1-1-2009

Using Web 2.0 Technologies to Build Learning Communities

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IADIS E-SOCIETY 2009 – INTERNATIONAL CONFERENCE BARCELONA (ACCEPTED FOR PRESENTATION)

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ABSTRACT

Web 2.0 technologies, such as wiki pages, have the potential to facilitate the formation of on-line communities of learning, especially useful when participants in that community are geographically dispersed and living in remote areas. This paper describes the authors' work with undergraduate health studies students tasked to work collaboratively on a problem-based learning (PBL) project in which the students use wiki pages to share ideas and resources. The study examines how different groups of students make use of the wiki facility in terms of the level and nature of contribution. Work to date suggests that students readily adapt to the on-line community and, given sufficient instruction, utilize the wiki pages to work together constructively. Evidence indicates that, provided tutors are supportive and provide encouragement, the level of wiki activity is independent of whether contributions are formally assessed or not, however, the language style adopted by students does change when their work is being assessed. When the contributions are not assessed, students adopt a very informal language, reminiscent of the language used in instant messaging and SMS texting; when the work is assessed, students revert to the more formal language of the traditional classroom

KEYWORDS

Web 2.0
Wiki
Community
Undergraduate
Problem-based Learning
Collaboration

1. INTRODUCTION

This paper describes the authors' on-going study of the potential of Web 2.0 technologies to facilitate communities of learning within groups of undergraduate health studies students. Group projects and problem-based learning has an established history within health studies courses but this presents challenges when students are geographically dispersed as, traditionally, collaboration can only effectively take place when students are physically on campus. Acknowledging that, even with such limitations, student collaboration and group work have sound pedagogic value, the authors proposed to explore how emerging technologies, in particular wiki pages, could facilitate greater flexibility and enhanced opportunities for students to collaborate at a distance. What has emerged is not only how these technologies are enabling, in the sense that students have opportunity to contribute to discussions at a time and place that is convenient to themselves, but also how group dynamics and use of language is context-sensitive; students 'behave' differently on-line even when they know tutors have access to and monitor their on-line activity. This paper describes in both quantitative and qualitative terms the nature of student participation within the community of learners together with the students' perspective of their experience of using a wiki for the first time. We conclude by recommending how such technologies can be applied successfully to facilitate collaboration and, in the words of O'Reilly (2007), for the 'harnessing of collective intelligences'.

2. WEB 2.0 – THE SOCIAL WEB

Web 2.0 technology probably became main stream on January 15th 2001 when 'Wikipedia' launched. Described by Surowiecki (2004) as 'the wisdom of crowds'; Wikipedia enabled individuals to contribute to a collective database of knowledge. Over the succeeding few years the 'social web', (Boulos *et al,*2007), has become ubiquitous; social networking sites such as 'Facebook' and blogs have become increasing popular, especially with young adults, and many of us in higher education are beginning to consider how this phenomenon can be used to facilitate learning. We now have a 'connected society'; connected not by face-to-face interaction but rather by the internet; geographical location is no longer a barrier to discourse and interaction. Applying these principles, the authors determined to evaluate whether student discourse at a distance could supplement, even replace, traditional face-to-face interaction and how such interaction would manifest itself.

2.1 Background to the study

This paper describes our experiences with two student groups:

- Second Year Bachelor of Nursing students exploring issues of care following a road traffic accident; in this instance the students were not assessed on their collaborative participation (Group A: 40 students divided into five sub-groups; A1, A2, A3, A4, A5).
- Second and Third Year Bachelor of Nursing students exploring issues related to mental health; in this instance students were assessed on their participation (Group B: 16 students divided into four sub-groups; B1, B2, B3, B5)

Both groups of students were adult (18+ years old), attending full-time education, many living in rural locations within 50 miles of the university campus. Students in both groups were assigned to smaller sub-groups and each of these provided with a password-protected wiki site for their collaboration; sub-groups only had access to their own pages. Tutors monitored contributions and this was facilitated by an automated email notification of any changes to the wiki pages. For the purposes of this paper all student contributions, either to the wiki or in feedback on their experiences, have been anonymized.

In each case, students are exposed to problem-based scenarios; these are designed to promote autonomous learning by encouraging students to take responsibility for their own learning (Ousey 2003). This is done by the identification of the student's own learning needs in relation to the problems highlighted within the weekly PBL scenario. PBL classes are timetabled for one day a week over a number of weeks. Each week the students work in small groups and each group is facilitated by a nurse lecturer. The lecturer's role is purely advisory and students are encouraged to work together towards a consensus position.

2.2 Student Wiki Use

Student wiki use was analyzed with regard to the number of revisions made to each wiki page and the 'quality' of student contribution, taking note of the type of contribution (resource sharing, critical debate, supportive commentary and language used) and the language style employed. Additionally, student feedback on the value of the wiki was elicited using questionnaires.

2.2.1 Wiki page visits and revisions

The numbers of wiki page visits and number of page revisions based on the average number per student per week are presented in Table 1. Group A, whose contribution was not formally assessed, made, on average, 12 visits and 2.44 revisions per student per week; Group B, where contribution was assessed, made, on average 10.5 visits with 2.03 revisions per student per week.

Table 1. Average number of student visits and (revisions) to group pages per student, per week of activity

	Average Number of visits (revisions) (Per student, per week)				
Group / Number	1	2	3	4	5
A	**12 (2.3)**	**13 (2.6)**	**13 (2.7)**	**13 (2.7)**	**9 (1.9)**
B	**6 (1.5)**	**8 (1.5)**	**11 (2.0)**	**17 (3.1)**	**n/a**

The numbers for Group A are broadly consistent across the five sub-groups but in Group B, the number of visits and contributions made by sub-groups B1 and B2 are significantly below those of sub-groups B3 and B4. This may reflect the fact that sub-groups B1 and B2 are year 2 students whilst B3 and B4 are third (final) year students, this does not, however explain why the contributions across Group A, also year 2 students, are 70% greater than those of their peers. This data indicates that, on average, students in both study groups were making 1.5 visits to their individual group pages per day with just fewer than 20% of these resulting in a page revision. This high level of activity contrasts with that reported by Kennard (2007) in his study of wiki usage, who reported 'low' use of such pages in his group of postgraduate students. Kennard (*ibid*) also suggested that the 'number of times students altered page content may reveal the extent to which wikis provide an opportunity for deep, rather than surface learning.' Simple quantitative analysis of the degree of alteration or addition to page content cannot, of itself, be a measure of the quality of learning experience; more refined analysis is required if we are to develop an understanding of the role of social interaction and group dynamic involved in establishing on-line communities of learning. To this end, one must examine the nature of discourse conducted on-line and how, if at all, this differs from conventional face-to-face interaction.

2.2.2 Language: does assessment alter context?

It has been recognized that social groups use language that is particular to their context (Maass, 1989), so one should not be surprised when students adopt language and behaviour that they perceive as appropriate to their given context. This study examined whether changing context had a significant influence upon student language; one group were not assessed on their wiki contributions whilst another group were assessed; this shift in context was tempered by the fact that students were aware that tutors had access to, and moderation rights, to their discussions. What emerged was surprising; students being assessed adopted the formal 'classroom' style of language whilst those groups not assessed uniformly used informal language reminiscent of instant messaging or SMS style. Typical of the postings made by the non-assessed group are:

- 'c u tomorrow' - see you tomorrow
- 'hope u are all happy' - hope you are all happy
- 'Dus any 1 no' - does anyone know

Typical postings made by the assessed group, in contrast, include:

- I looked at unusual posture; I found an article that stated that people that suffer from catatonia often suffer with unusual posture and ….
- Some very interesting points, I guess we have to consider whether the benefits are to the 'system'

By changing the context from non-assessed to assessed, it seems that students acquiesced to the style of language 'expected' of them within the formal setting; the impact this may have on their learning has not been evaluated, however the significant decrease in wiki activity for the assessed group may suggest that, to facilitate learning communities, tutors would be well advised to use wikis for informal collaboration rather than as part of the assessment process. Assessing contributions may well be a disincentive to contributing.

2.2.3 Student feedback

Student feedback has been elicited using anonymous questionnaires; these are presented in Table 2. This data suggests that, whilst a significant proportion of first-time wiki users would prefer traditional face-to-face collaboration, there is overwhelming agreement that the wiki 'was useful' to enable sharing of ideas and resources.

Table 2. Results of student questionnaire (aggregated results from 33 returns)

Statement	Score (1 = strongly disagree, 5 = strongly agree)	Agreement (as a percentage)
I found the wiki easy to use	**3.76**	**72%**
The wiki was useful in helping us share ideas and resources	**4.15**	**83%**
Our group work improved because we used a wiki	**3.38**	**68%**
I would prefer to use email to share ideas and resources	**2.48**	**50%**
I prefer to meet face to face or by telephone	**3.15**	**63%**
I would prefer tutors could not see our wiki pages	**1.85**	**37%**
I would like to use a wiki for group work in the future	**3.79**	**76%**

Perhaps most surprising is that the vast majority of students would prefer (even when their contributions are not assessed) that tutors have access to their discussions. Indications are that students want to demonstrate to their tutors that they are actively participating in the group work. Given the informal language adopted by the non-assessed groups, one is drawn to the conclusion that they (students) perceive the language used as socially appropriate and that tutors will adopt strategies to accommodate this.

3. CONCLUSION

This paper has explored the use of Web 2.0 technologies to facilitate the establishment of learning communities on-line. Emerging technologies offer the potential to engage geographically dispersed student populations in reflective and constructive debate regardless of location or time. The role of assessing such conversations within the overall objectives of encouraging deep learning has been explored; it seems that, whilst tutors would wish to follow, and assess, the process, the actuality of collaboration and, hence, deeper learning, may be best served by allowing students to explore such aspects free from assessment. Students, it

seems, welcome the opportunity to debate and discuss complex issues on-line and, whilst they welcome tutor observation of their conversations, these conversations are far richer when they are not assessed.

Wiki pages enable those students who, perhaps through geographical location or personal characteristics, find it difficult to attend face-to-face meetings, to contribute constructively to projects that involve a degree of collaboration. Some students prefer to meet face-to-face but the vast majority feel that the using a wiki improved their ability to share ideas and resources. Our use of wiki pages is not as a replacement to conventional meetings but as a supplement. Furthermore, by observing the discussion between students, one had the opportunity to evaluate the process of collaboration rather than just the product.

We plan to extend our use of wiki pages to other subject areas and to compare wiki use with other forms of e-communication for collaborative projects.

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