Using Wiki as a facilitative tool for group work

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Abstract: Setting an effective learning experience for students is a very complex process and yet, this has become even more challenging as the numbers of students in lectures are increasing. Apart from the usual complexities such as additional administration processes and errors associated with large units, there are other critical issues that need to be addressed. In particular, students may not have the opportunity of reasonable interaction with the lecturer and their classmates. Certainly larger units have the potential to provide an opportunity of having a wider range of lateral thinking and innovative ideas. However, these opportunities are often overlooked as there is no practical tool to support them. In this paper we report on our ongoing work using a Wiki for two different units, one an undergraduate unit and another at a postgraduate level. We found that while there are considerable differences between our perception and students' perceptions on using a Wiki, it can be a powerful tool for providing a space for students to present and record their efforts. Through using Wiki students can effectively disseminate their work and interact beyond their tutorial classes.

Introduction

Increasing class sizes is common among many first year units and this is also the case for units that are shared between different courses. The main driver behind increasing class sizes might be attributed to a surge in the number of students in recent years. On the other hand, creating a diverse range of courses appears to be economically viable when different disciplines share some resources and indeed have some common units. Feelings about larger classes and the effectiveness of the learning process in such settings differ but this discussion is beyond the scope of this paper. However, it suffices to mention that the problem of devising strategies that maintain a reasonable level of teaching quality and engagement as the number of students increases has been among academic circles for quite some time (see for example (Gibbs 1992) and still is an important issue of interest (Exeter et al 2010) There are guides

on strategies that could be helpful in teaching large classes. For example, the Griffith University *Good Practice Guide* (www.griffith.edu.au/gihe) suggests the following strategies:

- Organising and presenting effective lectures
- Engaging students and developing a sense of belonging
- Integrating active learning elements in traditional lectures
- Blending face- to-face and technology-enhanced activities
- Crowd control in large groups, and
- Managing and supporting staff teams, including tutors

Except the "crowd control capability" and "team management" aspects, there seems to be no particular aspect that can be attributed only to large classes. In fact, the fundamental aspects of good teaching are similar when the number of students increases. An effective teacher should be inspiring and approachable, the assessment tasks should be engaging and interesting and overall the unit should be well-organised and managed. However, the engagement level per person naturally would decrease as the class strength increases. There is usually much less interaction opportunities in a larger class setting for individual students. Most students tend to remain silent throughout the lecture time. Particularly, confident and or courageous students often seem to take over whenever a lecturer opens a topic for discussion. The concepts of individual behaviour vs group behaviour create layers of complexity to teaching an average size class. This becomes even more evident as the class sizes increases. Many students seem to perceive this, as generally they prefer to present in tutorial groups rather than in a lecture theatre to the whole class. One approach to minimizing the negative impact of a larger setting is the use of tutorials to complement lectures. However, this would not be the whole solution as in tutorials students might not benefit from the extensive network of classmates that a lecture class could provide while tutorials might occasionally be considered as secondary.

The use of Wiki mainly as a collaborative web-based group project development tool could provide a space for students to contribute in interesting and innovative ways. Students not only can present their research projects as teamwork, they can also present themselves and their individual work. In this paper we report on our observations regarding using a Wiki for two units, one a large undergraduate unit and one a medium-sized postgraduate unit.

Case 1: Use of a Wiki for group work in two undergraduate units

The first example is the use of Wiki for two undergraduate units: Engineering Management 1 and Engineering Management 2. Both units are offered to undergraduate students in the Faculty of Engineering and Industrial Sciences at Swinburne University of Technology. In the first unit, students are exposed to a range of fundamental management concepts such as scientific management principles, strategic management and organisational behaviour, as well as project management basics. In the second unit, complementary concepts such as operations management, basic accounting and legal issues are covered. The number of students in the Engineering Management 1 unit fluctuates from 100 to 250 and above students while the number is between 50 and 80 for the Engineering Management 2 unit.

The major assessment beside the final exam is a research project in which students are required to select an organisation and apply fundamental concepts of management to develop an in-depth analysis of efficiency and effectiveness management practices in that

organisation. Students are required to make presentations in class and write a report on their analysis. But beside these standard activities, they need to document their group work activities via meeting minutes and communicate to the class via their Wiki page about significant parts of their research. It is an option for them to develop their report using the Wiki as well.

We intended to observe whether the introduction of a Wiki facility can increase engagement for students and if it can work as a catalyst for a deeper understanding of management concepts, concepts that may not be necessary considered to be important or relevant to engineering students.

Analysis of collected data for the Case 1

In addition to our observations, a structured survey was launched and a summary of interim findings are reported in this section. The questionnaire was launched online using the *opinio* platform and invitation is distributed to all enrolled students of both units in this year. The questionnaire included seven questions seeking for each student: (1) their general experience of using a Wiki, (2) technical experience using a Wiki, (3) their perception of communication as a result of using the Wiki, (4) relative communication level within the group, (5) how much they had looked at Wikis belonging to other groups, (6) any lessons learned and (7) whether students would consider using Wiki in future. Soon after launching with some basic pilot testing, we realized that that some questions on the survey might have been designed differently for improved responses and better analyses.

46 responses were received from the surveyed population of 261 undergraduate students (220 in the Engineering Management 1 unit, 41 in the Engineering Management 2 unit), representing a response rate of 17.6%. Notable observations from our interim consolidations are:

- **Students overall find it useful but not with a clear cut majority**
Around 60% of respondents thought that it was an enjoyable tool for communication of their work to the class. However, 9% perceived it was a time wasting practice and 20% of respondents find that the Wiki is not particularly interesting. Also, 11% of respondents indicated that the Wiki is a good tool but not suitable for group projects in this unit. In the open-ended questionnaire part of the optional inputs section, there are some interesting feedback points on why students might not be happy to use Wiki via Blackboard. The first and perhaps foremost is that students have to resort to the same technology via alternative sources. The respondents mentioned that the current provision of the Wiki tool in Blackboard are not as directly compatible or convenient as tools such as Google Docs, MSN and various software easily linked to mobiles.

- **Gap between the lecturer and students regarding the tool**
In the question that asked whether the student had looked at other groups' Wiki pages, 63% said 'yes' while the others said 'no'. To the teacher this was unexpected as the aim of the introduction of a Wiki was to bring the students closer and improve their learning process. It seems for a significant portion of the students, this was not achieved.

- **Students want a private space in addition to their Wiki space**
Contemplating on results from Cole (2009), it seems that overall feedback from students was positive as they have a private space on Blackboard via the File Exchange tool. Many students appreciated the ability to share files in a simple way within their group but few were not comfortable making them available via Wiki.

It should be noted that it seems to be natural to have diverse views. The preference of some students for traditional methods of communication should be considered.

Case 2: Use of Wiki for group work in a postgraduate unit

In the second case example, a Blackboard based Wiki facility was used for group work in a postgraduate unit in Swinburne's Master of Construction Management program. The cohort included 9 groups with 4 postgraduate students in each group. The assessment weighting for group work in that unit is 30% of overall points. All groups were given designated Wiki work areas in Blackboard and the facilities provided include: online discussions, group emailing, file exchange, and web-based interface for group work reports. The research problem for group work was allocated by the teaching staff and the students were asked to use traditional ways of peer learning (e.g. face to face/ telephone discussions and brainstorming sessions) as well as Wiki in Blackboard with virtual collaboration facilities. In addition, there were some teacher-supported group project sessions e.g. to: finalise research objectives, approve research methods, monitor and control the progress, settle issues, validate results, check draft reports/ presentations.

Key observations from the Case 2

The online virtual collaborative group working through Wiki working spaces in Blackboard was considered as useful by the students. Especially, the postgraduate students found that use of Wiki in Blackboard for group work was: (i) helpful for their time management (as significant portion of the class have part time/ full time working in the industry), (ii) developing internal awareness and consensus amongst group members regarding the group work, (iii) competitively benchmarking other groups by checking other group Wiki pages, (iv) enhancing through dynamic feedback from teaching staff (v) cost savings by avoiding printing and binding. On the other hand, the main issues identified by the postgraduate cohort and included in suggestions for future improvements are: (a) most of the groups (5 out of 9) felt that interim stage viewing by other groups is not preferred as they might lose any competitive advantages from their innovations; (b) the web-editing software features were not sophisticated or user-friendly and yet some groups managed to overcome this issue by using hybrid/external tools and links; (c) few groups (3 out of 9) felt that additional efforts and learning curve for Wiki use was a challenge for them. Furthermore, the key points from teaching staff (i.e. second author) experience are: (i) the use of Wiki in Blackboard was acceptable handy arrangement to manage group works e.g. tracking of student transactions in group works, convenience of online access, time savings, easy monitoring/ controlling progress, convenient interim/ final feedbacks as well as peer-assessment arrangements; and even so (ii) some difficulties such as initial preparations and special trainings/ demonstrations.

Discussions

Wiki as a facilitating platform for students in their group work

From our case observations, the students basically viewed the Wiki as having value for expediting their group work, yet, when used for reporting/ presentation of their group work, the built-in facilities and arrangements are quite inadequate. In particular, the lack of editor software and mobile portability were among notable concerns for students. Also, specific operational suggestions for Wiki use in group work include: setting out some transparency

filter controls for groups so that they can check and control on releasing their works as visible to other groups.

Wiki as a convenient arrangement for teachers to manage students' group works

In both undergraduate and postgraduate cohorts, Wiki use was found to be beneficial to teachers in terms of: (a) dynamically engaging and advising students in group projects, (b) continuously monitoring and tracking student contributions in group projects, (c) providing frequent interim feedback to students on their group work, (d) integral benchmarking, and (e) encouraging competitive innovations amongst students. However, in the initial stages, the concerned teacher should carefully design the Wiki group spaces and significant efforts are required. Also, relevant instructions and demonstrations to students are essential for successful Wiki usage.

Wiki for improving sustainability targets in higher education sector

By means of Wiki use in group projects, traditional paper-based transactions such as hardcopy reports are avoided in our sample cases of undergraduate and postgraduate units. This in turn has environmental benefits e.g. in terms of embodied energy (EE) and carbon (EC) of (a) papers and (b) printing.

For example, a report by Australian Government Forest and Wood Products Research and Development Corporation and Cooperative Research Centre for Greenhouse Accounting (http://www.plantations2020.com.au/assets/acrobat/Forests,Wood&CarbonBalance.pdf mentioned:

"…*About 2 million tonnes of paper products are placed in landfill in Australia each year. In addition, about 300,000 tonnes of waste from papermaking process are disposed of in landfills each year…..This is despite increasing levels of paper recycling; 48.4 per cent of the paper produced in Australia is made from recycled fibre and 52.9 per cent of the paper consumed in Australia is recycled, levels among the highest in the world…*"

Also, printing and binding include some such direct and indirect costs. As per HP Carbon Footprint Calculator (http://h71028.www7.hp.com//enterprise/us/en/solutions/hp-carbon-footprint-calculator.html), the greenhouse gas emissions from one particular 'individual' printer model is 1.23 Kg COe/kWh and in terms of the Cost/kWh in Victoria, Australia. Overall, if an integral aggregate of overall paper use and printing in higher education group projects are calculated, this would be reasonably considerable.

Conclusions

Wiki is a useful web-based tool that can be deemed as a useful facilitating arrangement for group works in higher education. Recent case examples of using a Wiki facility in students' group works highlight useful values such as web-based dynamics and remote networking convenience. Additionally, teaching staff experience from two case-studies within three units mainly indicate convenience in managing student group works with Wiki in Blackboard and effectiveness in enhancing feedback to students as well as assessment of group works. However, there are certain limitations with respect to the lack of advanced/ user-friendly arrangements within the Wiki in Blackboard tried in our recent attempts. Furthermore, sustainable advantages of online reliance and minimizing/ avoiding paper based reports might be deemed as added environmental values.

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