

## The creation of group wikis by first year undergraduate physiotherapy students.

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### Abstract

*The control of infections in hospitals and other health care settings is currently an important issue. The Physiotherapy Practice Team at the University of Hertfordshire devised a group wiki assessment for first year undergraduate physiotherapy students to evaluate infection prevention issues experienced during a five week placement. Both Practice Team staff and students received hands-on training in wiki technology. Students also received a compulsory session on infection prevention issues. In groups of 6-8, the students used wikis to record their analysis of specially devised videos relating to infection prevention. They also considered their own practice and that of others during the placement and kept a reflective log on the wiki which recorded their own personal thoughts on the whole process. Post assessment evaluation was augmented by use of a student questionnaire. Initial findings suggest that this method of facilitating learning in the practice environment is successful. Considerations for improvement of the activity have centred around the timing of the pre placement assessment introductory lecture, the use of a formative activity and further information for students on the nature of remote collaborative working.*

### Introduction

In recent years university academics have been encouraged to revisit the teaching and assessment methods they offer undergraduate students. The shift in the way some university programmes now facilitate and assess learning may in part be due to developments in the understanding of the way students learn (Honey and Mumford, 1992). The Professional Standards Framework (PSF) encourages higher education teachers to have knowledge of how students learn and make use of appropriate learning technologies (Higher Education Agency, 2007). As a result, a variety of innovative assessment methods are now being used which enable students to be assessed in more contemporary ways.

Traditional methods of assessment for academic programmes have focused on the end of term written examination and within Physiotherapy this has typically been augmented with practical assessment of techniques. In June 2007, first year undergraduate physiotherapy students at the University of Hertfordshire undertook their first 5 week practice placement at the end of year one. Their clinical practice was assessed by Practice Educators and this was supplemented by an additional piece of academic work set by the University in which students were required to create a written *proforma* that detailed a critical incident in the 'infection prevention' aspect of their work. This particular assessment was produced as an individual piece of work. Students were very much alone in their learning and collaborative study between the students was minimal.

The Practice team felt that the learning outcomes for this piece of work could equally be met by the creation of a group 'wiki'. The word 'wiki' is Hawaiian for 'quick' and in an educational context refers to an online resource (web site) that allows users to add and edit content using their own web browser. It was felt that wiki use would encourage collaborative working, reflective practice and communication between students. Many students were alone on placement, therefore wiki engagement would also facilitate social support and allow contact with the University on a regular basis.

Current students are immersed in electronic opportunities to communicate and this is evident in the explosive use of social networking sites such as 'facebook'. The shift, therefore, from paper based assessment to wiki creation and assessment was perceived as being positive for the students by the University's Practice Team and a decision was made to embed a wiki into the infection prevention assessment part of the practice experience for a cohort of 64 first year students .

## **Background**

Developments within the field of Information and Communication Technology (ICT) initially provided Higher Education Institutions (HEIs) with the ability to provide vast resources of materials for their students (HEFCE, 2005). Further developments have enhanced the students' ability to be independent in their learning and share information within their student bodies.

One measure of success of a HEIs ability to embed e-learning into the curriculum, as described by HEFCE (2005:9), is that 'students are able to access information, tutor support, expertise and guidance, and communicate with each other effectively wherever they are.' This is particularly important for the Physiotherapy undergraduate degree programme as placement learning is an integral part of the course. Students must pass a total of 1000 hours in clinical practice in order to register with the Chartered society of Physiotherapy (CSP) and be eligible to practice within the National Health Service (NHS) (CSP, 1997). Embedding e-learning into the curriculum enables students to not only engage with their placement learning activities in an enhanced way, but also to access resources remotely and continue to liaise with each other and with their academic staff.

Miers (2004) suggests that learning should, in part, be 'cooperative, collaborative, and conversational' and Wiki development certainly encourages these characteristics. One of the features of constructivist learning is the inclusion of reflective practice and wikis meet this need as they enable reflection to be experienced and shared collaboratively. Gibbs (1998), in his reflective cycle, suggests that the beliefs and feelings of other people are important in the reflective process and sharing their thoughts via a wiki and providing feedback on reflection by peers enables this reflective process to evolve transparently and in real time.

The idea that group working enhances individual learning is not new and methods of achieving this within an increasingly diverse academic structure and student population

have emerged with the development of new technology. Parker and Chao (2007) see a wiki as 'a web communication and collaboration tool that can be used to engage students in learning with others within a collaborative environment'. This collaborative element is easily enabled by wiki technology and especially well suited to those students undertaking placements who are unable to meet face-to-face.

Wikis are based on the idea that virtual connectivity is useful in enhancing knowledge and the learning ability of the individuals engaging with it (Alexander, 2006). As such, wikis have been described as part of a collection of social software. Their function is not, however, of sole benefit for the creators of the work; wikis can expand into a permanent source of information and knowledge for others. 'Wikipedia', the free on-line encyclopaedia, is one such well-known repository.

In 'pre-wiki' times, group on-line activity consisted of group members emailing a document back and forth between them and attempting to create a final edited version to reflect the group activity. Wiki functionality now enables group members to create and edit one document on a single web page (Duffy and Bruns, 2006).

Wiki technology encourages peer interaction and group work, and the sharing of knowledge and experience amongst the users is what makes it such an effective collaborative tool. Johnson and Johnson (1986) suggest that students working cooperatively achieve higher levels of thought and have enhanced memory of the learning activity compared with students who work individually. Chickering and Gamson (1987) support this idea and believe that it is the sharing of individual ideas and discussion of those of others that deepens understanding. One of the ultimate aims of higher education must be to foster a desire for lifelong learning in its students. Enabling students to work collaboratively, especially remotely, embeds some of the skills necessary for them to develop learning communities for the future, a vision shared by the Higher Education Authority (HEA, 2007).

Although there is a wealth of literature which supports wiki use, Wang and Turner (2005) suggest that there are challenges associated with this particular tool. For example content is modifiable by any user, yet there may be pages which the tutor intended to remain in their original form. To prevent users from overriding each other, page-locking mechanisms operate and simultaneous edits are not facilitated. Boulos, Maramba and Wheeler (2006) also suggest that plagiarism is a potential threat. The posting of previously copyrighted material without the authors consent is viewed as academic misconduct and constant vigilance is needed by the moderators and academics overseeing wiki creation by students. Similarly, constant editing of material may reduce the accuracy or truths associated with wiki postings (Boulos, Maramba and Wheeler, 2006)

### **Use of a Wiki to facilitate and assess learning in the Practice environment.**

Physiotherapy students at the University of Hertfordshire were assigned into groups of 4-8 in order to create a wiki on the topic infection control. Each group had a mix of placement specialities and students from different placement locations within it.

In terms of staff preparation for the wiki assessment, a member of the Practice Team received wiki training from the Learning and Teaching Institute at the University of Hertfordshire. This enabled staff to experience firsthand some of the challenges the students might face when engaging with wiki technology. The same member of the physiotherapy Practice Team was also responsible for the creation and organisation of training videos with the help of staff members across the School of Health and Emergency Professions. The videos featured actors playing the parts of physiotherapists, radiographers, patients and other health care personnel in various different clinical settings. The videos contained scenarios that demonstrated some areas of bad practice with regards to infection prevention, but also examples of good hand washing technique and use of alcohol gel. Reference was made to the National Institute for Clinical Excellence Guidelines for Infection Control (2003) when researching good clinical examples. The videos were located on the University's virtual learning environment, StudyNet, for remote access by students on placement.

To prepare the students for the use of the wiki in their assessment, the students attended a compulsory one hour lecture on infection prevention in May 2008, 3 months before the placement was due to start. This covered types of infection, the scale of the problem, how infections spread and the nature of infection prevention.

Following this was a one hour session in a technology suite at the University where theoretical and 'hands-on' wiki training was undertaken by all the students. A wiki on infection control was to be produced by each group. Each was to contain core information about infection and infection control, analysis of the videos relating to infection control, personal reflection pages considering wiki use and placement experiences, and group recommendations for improved practice within their practice placements. Each group was asked to create a title for their wiki and then consider ground rules that defined their group working etiquette without stifling creativity of thought. Ground rules around use of discussion sites, distribution of content and response times were common.

The students were asked to work together on their wiki, whilst they were on placement, to identify and explain the bad practice they had observed within the video and how it could contribute to the spread of infection. They also had to recommend how practice could be improved with reference to the evidence base. Each student was also required to highlight areas of good and bad practice from their specific placement and these comments then needed to be combined to produce a common source of information. The wikis needed to conclude with a list of recommendations made in response to the various placement experiences. Each group member was also asked to maintain a re-

flective page within the wiki where they would post personal notes, reflections on the placement that related to infection prevention and reflections on the experience of contributing to a wiki. These reflective pages were then to be printed off at the end of the assessment to be included in the students' professional development folders.

The importance of maintaining anonymity of the placement sites and personnel hosting student placement education was stressed to the students during the introductory workshop on wiki use and the need to adhere to the faculty confidentiality policy was highlighted. During the placement period the Practice Team monitored wiki use and were able to help with any technical issues which arose either by direct observation or by individual requests for help by email, telephone or StudyNet communication.

The wikis were designed to be closed environments. Therefore, groups could only see and edit their own wiki until the date chosen for them to 'go live' thereby helping to prevent potential plagiarism issues. After this the wikis were viewable by other students within the teaching group but not the general public.

When the students returned to the university after their placements in September 2008 they presented their wikis to the rest of their cohort and also submitted a short reflective evaluation of their personal experiences of using this particular technology. In addition, they completed a questionnaire about their wiki experiences from which common themes were identified to help inform staff of any future assessment developments which may be needed.

Programme tutors from the School and the Faculty Inter-professional Learning Co-ordinator were informed of the project and gave their approval. Practice educators were informed about the assessment by letter and contact details of the Practice Team were disseminated to them should further information have been needed.

### **Assessment outcome**

After the placement, groups had one final meeting in order to complete their work. The wikis were then shared in a 'Best Bits' showcase where all the students from the cohort met together to see all the final wikis. This was managed by a member of the Practice Team. All groups finished the set task on time and so by the submission date there were 10 completed wikis.

Each group wiki was assessed by the Lead Tutor for this piece of work and feedback was provided in the following areas:

- Wiki layout and appearance
- Introduction
- Video Analysis

- Placement reflections
- Referencing

Individual students were acknowledged where it was evident that they had contributed far more than other students within the groups. The wiki history enables contributions to be monitored so this was easy to see. All groups passed the wiki assessment.

A post assessment questionnaire was issued at the Showcase event and completed by 58 students. It contained 7 questions and was devised by the Practice team member responsible for leading the assessment activity. Information was requested which highlighted the amount of time the student had spent editing the wiki during the placement and when in the day this work was undertaken. Information about the barriers which challenged the student's contribution to the wiki, the positive learning experiences gained and suggestions for improving the learning experience were also requested.

### Results of the Questionnaire

Key findings of the questionnaire are reported below. Figures 1 and 2 show the level of engagement the students recorded in working on their wikis.

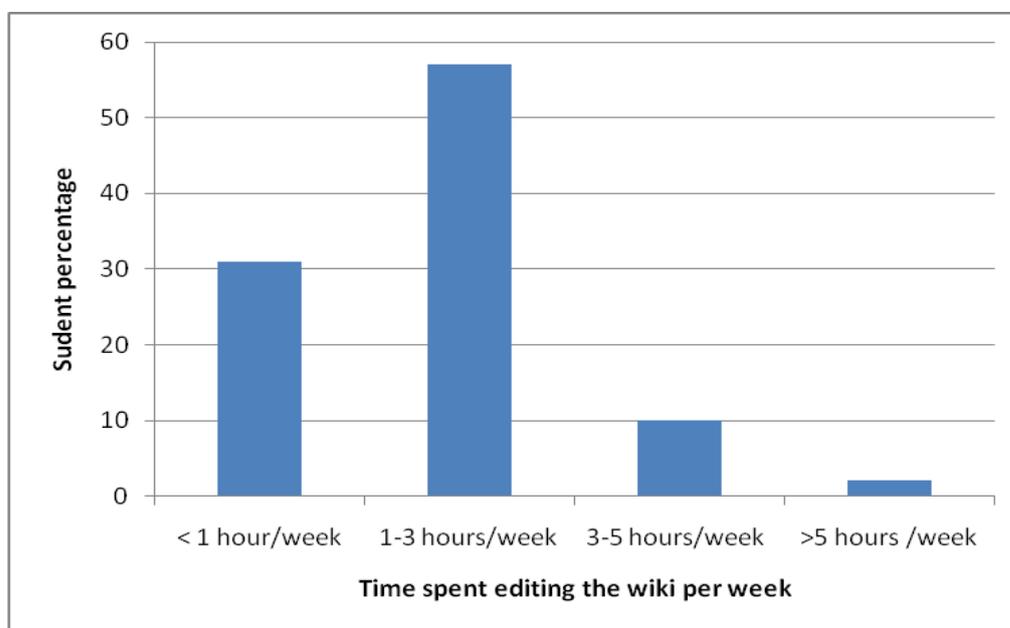


Figure 1. *Weekly time commitment to wiki work.*

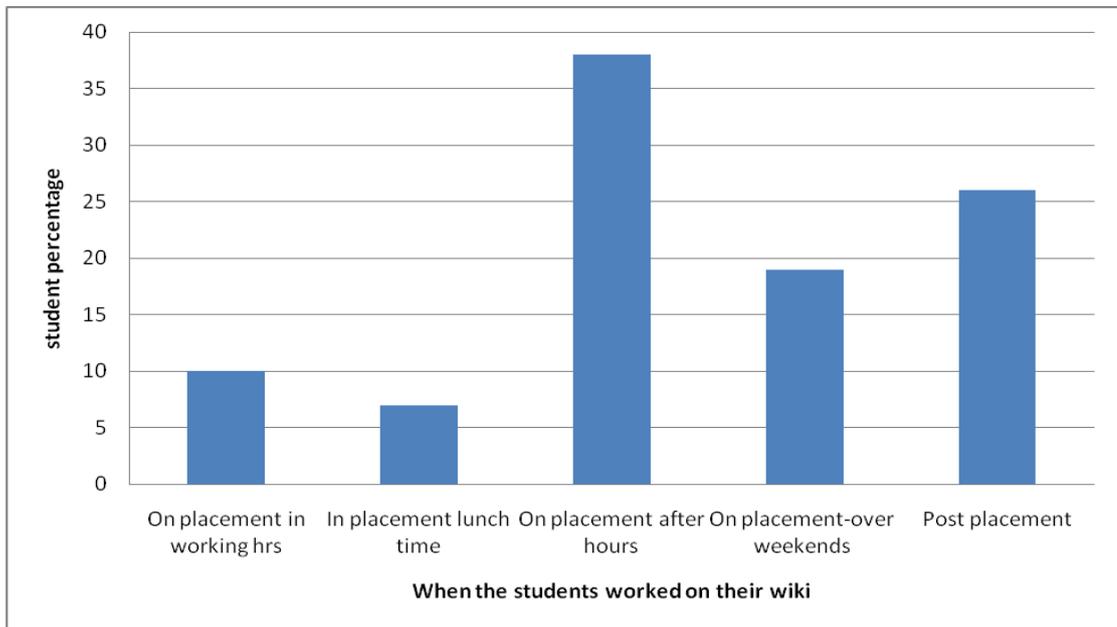


Figure 2. Daily time allocation for wiki work

Figures 3 and 4 show the barriers to wiki working and ways in which wiki engagement was felt to enhance learning while figures 5 to 7 summarise a variety of student opinions on the use of wikis in this context..

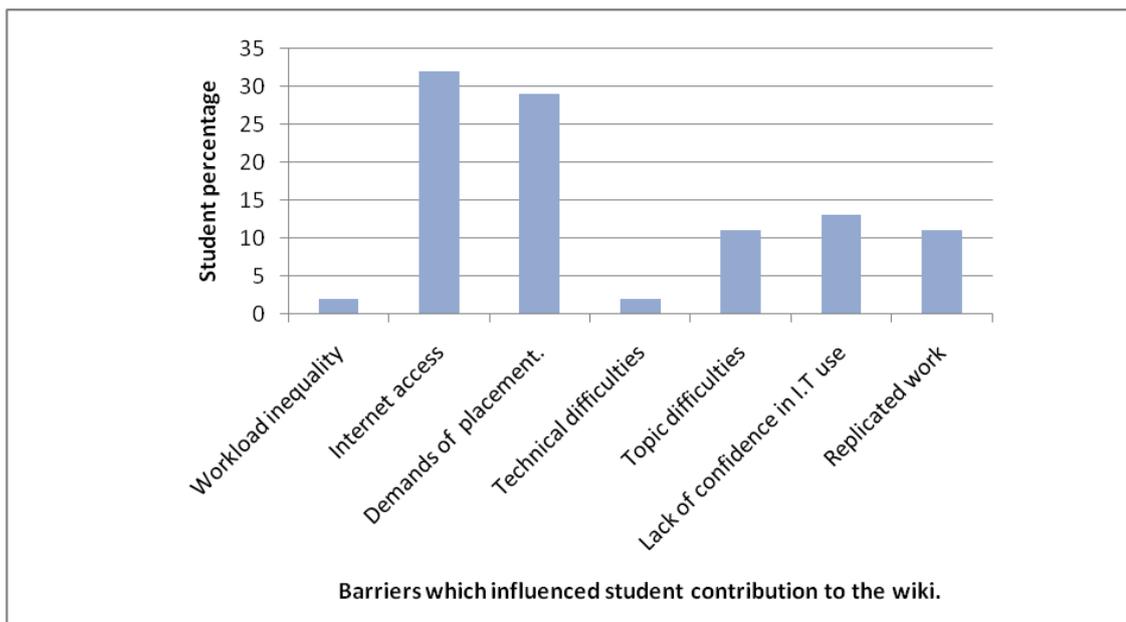


Figure 3. Perceived barriers which students reported as influencing their contribution to the wiki activity

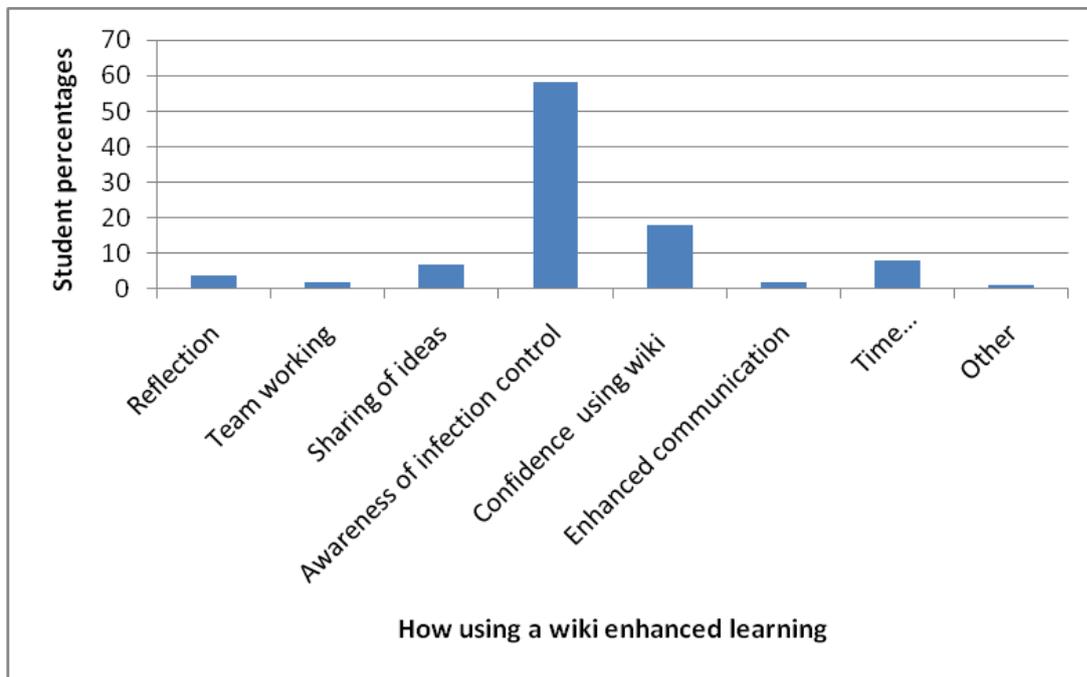


Figure 4. Student opinions on the educational benefits of wiki work.

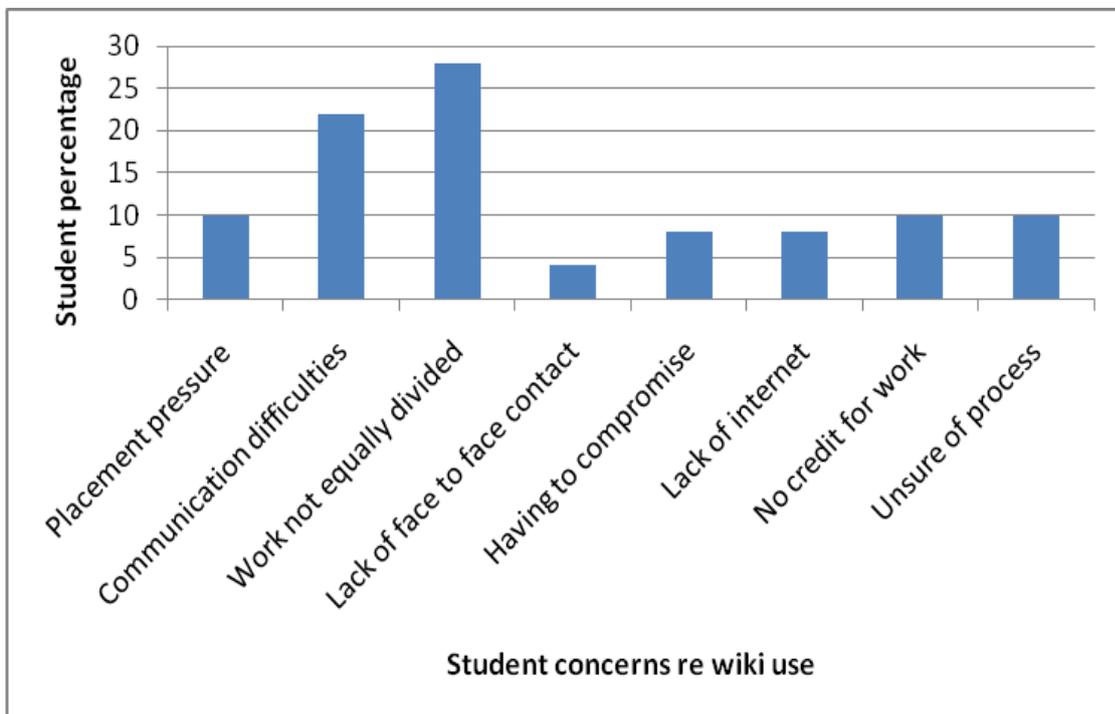


Figure 5. Student concerns about using wiki as a group working activity.

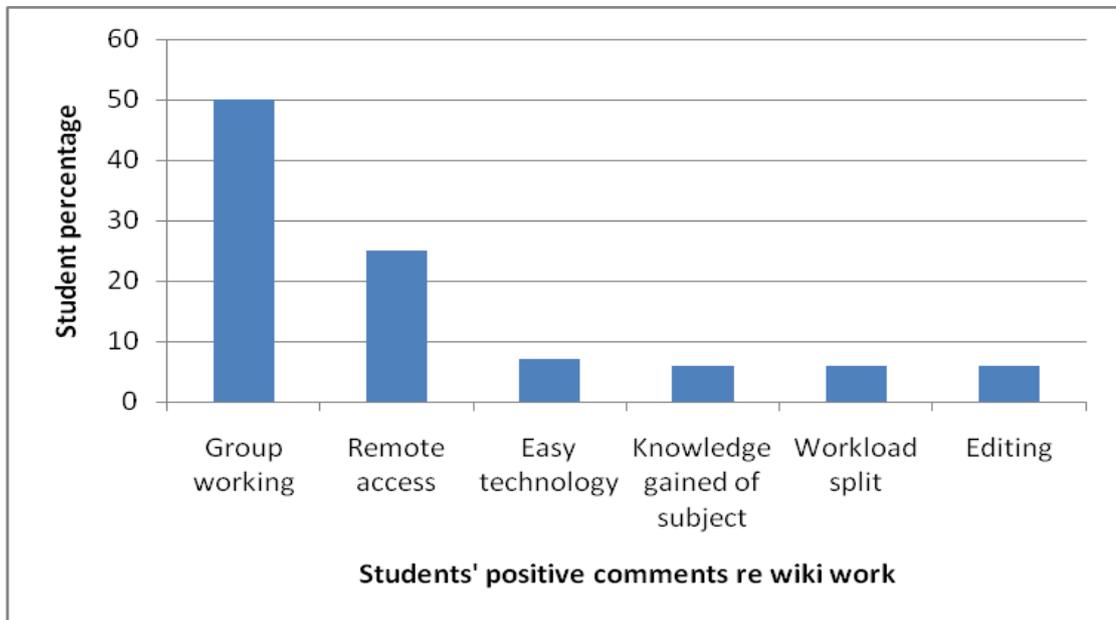


Figure 6. Students' positive opinions of using a wiki for group work activity.

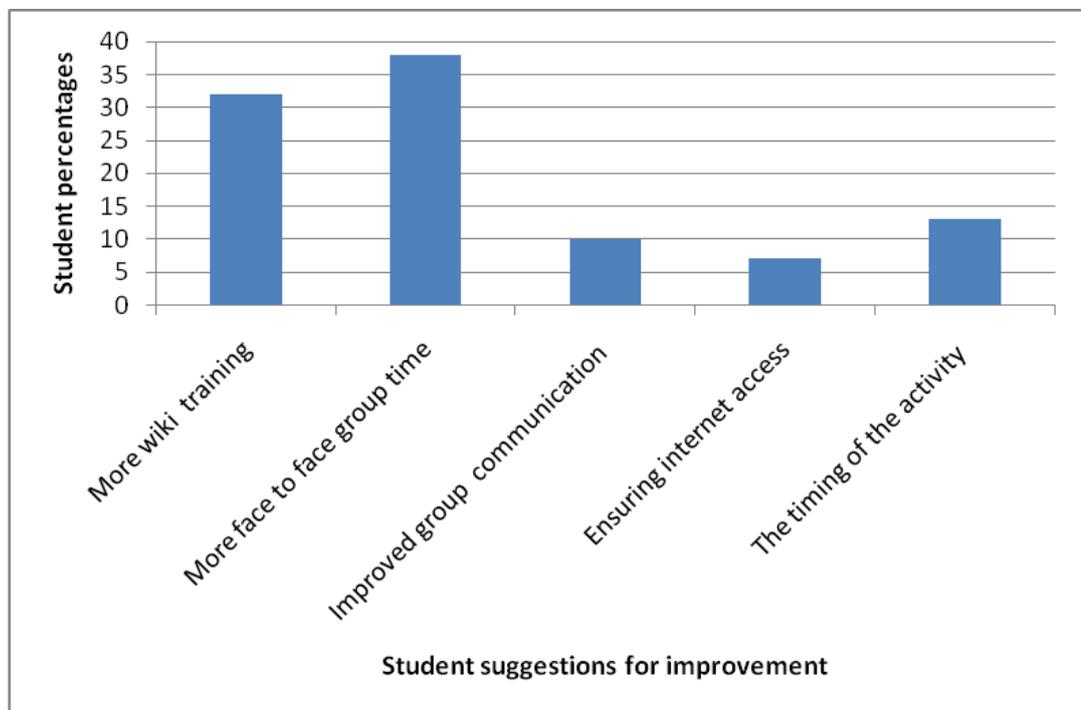


Figure 7. Student suggestions for improvement to the wiki activity

## Assessment evaluation

The aim of the assessment was for students to gain knowledge and understanding of infection prevention. This knowledge was demonstrated by all wiki groups in the final 'showcase' at the university. Students were also expected to develop in ways which would enable them to compare theory and practice, reflect on their own practice and that of others, write collaboratively and improve their generic information technology (IT) skills. The tutor was able to give detailed written feedback to each group that not only evaluated the final product, but the skills mentioned and the contribution and timeliness of edits by each contributor.

The wiki training received by the staff was sufficient for them to be able create and support this assessment activity and only 2% of students reported that technical difficulties were a barrier to wiki working (Figure 3). The university infrastructure was also able to support the production of the videos which were analysed by the students within the wiki.

The results of the questionnaire showed that 57% of students spent between 1-3 hours per week editing their wiki while they were on placement (Figure 1). This was deemed by the academic staff to be an appropriate amount of time for this activity. It was noted, however, that 31% of students spent less than one hour per week on their wiki editing (Figure 1) but due to the anonymous nature of the questionnaire it was not possible to recover their wiki contributions to look for skills levels in these particular students.

It was encouraging to see that 38% of students did most of their work whilst on placement but after hours (Figure 2). Physiotherapy students' placement education should be patient centred and time should not be spent on this type of assessment during the working day. It was concerning to see, however, that 26% of students did not engage at all in the wiki until their placement had finished (Figure 2). despite being asked to contribute throughout the 5 weeks of their placement. This may well explain the complaints that 28% of students made about inequality of workload within the groups (Figure 3).

The students reported that the main challenges to completing the assessment were those of reduced internet availability, and that the placement learning workload/ experience was too consuming to leave much time or energy to engage with the wiki development (Figure 3). It is acknowledged that those students working hard within a busy department may well be tired at the end of the day and, if coupled with a long journey home, it is understandable that this would affect wiki engagement. However, the nature of the remote working afforded by the wiki does enable those students to work at times which suit them better, over weekends for example. This is supported by 25% of the students suggesting that the best thing about using the wiki was the fact that it did enable remote working (Figure 6).

When looking at what could be improved for the next cohort of students it was interesting to see that 25% of the students felt that there should be more wiki training and some

of the comments suggested that there was minimal training (Figure 7). However, the presence of a PowerPoint presentation and associated supportive literature which was posted onto StudyNet after the training session suggests that this was not the case. It is perhaps due to the timing of this preparatory session that these comments were made. Due to constraints within the academic timetable it was only possible to run the training session 3 months before the students went on placement. It is proposed that the length of time between training and starting the wiki was far too long and many of the students had simply forgotten the information.

It was also interesting to see that, although this assessment focused on remote working, 30% of the students wanted more face-to-face group contact (Figure 7). Given that these were first year undergraduate students, this result may arise due to a lack of confidence in the technology or experience in distance group working activity.

The strengths of this assessment were that tutors could use real clinical issues to aid learning and students explored and discussed them in relevant ways. It enabled reflective practice and 58% of students felt they learned about infection control through the activity (Figure 4). New technology was introduced to the cohort and was used to meet the aims of the study. Boulos, Maramba and Wheeler (2006) suggest that in the absence of direct contact with an academic institution and with reduced social presence from peers wiki technology does enable learner support. This view is now supported by the academic staff involved in this assessment activity.

### **Recommendations for future use**

Ideally, students could engage in a formative wiki exercise to increase their confidence in the technology, introduce them to the complexities of remote group working and allow them time to develop strategies to help them during the summative assessment. However, Cubric (2007) suggests that the nature of formative work is such that students may well choose not to engage and therefore any benefit from this activity is lost. Boulos, Maramba and Wheeler (2006) suggest that re-educating students to participate within a distance learning environment may be necessary and support may be needed when they first try to communicate with each other using the new collaborative technologies.

In order for students to retain more of the information about the assessment activity and process, the timing of the pre placement lecture should be further considered and moved closer to the placement start date. This may help to decrease the perception for some students that there was a lack of information regarding the required work.

### **Conclusion**

In summary, specific placement learning about infection prevention issues in first year undergraduate physiotherapy students was enabled through the use of a group wiki as-

signment. The functionality of the wiki enabled academic staff to evaluate students' individual and group effort in the assignment and the wikis could subsequently be used as a source of information for other cohorts of students. Students were introduced to the concept of remote collaborative working and gained valuable experience in the use of IT which supports this web based activity. Future considerations include the introduction of a pre-placement information lecture nearer the commencement of the placement, enhanced student preparation regarding the nature of remote collaborative working and a formative piece of work which supports the final summative assignment.

### Acknowledgements

I would like to thank my colleague Scott Rickard for his encouragement and Jennefer Hodges for her constructive criticism during the preparation of this article.

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