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Researching the use of Wiki's to facilitate group work

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Abstract

This paper reflects on the experience of introducing Wiki technology into a “Japanese for Beginners” module at one of the universities in the UK and the evaluation of learner experiences that followed. The findings of both qualitative and quantitative data analysis are reported in the light of their significance for e-learning research and practice.

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1. Introduction

Wiki is often described as one of the most popular Web 2.0 technologies (e.g. Leslie and Landon, 2008). It is defined as “a collection of web pages designed to enable anyone who accesses it to contribute or modify content, using a simplified markup language” (Wikipedia, 2008). While there are several types of Wikis depending on their usage, ownership and architecture, this technology is believed to have large potential for fostering collaborative group work and creating learning resources. The usefulness of Wikis as a learning and information resource is difficult to dispute largely due to the popularity of some of the popular Wiki sites (such as the Wikipedia), but more empirical work needs to be done in terms of analyzing the use of Wikis to support collaborative learning, particularly in the context of more traditional universities where face-to-face interaction is blended with computer-mediated communication.

Academic literature in the field is mainly concerned with technical issues in designing and administering Wiki space or with pedagogical implications of using Wikis for group activities. For example, Roth (2007) looked at the dynamics in the growth of Wiki communities and how it was affected by the characteristics of community members and the Wiki content. Reinhold (2006) examined how Wiki functionality can be enhanced through the use of tracking and WikiTrails. Parker and Chao (2007) explained how Wikis can be used to support collaborative and cooperative learning in agreement with the constructivist principles and provided examples of relevant learning activities. Raitman et al. (2005) and Wang, et al. (2005) discussed Wiki usage in its relationship to learner

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satisfaction and assessment scores. Bower et al. (2006) provided a list of recommendations for implementing Wiki-based learning tasks, drawing on their experience of implementing Wikis on two Master's courses in IT and evaluating the efficiency of the new technology.

Most of the existing literature does not seem to consider relationships between designing Wiki-based learning activities and student experience of using this technology. One possible explanation for this might be that the traditional e-course development approach where either tutors or IT staff take a lead constrains the potential benefits of using this technology. Moreover, the evaluation of student experiences typically plays a minor role in course development and is mostly conducted in the form of end-of-course surveys.

Arguably, without taking account of student experiences in the e-course development process, the content or learning activities of the course may not meet learner needs, and might have a negative impact on their engagement with the course.

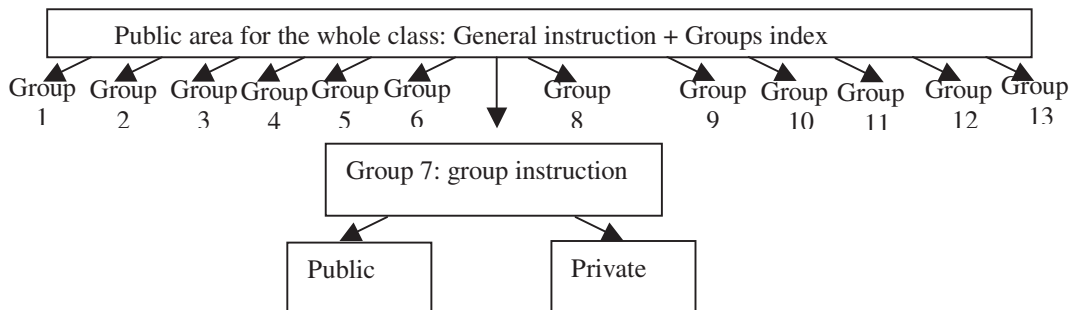
2. Institutional and Course Contexts

This study was conducted at Oxford Brookes University in the United Kingdom, one of the higher education institutions, which was granted a university status in the early 1990s. In the academic year 2006/ 2007, a total of 18,768 students were enrolled on its courses: 73 percent were undergraduate, 25 percent postgraduate and 2 percent were research students. All of the university's undergraduate courses and some taught courses are made up of modules, i.e. classes that are taught and assessed independently of each other (Oxford Brookes University website, 2008). Depending on the course of study some modules are compulsory and some are optional. Full-time students are typically required to take four modules in each of the two semesters.

The module under study is called Japanese for Beginners, which is typically completed by 75 students specialise in Japanese, or other students who study Japanese as a minor or an elective module. The course covers all major aspects of the language – reading, speaking, listening and writing. The use of Wikis was seen as an opportunity to encourage groups of students to independently research some of the grammar functions and to create learning materials that combined descriptions of each function with examples of its use.

Having the module context in mind, the Wiki space was designed to have two levels (see Figure 1): a common public level where general information was provided such as module tasks instruction, Wiki guides, and a common task for all 13 groups which allowed students to familiarise with the system and to develop team work skills; and a private group area, which can be made public when group members are ready to share the resources within it with other 12 groups.

Figure 1. Wiki Design.



The present study was part of the Pathfinder e-learning evaluation conducted at Oxford Brookes University and was also a theme of one of the Brookes Fellowship projects, which aimed to bring learner perspectives into a reflective, multi-skilled team approach to online course development. The research team included a subject expert who was also a course tutor, a learning technologist who was the project leader and an educational researcher whose focus was on evaluating learner experiences.

3. Aims and Methods

At the stage of evaluation the project focused not on the degree to which the use of technology was linked to the attainment of learning outcomes, but on understanding the process of using the Wiki technology to facilitate group work per se. It sought to address two central questions:

- How can Wiki space be designed to support collaborative learning?
- How does student-centred approach to learning space design affects the participants' experiences of learning Japanese grammar?

To collect empirical data on learner experiences both qualitative and quantitative data collection methods were employed. Quantitative data included the results of the Brookes Learning Technologies Survey (Ramanau, Sharpe and Benfield, 2008) and the data from end-of-course evaluation. Most qualitative data was collected through face-to-face and e-mail interviews with students at the end of each of the two semesters. A semi-structure interview format was deemed appropriate where e-mail and personal conversations were centred on both several key themes suggested by the researchers and the themes that emerged in the participants' responses. A total of eleven interviews were conducted, four of which were carried out in person and seven by e-mail. The interview data was analysed using the inductive approach to data analysis (Thomas, 2003). In addition, rich contextual information about the module was collected before and during the study through the analysis of course syllabi, other pertinent online course resources and the interview with the course tutor.

4. Key Findings

4.1 Survey Results

Before analysing the interview data, it was important to consider the differences in the use of Wikis across key demographical groups of students (i.e. gender, age and department affiliation) and the frequency of the use of this technology compared to other Web 2.0 tools, such as blogs, virtual worlds and social bookmarking. The data from Brookes Learning Technologies Survey (Ramanau, Sharpe and Benfield, 2008) collected in October-November 2007 was used. To explore group differences a series of one-way ANOVA tests was performed coupled with the analysis of descriptive statistics. Compared to other Web 2.0 services, the usage of Wikis was quite low – students tended to post comments on blogs, contribute to own blogs or use virtual worlds more often than using Wikis. 78 percent ($n = 926$) of a total of 1150 students surveyed in the study never or virtually never used Wikis and 9.7 percent of them ($n = 115$) did it only occasionally. However, Wiki use appeared to be more frequent than the use of social bookmarking services ($M = 1.40$ on a five-point Likert scale, $SD = 0.83$ compared to $M = 1.32$ and $SD = 0.80$ respectively).

The analysis of group differences showed that there were gender, age and school differences in the use of Wikis. Male students were more likely to use this technology than female students ($F_{(1, 1113)} = 6.50$; $p = 0.01$) and students aged 20 to 25 years were more likely to use Wikis than students aged 17 to 19 years of age or students aged 26 years of age and older ($F_{(1, 1113)} = 8.05$; $p < 0.001$). Technology and Arts and Publishing students were more likely to use Wikis than students in the School of Health and Social Care ($F_{(1, 1113)} = 2.80$; $p = 0.01$).

4.2 Key Interview Themes

The interview data was coded by two research team members and the key themes that emerged in the participants' responses were: problems of creating and editing Wiki pages; uncertainty about the nature of learning activities;

difficulties with the structure of learning space; need for more proactive interaction in groups; perceived benefits of learning through the Wiki and issues of group leadership.

Virtually all of the respondents experienced technical difficulties with using the new technology, particularly in the beginning of their work. Some of them had difficulties doing simple tasks and did not know where to start or how to create page content.

Student A: We were working on the same page. I had lots of work saved; another student saved only a few sentences produced by him after me. So all of my examples got lost.

Most students were not really sure how group work on the Wiki fitted into the rest of their studies on the course. They often were not clear on whether their contribution to the Wiki was an in-class or an out-of-class activity and thus had problems structuring and timing their contributions. Therefore, even although the weekly number of contact hours for the module did not exceed four hours, most of the participants seemed to prefer to work together face-to-face.

Student B: In our case the main problem was the lack of classroom time which meant that we had to shoehorn collaboration into a fifteen-minute or so slot in the Tuesday computer-room sessions which isn't always enough time to sort out problems in a fair and orderly fashion. However, the lack of classroom time is something we've worked on separately - we've signed a petition asking for more classroom hours.

The course tutor also admitted that while being planned as an out-of-class activity much of the Wiki work was done during language computer laboratory sessions, as students made relatively little work outside class hours.

Tutor: Well, it was meant to be outside class, to begin with ... that was my intention, but it didn't go down to students. So I spent a few class hours when I realised they were not very active ... I think most people in this year's cohort had better communication in the e-lab when they were doing and talking about it. So they swap their seats "Let's swap the seats, let's sit together". They were making discussions ... in the classroom.

Not all of the respondents were sure whether the Japanese grammar Wiki powered by Confluence was the ideal platform. Some of the more experienced Wikis users thought that other platforms such as Media Wiki would do a better job, due to the possibility of, say, being able to view a clearer structure of the learning space.

Student C: I feel that things are unorganized. If there were something like a directory tree, you knew where you put up each page. That's would simplify the process as you can see the whole structure.

Interestingly, while the tutor thought that it was sensible to use three main headings for each grammar function that student groups had to work on (description, examples and application), not every learner found it easy to follow it. Moreover, the students felt that they were ready to structure their contributions in a different way.

Student D: The three headings did not work that well. ... What I would do is to show what the previous year did, and ask students to come out their own page structure.

Some of the interviewees thought that in order to foster communication within their group including a discussion tool in the Wiki would be desirable.

Student E: It definitely needs to have a discussion page. Currently there is no way you can tell what we were thinking, how we came to the decisions. Although we have talked to each other in class or using email, there is no documentation /record of it.

When asked about other suggestions to enhance learning through Wikis the learners came up with several viable options. For example, some of them thought that providing guides or handouts on how to use the Wiki or doing live demonstrations of the technology works may be a useful way to introduce the technology.

Student F: Some sort of handouts to provide basic instruction how to do the basic things in the Wiki such as creating pages, editing pages.

Although students were randomly allocated to their groups and nobody was formally nominated as a group leader, the issues leadership seemed to be important to all of the interview participants. One student noted that as long as no one seemed willing to assume the initiative in his group he had to become the group leader, particularly when the group work did not seem to be going anywhere. It seemed that the group leader emerged without nomination and it appeared to be useful in terms of coordinating each others' input.

Student F: Nobody was nominated as the group leader. But I think I may have to end up becoming that guy. Some other collaborative work I've done, I had to be that guy. Because I looked at my calendar, my time and think "Yes, this isn't going anywhere". All right, fine, so I send email to everyone. "Can we please get together; can we decide to do something?"

In spite of the technical difficulties with using the Wiki environment and the difficulties with managing their and other students' time, the respondents noted the benefits of using this technology. For example, students claimed that although the first task was to go over what they learnt in class, it helped revision and widen the understanding of the grammar points. In addition, most of them thought that resources created by their peers were easier to understand than textbooks, which helped them to learn Japanese.

Student G: Because the text book gives you one way, like spoon feed, but when someone else thinks about it, writes about, maybe they have new angle on it, slightly different, maybe just worded it differently. That may help.

Student H: It is just helpful to go over it. There is one grammar point I did not know. One of my mates explained to me just about something I have not thought of, but then it did make sense when she said it. It is helpful to hear other people like how they understand it, and what it means to them sort of thing.

In her interview at the end of the project the course tutor concurred with student views on the usefulness of the new technology. She noted that the lack of realistic estimation as to how much staff and tutor time the development, design and evaluation of the module takes created impediments to more effective use of the new technology. However, the quality of student work was often of a high standard, although the degree of learner satisfaction from their learning experience was not always clear to her.

Tutor: Because of the Japanese font, they have to use everything in Word and then copy onto, because they can't directly do the Wiki page. Even so – they make tables; they create images. I'm amazed at the way they use technology and have the end product like that is something quite good. And also they are talking to each other, when we have the time in the e-lab session. Whether they liked it or not I really didn't know, but they seemed to have got through many other Internet pages to look for answers.

4.3 Results of End-of-Course Evaluation

At the end of the academic year one of the tutors administered a set of closed and open-ended questions to a group of 19 students on their experience of using the Wiki on this module. The first question asked the participants to rate the degree of their involvement into learning with the Wiki on a scale from 1 to 10. The mean score equaled 6.5 with seven out of 19 students giving a mark of 7 for their participation in Wiki-based group work. Three participants gave a score on 4 for their involvement in the project and one gave a score of 10. Open-ended comments that the participants added to their scores shed more light on their experiences. Typically the learners did contribute to the learning space, but found it difficult to commit more time than they would have liked to the activity:

Student I: I contributed a reasonable amount of the grammar in the pages and arranged it into a viewer-friendly format to make it easier to read and absorb. However I did not devote as much of my time to the grammar Wiki as I could have done.

When asked about the aspects of grammar that the students liked most about their experience of using the Wikis seven out of 19 respondents thought that it was the ease of use and of editing group contributions. Five students found an opportunity of working with other people and sharing knowledge to be most rewarding. In quite stark contrast 13 out of 19 respondents thought it was technical difficulties with using the Wiki due to its layout, unfamiliar interface or difficulties with typing Japanese characters that was most challenging.

Student K: I disliked the disorganization and the difficulty of editing the pages. The boxes for entering new texts were somewhat messy and often skewed with the format of pasted examples.

Student L: It was sometimes difficult to navigate, and for some reason, the e-lab computers didn't display the Japanese language when on Firefox, necessitating Word so we could copy and paste our information.

5. Discussion

Before the implications of the study are discussed it is important to delimit the generalizability of its findings. The project was carried out at a UK university and involved a limited number of respondents in one subject area. Moreover, most of the interview participants were British or students from other European Union member states, thus their experiences of using Wiki technology might not be transferable to other learning contexts.

The results of both qualitative and quantitative data analysis paint a complex picture of student use of Wikis. On the one hand, students seemed to find the use of the new technology beneficial to their learning, particularly due to the possibilities of learning grammar with their peers and opportunities to be involved in collaborative work. They were quite keen to learn new skills and found Wiki technology suitable for sharing and editing grammar content. It was also apparent that the new learning experience encouraged some participants to reflect on their learning styles and preferences even though neither the interview questions nor the end-of-course evaluation were concerned with this aspect of their learning. For example one of the respondents noted his preference towards “*learning by doing*” rather than passive transmission of information. Further projects in the area might investigate the degree to which collaborative Wiki-based activities are linked to students of differing learning styles.

On the other hand, in the initial stages of using the Wiki the learners often appeared to be at a loss as to what precisely was required of them and struggled with basic tasks, such as adding an entry, saving a Wiki page or reverting to its previous version. Part of the reason for that might be the technical problems with the Wiki server that occurred during the course and the fact that the new technology was introduced several weeks later than it was expected. As a result, neither tutors nor students were provided with sufficient training on how to perform most frequent tasks that they had to encounter, which might have affected student and staff enthusiasm. Another explanation for the initial difficulties could be the learners' relative inexperience with this as well as other Web 2.0 tools. The data obtained from a representative sample of respondents at Oxford Brookes University suggested that despite wide proliferation of Web technologies, most students used them (possibly except social networking sites) rather infrequently and required additional training to routinely use them in their studies. The data from other institutions seemed to suggest a similar picture. In their survey of more than 2120 first-year students at the University of Melbourne in Australia Kennedy et al. (2008) found that 81.6 percent of the respondents virtually never used the Web to contribute to the development of the Wiki and 65.1 percent never contributed to their own blog. Typically the students in this study varied in their levels of IT skills thus concurring with Kirkwood and Price's (2005) conclusion that relatively few students have equally high levels of IT proficiency across a range of applications.

These findings suggest that universities should not overestimate IT skills of undergraduate students assuming that because they belong to the so-called “Net Generation” (Oblinger and Oblinger, 2005) their previous experience with using various IT applications should be sufficient. It appears as though most of today's students lack familiarity with one of more of Web 2.0 technologies and therefore if their use is compulsory sufficient training in how to perform the key tasks that they have to do on the course has to be provided. Likewise, tutors who intend to use Wiki technology on their courses might be given some additional training on how to design and administer learning activities and should be provided with sufficient time to successfully complete the training and gain experience in applying the new skills.

6. Conclusion

To conclude, the present project highlighted a number of issues in student use of Wikis for collaborative group work which might of interest to educators using this technology. While being a challenging and useful learning experience, this project underscored the importance of technical infrastructure behind the design of the learning space and the need for adequate training provision to cater for the needs of both students and staff. It also suggested that the diverse experiences with IT and learning preferences of today's students might also be an important determinant in how they go about their learning and this has to be taken into account when developing similar projects in other contexts.

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