year of studies drawn from the whole population of 17,000 students (Okaz Magazine, Dr: Saad bin Mohammed Al Hariqi , 2011). They are considered to be representative because, they have experienced undergraduate education and are aware of the demands, and they have been exposed to the potential of the internet through other educational opportunities as well as leisure activities. They are different to many students in that they, as part of their studies, are expected to reflect upon educational theory as well as the science content of their studies.

Research Method

This study with data gathering after an introduction to the concept and practicalities of learning through a wiki. The research protocol is outlined in Table 1 (below). Data was collected from sample members through 'interviewer-administered questionnaire'. A key feature of this type of questionnaire, according to Kaden (2006, p 128) is it "will have skip patterns that jump a respondent from one section of the questionnaire to another based on participants' responses". Moreover, interviewer-administered questionnaire allows participants to ask about any questions that are not clear and need further explanation.

Informed consent is an under-pinning principle of this research procedure. After the initial briefing and explanation, consent forms are completed by each participant in order to inform them and obtain their agreement to participate in this research. To make the participants feel freer to participate, the researcher described their right to participate or

withdrawal at any time without any conditions or restrictions or negative impact on their academic study. Participants are informed that their participation would be voluntary without coercion. The participants are given a full description of the process and their rights.

Phase	**Procedure**
Before implementation with regard to the sample	Identify type of sample
	Identify the sample group and number
	Identify place and time for implementation
	Identify data collection method
Before implementation with regard to the ethical governance	Design questionnaire
	Design the consent forms
	Complete the ethics process
	Obtaining the consent of the University
	Obtaining the consent of the sample members
During implementation	Meet the sample members as a single group
	Conduct interviewer-administered questionnaires
	Collect data
After implementation	Data analysis and writing the findings

Table 1. Research Protocol

Results

Data collected were analysed for each sub-question of the study axes, using frequency counts and percentages and the findings were presented by use of descriptive statistics.

Students' responses to the questions of the first axis indicate that all of students have the possibility of using the computer/laptop regardless of whether they own a computer/laptop or not. 84% of the students have a computer; the others have access to computers elsewhere. The final analysis of this axis indicates to that all of the samples have the possibility to use the computer/laptop whether they own a computer or they can go to a place where there are computers. This result is a positive indicator of the ability of the students to access the wiki.

The second axis aims to determine the students' possibility of using the Internet through two essential aspects: the students' internet connection and their practical experience of the internet. The responses indicated that (60%) of the students connect to the internet via an internet café, while (24%) of the respondents access the internet through the university's internet facility, and the minority respondents (16%) can connect the Internet in other ways. This finding indicates that students have the ability to find a place to connect the internet such that mentioned above, but we need to determine their level of the use of the Internet. The respondents identify their level of the internet knowledge: Excellent or Average. Significant difference found between the samples with regard to them level of the Internet experience. 76% which is 19 students of 25 students have excellent level of the Internet, while only 6 students their level were average (24%). The previous percentage in this aspect is a clear sign of that most of the students easily can use the Internet. However, from the analysis of these two aspects indicate that the majority of students can connect to the internet which is the important requirement to access the wiki pages.

To find out students' knowledge of wiki, the third axis consists of four questions concerning the main characteristics of wiki including text editing, communication, learning style and content creation. The vast majority of students (up to 92%) indicated that they have a very good level of skill in editing. Only one student (4%) has a good level in editing and one student with a satisfactory level. With regard to the type of learning students identify one of two learning types: collaborative learning or individual learning. There is not a dominant preference; (52%) prefer to learn collaboratively and (48%) prefer to learn individually. Another characteristic of wiki is the communication between users; students were asked if they know the meaning of the synchronous and asynchronous learning. The majority of students seem do not know the meaning of these two concepts, only 7 students (28%) indicate that they know the meaning of synchronous and asynchronous learning. The final characteristic of wiki in this axis is "content creation". 5 respondents (20%) believe that websites that enable the user to create content is useful. Importantly, (40%) of students do you perceive the value of "content creation" websites.

With regard to understanding the concept of wiki, students seem to consider Wikipedia as synonymous with wiki because Wikipedia is the most famous wiki and many students use it as a resource. In the terms of wiki just 4 students understanding the concept of wiki, while 11 students (44%) somewhat understanding the meaning of wiki and almost the

same number of students who do not understand the concept of wiki10 students (40%). This indicates that the wiki-concept is unfamiliar, with few students actually understanding this concept.

Overall, it can be said that the respondents related to this axis "the main characteristics of wiki" indicated that students have a good knowledge of the use of wiki in the terms of editing the comments. In addition, about half of them work collaboratively via wiki. With regard to the meaning of communication ways between wiki users, students indicated that they do not know exactly the meaning of synchronous and asynchronous ways. The majority of them believe that the websites which the user contributes to build its content is somewhat useful. The negative indicators in this axis indicate a lack of student experience of wiki and a lack of knowledge characteristics.

The fourth axis is designed to find out the students' preferred methods of learning. The students indicate the popularity of learning via traditional learning style (the lecture) (64%), E-Learning type (20%) and blended learning (16%). When asked whether the current learning style is suitable or not, (52%) say yes and (48%) say no.

The fifth axis gives an indication of the students' perceptions of the role of Al-Baha University with regard to E-Learning. Through students' responses it is clear that the students do not feel the University has an active role with regard to e-learning in terms of the following elements: computer availability and internet accessibility. With regard to the availability of the computers in the University's facilities such as classrooms, computer laboratories, library, 7 students (28%) said they can use the University computer easily,11 students (44%) agree with that the University computers are somewhat available and 7 students (28%) think is that it is not possible to use the University computers. With regard to accessibility of the internet in the University's facilities, 6 students (24%) said it is available with easy connection, 4 students (16%) agree with that the Internet in the University is somewhat available but most, 15 students (60%), believe that it is not possible to connect to the internet in the University. The situation is reflected in the students' satisfaction with the university's role regarding to E-Learning, 5 students (20%) said they are very satisfied, while 14 students (56%) were somewhat satisfied and 6 students (24%) were not satisfied.

Conclusion

This study came as an attempt to determine the possibility of students to learn through wiki technology as a learning tool in Al-Baha University from their perspective of wiki.

Therefore, this is the first study in Al-Baha University applied to determine the possibility of using wiki in learning. Al-Baha University is one of the emergent universities in Saudi Arabia. Several aspects was behind this study, the learning style in this university is the traditional learning (Lecture method) and a result of some factors that negatively affect on educational environment in A-Baha University such as the steady rise in the number of students, the geographical environment of the city of Al-Baha and its impact on the discipline of students' attendance at the university. However, it was necessary that there be solutions to these factors.

As a result of the wiki is a new technology among Al-Baha University students, researcher used an appropriate method to collect the data. This method is interview-administered questionnaire which allowed researcher to describe the questions related to the wiki in terms of the use and the characteristics. The interview-administered questionnaire was used in this study; 25 students were chosen with through convenience selection from two colleges: college of science and college of education at Al-Baha University. The questionnaire was developed after an extensive review of literature and with assistance of 11 academic staff from Al-Baha University. Data was analysed using frequency count and percentage.

The study attempted to find out the perspectives of undergraduate students in Al-Baha University, Saudi Arabia toward using wiki technology in learning. Based on the findings above although the majority of students do not have enough experience on the wiki, students would prefer to use wiki in learning. This perception is due to the characteristics of wiki in terms of the learning style and because of the way that students deal with each other.

However the study also identifies that a significant number do not understand the full concepts behind wiki-based learning and synchronicity. The extent of their ability to access both the internet and the computer as the main requirements for the use of wiki in learning is also an issue. The findings indicated that students have good personal access the internet. Finally and with regard to Al-Baha University, students feel that the University does not have the required service for the use of the internet.

References

Albalawi, M. (2007). *Critical Factors Related to the Implementation of Web-Based Instruction by Higher-Education Faculty at Three Universities in the Kingdom of Saudi Arabia.* Doctoral dissertation submitted to the Department of Instructional and Performance Technology, The University of West Florida.

Anderson, P. (2007). *JISC Technology and Standards Watch.* Available from: http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf. [Accessed on 03 July 2011].

Arif, M and Mahmood, K. (2010). *The Changing Role of Librarians in the Digital: Adoption of Web 2.0 Technologies in Pakistani Libraries.* World Library and Information Congress: 76th IFLA General Conference and Assembly. 10-15 August 2010, Gothenburg, Sweden.

Ebersbach, A. Glaser, M. Heigl, R and Warta, A. (2008).*Wiki: Web Collaboration*. Springer.

Franklin, T. and van Harmelen, M. (2007). Web 2.0 for Content for Learning and Teaching in Higher Education. JISC Report. Available from: http://ie-repository.jisc.ac.uk/148/ [Accessed on 1 September 2011].

Hart, T. Greenfield, J.MacLaughlin, S and Geier, Jr. P. (2010*). Internet Management for Nonprofits: Strategies, Tools and Trade Secrets*, John Wiley & Sons.

Jones, R. (2003). *Blogs and Wikis: Environment for On-Line Collaboration*. *Language, Learning and Technology*, 7(2), 12–16.

Kaden, R. (2006). *Guerrilla marketing research: marketing research techniques that can help any business make more money*. Kogan Page Publishers.

Ministry of Higher Education. (2011).*Education News*. Available from: http://www.mohe.gov.sa/ar/news/Pages/25j2011.aspx. [Accessed on 25 Jun 2011].

Neumann, D and Hood, M. (2009). *The Effects of Using a Wiki on Student Engagement and Learning of Report Writing Skills in a University Statistics Course.* Australasian Journal of Educational Technology 2009, 25(3), 382-398.

Okaz Magazine. (2011). Report of the Director of Al-Baha University, Dr: Saad bin Mohammed Al Hariqi. Available from: http://www.okaz.com.sa/new/Issues/20110122/Con20110122396099.htm. [Accessed on 09 October 2011].

Ozok, A. and Zaphiris, P. (2010). *Online Communities and Social Computing*: Third International Conference, OCSC 2009, Held as Part of HCI International 2009, San Diego, CA, USA, July 19-24, 2009, Proceedings. Springer.

Parker, K and Chao, J. (2007). *Wiki as a Teaching Tool*. Interdisciplinary Journal of Knowledge and Learning Objects Volume 3.

Pegler, C. Mason, R and Stefani, L. (2007). *The educational potential of e-portfolios: supporting personal development*. Routledge. 2 Park Square Milton Park, Abingdon, OX14 4RN.

requirements of Dublin Institute of Technology for the degree of M.Sc. in Computing (Knowledge Management).

Reynolds, J. (2007). *A Framework for the Introduction of Organisational Learning using Web 2.0 Applications*. A dissertation submitted in partial fulfilment of the

Schwartz, L. Clark, S. Cossarin, M. and Rudolph, J. (2003). *Educational Wikis: Features and Selection Criteria*. The International Review of Research in Open and Distance Learning, Vol 5, No 1 (2004).

Wang, L. and Beasley, W. (2008). *The wiki as a web 2.0 tool in education.* International Journal of Technology in Teaching and Learning, 4(1), 78–85.