Evaluating pharmacy students' wiki-based collaboration

Jim Woulfe, **Kylie Williams, Greg Ryan**
Faculty of Pharmacy
The University of Sydney

Final-year Master of Pharmacy (MPharm) students at The University of Sydney are required to submit a series of group-generated Problem-based Learning (PBL) cases. When submitted as word-processed, or paper-based documents, the cases are characterised by a fragmented approach, and academics often report that a patient-focus is lacking. Following a successful pilot in 2007, wiki format was introduced, with a view to encouraging a whole-patient approach to the task. In Semester 1 2008, students submitted their group cases on paper, and in Semester 2, via a wiki. At the end of each semester, students' views regarding the two case presentation formats were sought via self-completed questionnaires. At the end of the year, and independent of the students' course assessments and grading, an evaluation of the PBL assignments was carried out by an external evaluator. The overall performance using the wiki was much less than expected following the pilot. However overall scores indicated no significant difference between the two methods.

Context

Problem-based learning (PBL) forms a significant part of the curriculum in Faculty of Pharmacy programs, including the pre-registration MPharm degree. Students are required to submit a group-generated case summary for each problem they examine, and typically, they 'divvy-up' the learning issues associated with a particular PBL case, and each group member explores the allocated issue and reports back to the group. The sharing of the learning workload is an important objective and outcome of PBL process, but can also lead to a 'fragmented' final case summary, if the individual components are not brought satisfactorily together in a 'whole-patient' way. Anecdotally, it has been reported that when trying to complete group case-summaries, MPharm students appear more focused on the administrative aspects rather then the clinical issues associated with the case. Students complete their own research in isolation and then email it (usually several times with corrections or additions) for the group "scribe" to collate into a complete document. As a result, each student seems to consider only their own research, rather than the whole group's, as they don't have access to all the information until the final document is complete. Academics report that the final documents lack internal consistency, and that students do not appear to be taking a whole-of-patient approach to their case summaries.

In an attempt to address this problem, an alternative wiki format was introduced (a website or similar online resource which allows users to add and edit content collectively), with three aims:

1. to address the problem of students completing the task in a fragmented, piecemeal manner (in which individual contributions were sometimes inconsistent) and thereby encourage a whole-patient approach to the problem;
2. to improve the quality and consistency of the final PBL case summary document;
3. to streamline the collaborative processes while students are completing a group PBL case summary.

Design

Second-year MPharm students (N=38), were divided into six tutorial groups in each semester, producing one PBL case summary per group per week for ten weeks: a total of 120 case summaries for the year. In Semester 1, students were required to submit their case summaries on paper. In Semester 2, they were

required to produce their case summaries in a wiki. At the end of each semester, students completed a post-activity questionnaire about their experience completing the case summaries. At the end of the year, the case summaries were evaluated by an external expert, a practising pharmacist who had previously taught in the Faculty. The external expert used an adaptation of the 11-criterion evaluation matrix currently used in the Faculty to assess students' PBL case presentations. The questionnaire data and expert evaluations for each semester were compared.

The PBWiki platform (now PBWorks http://pbworks.com/) was used for the student case summaries. This was chosen because it was a publicly available wiki application that allowed password protected logins.

Results

Several problems appear to have influenced the results. It was assumed that since the students were all experienced in using Microsoft Word, plus a range of web-based applications (e.g. the University's learning management system, web-based email), the online help in PBWiki would be sufficient. Particularly at the outset, there were technical failures of the editing screen in PBWiki, and multiple simultaneous users caused some students to be excluded from the document they were editing. Also, students experienced severe difficulties formatting text – there was a very strong expectation that the behaviour of the text input fields would be identical to Microsoft Word.

Questionnaire data

In the questionnaire data (Figure 1), students reported high levels of difficulty with both paper- and wiki-based case summaries.
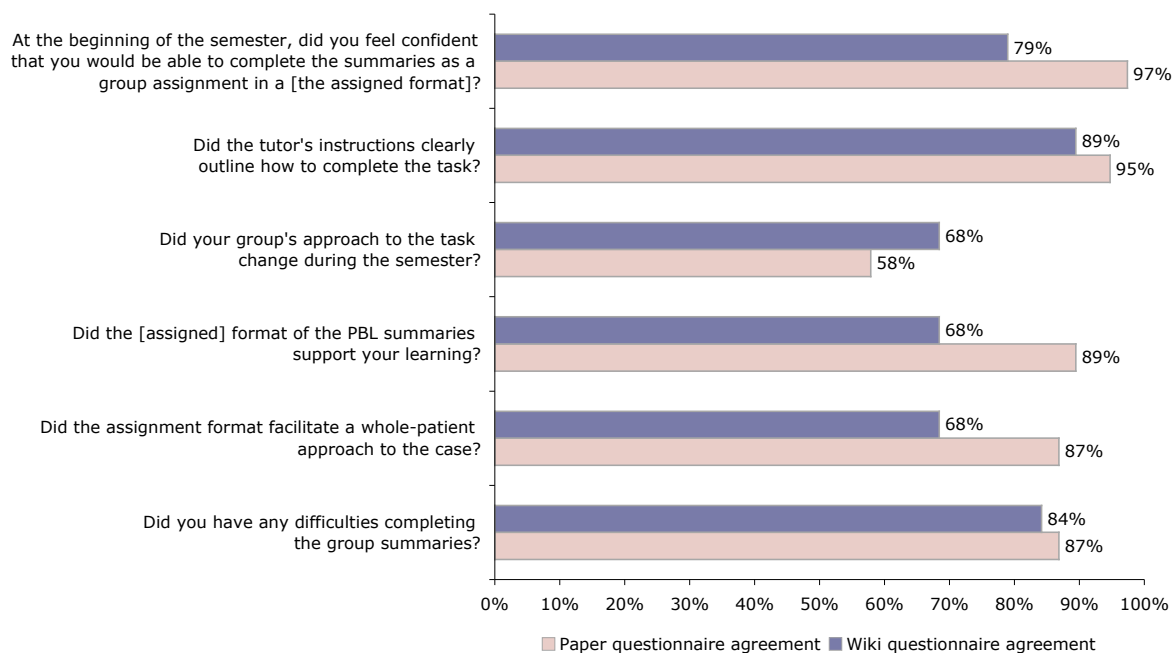

Figure 1: Questionnaire results: Student level of agreement (N=38)

Expert evaluation

The quality of the PBL case summaries was measured by the expert evaluation. Overall the total mean scores for paper (23.6) vs. wiki (20.8) were not significantly different (T-test, p=0.12). The technical difficulties with the wiki were largely resolved in the second half of the semester. To exclude the technical issues, and in order to examine possible maturation effects, expert evaluation results were separated for the first and second half of the semesters. Comparing the 1st half of Semesters 1 and 2, the expert evaluation was significantly higher for paper in 7 of the 11 criteria. In the 2nd half of Semesters 1 and 2, students scored significantly better for paper in only 1 criterion.

Conclusions

Given the positive results of the 2007 pilot, the 2008 results above are disappointing. The early technical difficulties reported by students appear to have greatly affected the quality of their case summaries, as well as influenced their perceptions of the wiki.

This study is currently being repeated, using a locally-hosted wiki built in the Drupal open-source content management system. In addition, more training in the use of the wiki has been given to students, and help documents customised to their particular tasks have been provided.