How do Students' Choose and use Technology for Collaborative Learning?

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Abstract In this case study, 86 physiotherapy undergraduate students studying a third year module, chose a blend for a collaborative task. Data was focused in capturing the students' experience, and included interviews, questionnaires, and observation of both face-to-face and online activity.

The students held strong views on collaborative learning that included inclusivity, valuing difference, democracy and the importance of all group members participating fully in decision making. All groups used a similar range of technology. They highly valued the classroom technologies provided in a specialised collaborative classroom that included computers and data projectors that enabled a group to visualise their output and connect to their online group sites. They used the online environment (the University's managed learning environment) largely as a repository, 'offloading' some of the organisational components of collaboration and for knowledge acquisition that enabled them to use the face-to-face meetings for interaction and co-construction of knowledge. They did not use the asynchronous facilities for discussion, more for basic information giving, in common with other studies on undergraduate students. Students also wanted their education and social sites e.g. Facebook kept separate.

The process undertaken in completing the weekly tasks had clear stages which included individual and group components. The students' experience reflected aspects of both of the two major metaphors of learning 'acquisition' and 'participation'. Students organised their use of technology to enable them to maximise interaction when they met face-to-face. The implications for practice include, creating more dedicated high technology classrooms, introducing technologies in a structured way earlier in the course and tutors modelling their use.

Introduction

This paper will report on one aspect of a case study on a cohort of third year physiotherapy students undertaking weekly seminar presentations, focussing on the factors influencing student's choice of technology.

Background

When students are required to work collaboratively there needs to be some consensus within the group as to the means of communication for the students to work effectively. Through my reflective practice I noticed that in some groups the use or not of technology appeared to impact on group working. The diversity of the cohort includes students who had grown up with the use of technology

for learning and life in general, what are often described as 'Net generation learners' (Oblinger & Oblinger, 2005) or 'Digital natives' (Prensky, 2001), and other students who had very limited prior experience of technology use – digital immigrants. However the preference was not simply related to generation.

One of the aims of blended learning is to increase flexibility and improve the students' experience. To enhance this choice, given the diversity in the cohort, I enabled students to express a preference for technology for communication in their second year and organised students into groups for their third year based on this expressed preference. This I reasoned would enable students to interact by whatever communication means they chose either face-to-face or online.

Finally we were having developed a specialised collaborative learning room and I wanted to see how this fitted into the overall student experience.

The Module

Advancing Practice (AP) is in the third year of the Physiotherapy honours degree. The students are divided into four classes; each class is divided into four small groups of 5-6 students.

The Task

Each group has a task alternating weekly between a debate motion and a case presentation. To support this students have a tutorial on the Monday with the tutor and then they prepare for the presentation on the Thursday. The debates use an electronic voting system that enables rapid anonymous voting (Thornton & Groefsema, 2006).

The Technology Available

This study was undertaken in 2007/8. The students had used the institutional MLE, StudyNet for the previous two years. Before making their choice they had a workshop session demonstrating the technologies available in LG3 (a high technology classroom), and open source applications. Technology available changed dramatically during the study, at the beginning only a few students were on Facebook but by the end all of the students interviewed were on Facebook.

StudyNet has private group sites including discussion facilities, blogs, file sharer, project planner, tagging and wiki pages. The tutorial on the Monday is in our high technology collaborative learning room LG3. This has collaborative designed furniture and each collaborative area has a computer that is networked, a data-projector and an interactive white board. In addition in the LRC there are group rooms that have a collaborative table, computer and data projector.

This paper will focus on the students self-reported factors that influenced their technology use.

170

Methods of Inquiry

This study used a case study design with a mixed methodology. Data collection strategies used included interviews (26) three questionnaires and observation of both face-to-face and online activity. The study was in two stages. Stage 1 was when the students were in their second year; they filled in questionnaire 1 and were then allocated to groups based on their expressed choice of blend. Stage 2 was when the same students were in their third year, and included questionnaire 2 after the students had filled in the ground rules contract where they decide what blend they will use to complete the task, and then questionnaire 3 and interviews at the end of the period of study. Online trails were also used for analysis in stage 2. Analysis was carried out based on the deductive method.

Ethical approval for this study was gained from the Open University Human Participants and Materials Ethics committee (HPMEC).

Findings

The students were in their third year, having used StudyNet for the previous two years. They had a workshop session exploring the open source applications and the technologies available in LG3. They were put into groups based on an expressed individual choice at the end of year 2. The groups then agreed how they would work and prepared and gave weekly seminar presentations.

All groups used StudyNet, mainly the file sharer, texting on mobiles and discussion site for administrative process purposes, but face-to-face for co-construction of meaning. They used the classroom technologies extensively, and always met with a computer.

In making the choice of blend the following themes emerged:

- Past experience - use what you know works
- Efficiency - use technology to maximise efficiency
- Quality of interaction – need quality communication for co-construction
- Inclusivity – must include all of the groups participants
- Technology is compartmentalised

Past experience - use what you know works

The students wanted to use a blend of face-to-face and online technology; this reflected their experience in years 1 and 2.

"Most communication should occur regularly and in face to face meetings. Technology is a useful adjunct, but should not replace team meetings (i.e. both should compliment each other)." - Participant 44, Q1.

171

In the quantitative rating scale data 'previous experience' (Figure 1) rated highly as influencing their choice.

Key: 1 = Influenced Choice to 5 = Didn't Influence Choice
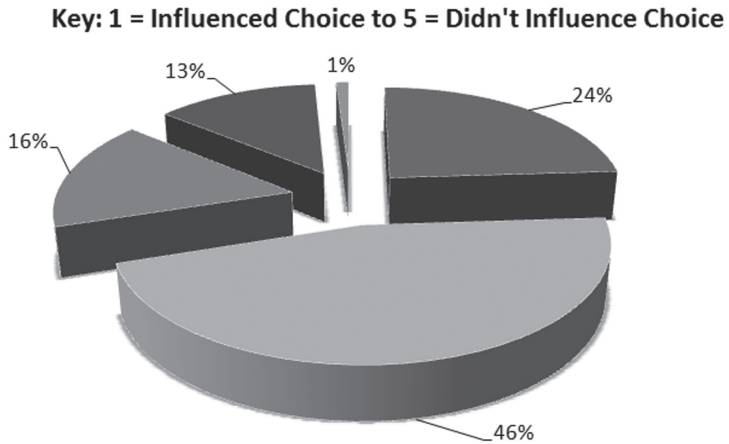

Figure 1: Pie chart to show responses to 'Previous experience'

The students thought that they would use a range of technologies and were open to the idea of new technologies as expressed in their group sheet and questionnaire 1, see Figure 2.
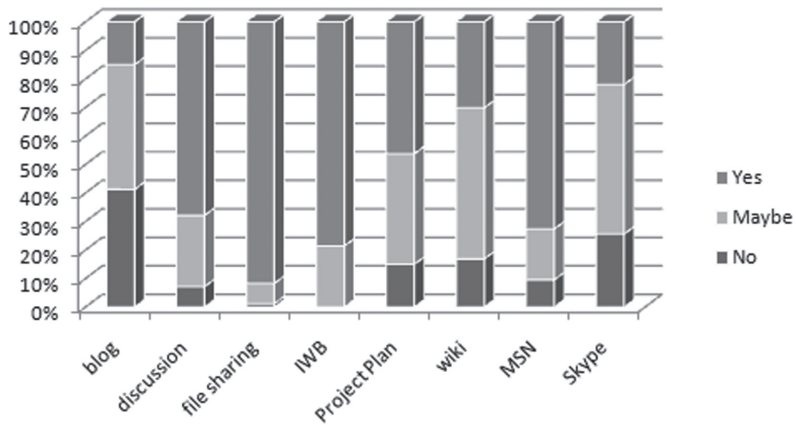

Figure 2: Technologies the students said that they wanted to use in questionnaire 1

Key: Technologies they wanted to use (yes), maybe wanted to use (maybe) and didn't want to use (no) these relate to individual responses.

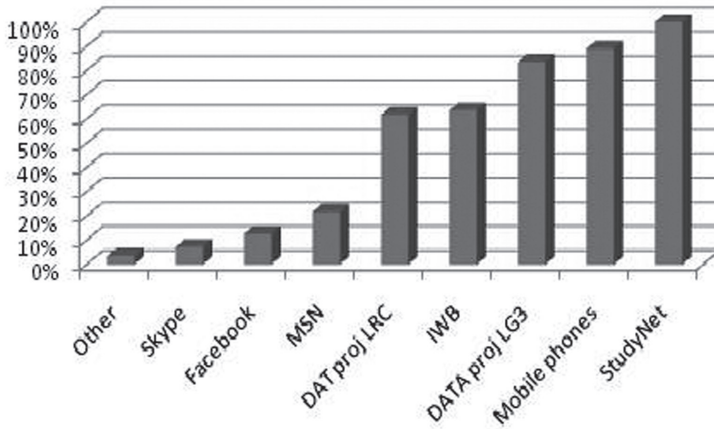However, when it came to actual use the students tended to use what they had past experience of see Figure 3.

Figure 3: Technologies and applications used by the students – Questionnaire 3

"How I have *worked before. Working face to face but I don't mind working sometimes with technology" – Participant 69, Q1*
*"It's not that I don't like using technology I just kind of stick to what I know." Participant 38, Inter*view

Students had therefore not used all of the facilities on StudyNet that they thought they would or used open source such as Facebook or Skype to the extent that they had indicated in questionnaire 1.

Use Technology to Maximise Efficiency

Time was a major issue for the students, and expressed in all three questionnaires.

"The quickest, most effective method" – Participant 60, Q1.

"Time in Uni and how late lectures go on. Time outside of Uni with other module commitments. Time basically" – Participant 1, Q2

Finally at interview, time still was recognised as a constraining issue.

"I think time was a big factor the blend I think, in the circumstances and the time pressure that we had". – Participant 25, Interview

They used the file sharer on StudyNet extensively. This meant that they could see each other's work so they knew what they needed to discuss which

maximised the efficiency of their face-to-face meetings. All groups posted up their presentations, and additional resources, three groups used tagging.

"So it was usually dumping information on StudyNet and if people wanted to access it they could." – Participant 22, Interview.

They saw StudyNet as a repository, not as a means of communication.

"Whereas StudyNet I find is a brilliant resource, I see it more as a resource rather than a method of communication." – Participant 80, Interview.

When meeting students said it was automatic to put the computer on, by using a computer they could link online and face-to-face and upload immediately onto the group site. Students used the classroom technologies in LG3 for 'higher level' functions. Using the interactive white board and computers connected directly to the internet enabled them to capture their discussions real time and search the internet. This facility was highly valued by the students, who were very enthusiastic about LG3 at interview.

"The whiteboard in the .….we had four, five screens I think around the room, which I think was useful. I wish we could always have a room like that" – Participant 40, Interview.

Observation data of the students' activities in LG3 confirmed that the students were valuing the room; I had to be very 'encouraging' to get students to leave the room at the end of the session. When students met outside of the tutorial they tried to get a group room in the LRC where they have a data projector and computer, 33 (60%) of students in Q3 reported using group rooms.

Quality of Interaction

Although efficiency was a factor it did not override the importance students placed on the quality of interaction. From the first questionnaire right through to every student who was interviewed the students stated that to collaborate (co-construction) face-to-face was essential.

"I think I definitely learn more from face to face than virtual means I'm more comfortable in that setting .. we did meet to discuss issues and somebody said something and someone else disagreed it was useful to have a mini debate because then you can really get to the bottom of the issue and resolve any potential conflict so I definitely…for me I found I learned better in a face to face setting." – Participant 63, Interview.

All groups had face-to-face meetings in addition to the tutorial, some groups even met several times a day, and on almost every week day. The need to meet to face–to-face was mentioned by students in every interview. The students stated that they found the face-to-face communication enabled them to discuss more

openly and fully, and provided a richness that they valued for their learning.

"I think face to face I just prefer it because you can just see what people are thinking more, you can just get a better feeling for what they want to do and they don't want to do and I just think they're more like likely to say what they want in that environment." – Participant 80, Interview.

The students justified their choice of face-to-face by expressing concerns over text based communication.

"You can't interact properly over a computer, so I think face-to-face just enables decisions to be made quicker and it just bonds that group in terms of presenting." – Participant 8, Interview.

The students would only attempt to communicate online if students had commitments that made it impossible to meet face-to-face, for example childcare or sport. Although even then they would plan around this. Students commented that as they were in most days at UH there was no need for online communication.

"face-to-face during the day, technology at night where necessary". – Participant 3, Q1.

The emphasis on - "*where necessary*", reflects that most of the time it was not necessary as they were on campus and so met face-to-face.

Inclusivity – Must Include all Group Participants

The students expressed at interview that everyone must be involved in decision making, and changing work. If one student from the group didn't have a technology then they wouldn't use it. This should have been avoiding by putting the students in groups based on their expressed choice but in some groups this didn't seem to be the case. As expressed in questionnaire 2, to the questions what influenced your choice?

"What everyone has access to." – Participant 58, Q2

This was also mentioned at interview:

"No we didn't use MSN because not everyone used it straight off and not everyone had the Internet where they were living so that was a no go." – Participant 42, interview.

They valued the technological applications that gave everyone equal access to information such as the data projector in LG3 and LRC group rooms where they could all see the output, and the StudyNet file sharer where everyone could see all of the information.

"StudyNet there ... was no possibility of that [anyone not knowing]. Everybody had access to the same material" – Participant 27, Interview

The students found using a data projector preferable to crowding around one laptop; as if they had to do the latter it inevitably it meant that they didn't all have equal access and ability to participate.

"slides on the large screen as we did in LG3 so…I thought that was really helpful again everyone looking at the slide, everyone can see it and can just comment on it straight away instead of like peeking through." – Participant 40, Interview

"It was a bit difficult sometimes because congregating around one computer in the libraries always puts somebody on the outside and it's quite difficult for them to always get their opinions …" – Participant 27, Interview.

Participant 11 eloquently summarised the difference between the facilities.

"The group room is much more accommodating for a group but then when you're out in the LRC it is very individual …the computers are set up so you work individually so that's a problem." – Participant 11, Interview.

Technology is Compartmentalised

The students had clear boundaries between the educational technology and the social open source applications e.g. Facebook. They valued StudyNet and expressed that this was their educational technology, it was used by all of them regularly and reliably.

"I mean StudyNet was in use twenty four seven for it. If we didn't have StudyNet I don't really know what we would have done … StudyNet was fantastic. Use it, go on it, 'I don't know how' many times a day." – Participant 21, Interview.

Although on the quantitative data 10% of students said they had used Facebook and 20% said, this included one group who had set up a Facebook group but never used it. The interview responses suggested that the use of open source was minimal. All of the students interviewed expressed a desire to keep education and social technology separate.

"Yeah. Kept it separate. It was nicer to have kind of keep work separate from kind of social life …" – Participant 15, Interview.

Discussion

Past experience will influence engagement (Sfard, 1998), so it is not surprising that the students based their choice on their previous two years at UH. The

students were studying a professional course and so saw tutors and clinical educators as role models, and have been socialised to learn in specific ways. This cohort's past experience of a learning discourse on physiotherapy has been largely as a face-to-face activity, the students were adopting the ways-of-behaving (Handley et al., 2006) that their lecturers had used. Whilst the discussion sites have been used in the programme, the majority of posts have been questions posed by students often answered by tutors, and focused around procedural and administrative aspects (Alltree & Thornton, 2004; Thornton & Alltree 2002). In other studies (Davies et al., 2005; Hughes & Daykin, 2002) some students didn't see using technology as a requirement for their professional role. This was not expressed by the students in my study, and perhaps reflects the changing technological environment.

But the profession is changing with recent developments by the Chartered Society of Physiotherapy that have included the development of online interactive discussion forums called ICSP (www.interactivecsp.org.uk), and an electronic portfolio for continuing professional development. Subsequent cohorts have used Web 2.0 technologies with the use of wiki's and podcasts being introduced early in year 1 (Anders & Thornton, 2008) and then used for an online collaboration while the students are on placement at the end of year 1 (Rickard, 2009).

The time pressure reflects a course that has 1000 clinical practice hours; this didn't lend itself to asynchronous communication via discussion sites. The importance of the "*immediacy*" of response (Conole & Dyke, 2004: 120) led to the students using mobile texts e.g. "where is the meeting?", rather than StudyNet. In a study by Peacock and Hooper (2007), time was also identified as a theme, students identified that to use the asynchronous discussion site required them to log on, read posts, write a post and the whole interaction was time consuming, the undergraduate students felt that this made online discussions "*inappropriate*" (226).

The students used face-to-face communication for their co-construction of knowledge. It is recognised that the face-to-face environment provides high social presence (Garrison & Vaughan, 2008). Ausburn (2004) found that students experienced in a blended environment rated discussion online in the bottom rank of features that they wanted provided on an MLE, they suggest students do not see the online as fulfilling this need that is met by face-to-face. The results are congruent with a study by Curran et al. (2008). Curran et al.'s (2008) survey of 520 undergraduate health students, who had much greater satisfaction with face-to-face, case based learning than with asynchronous online discussions.

The students used the file sharer on StudyNet as a repository. This "off loads" (Suthers, 2006) some of the activities of learning onto the technology as the students could see what needed to be discussed face-to-face. However conversely this could be interpreted as the students being engaged more in gathering information than in engaging in active learning. In Peacock and Hooper's (2008) study of physiotherapy students the undergraduate students

use of an MLE was focused on gathering and storing of information rather than engaging with it. The key difference for the students in my study is that the students had engaged to apply the information to practice case.

The students valued LG3, it would make "*a big difference*" if they had such learning spaces always available to them. They valued using technology to link the classroom and online experiences, in an efficient manner. This fits with the transformative approach of blended learning including the classroom not simply adding online components but linking the physical and online "*in a seamless manner*" (Garrison & Vaughan, 2008: 27), such that the boundaries between physical and virtual become blurred (Armstrong & Franklin, 2008).

Access and availability of technology was not mentioned by many students during the interviews. That this didn't seem to be a major issue reflects possibly the organisation of groups, putting students who wanted to use a technology together, and the increasing availability of technology (Garrison & Vaughan, 2008) e.g. Wi-Fi has been introduced on campus.

Although by StudyNet has excellent facilities and the students were positive of its use, they don't have access to synchronous group technology that is not text based. Hrastinski (2008) suggests that synchronous provides a better environment for "*personal participation*" and for "*convergence on meaning*" (52). A few students did use Skype to some extent. The importance of the social presence provided by the face-to-face communication is well recognised and has been shown that high social presence is most significantly associated with group cohesion (Garrison & Vaughan, 2008) which the students valued.

All of the students interviewed had used a social networking site, the most common being Facebook (www.facebook), others mentioned were MySpace and Beebo, but wanted a clear split between their educational and social technology online. Some students thought these sites were too distracting for work, a finding also found in a review (Armstrong & Franklin, 2008). The demos report "their space" (Green & Hannon, 2007) found that some students saw lecturers going onto social networking sites as an invasion of their space whereas others welcomed it. Their desire for this distinction may be discipline specific and a reflection of their professional identity.

Conclusion

This study suggests that to further enhance students experience on this module there is a need to develop more high technology classrooms, to introduce online technologies in a structured way earlier in the course and for tutors to model their use. The use of voice based synchronous technologies needs exploring within this discipline. Tutors should not expect students to use social networking sites for study.

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179

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Biography
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