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Exploring collaborative learning: Experiences of a web 2.0 tool within a pre-service teacher education environment

Jackie Cowan
College of Education,
University of Canterbury, New Zealand
Email: jackie.cowan@canterbury.ac.nz

Chris Astall
College of Education,
University of Canterbury, New Zealand
Email: chris.astall@canterbury.ac.nz

Abstract

The move to a Moodle Learning Management System (LMS) provided an opportunity for course instructors to use web 2.0 tools to create a web-enhanced learning community. This paper explores how a group of 18 first and second year pre-service primary education teachers adapted to using wiki as part of their online course work. Data was gathered using pre and post surveys that were composed of a combination of Likert scales and open-ended questions. The students' contributions to the wiki and forums were also analysed. This study reports that although students were positive about the collaborative potential of wiki, several factors appeared to create barriers for students as they moved towards constructivist learning practices. Each of these factors – *Personal Feelings*, *Time* and *Purpose* – are discussed in terms of the implication for online course development. Results highlighted the need to provide students with a learning process that guides them towards effective collaborative work and contributes to the development of risk-taking attitudes and behaviours when writing in a public forum. The need to scaffold the development of both technological and collaborative skills through progressive wiki tasks was evident in aiming to meet the social, emotional and academic needs of students within a virtual learning environment.

Extrinsic motivation, in the form of assessments that credit participation and acknowledge the development of students' technological skills, is more likely to encourage students to embrace the use of web 2.0 tools and respond more positively to the use of social constructivist pedagogies. The findings of this study are discussed in response to the learning needs of students in the twenty-first century and the shift towards the collaborative nature of knowledge building.

Introduction

In her description of the knowledge society and needs of twenty-first century learners, Jane Gilbert (2007) emphasised the importance of developing educational models that allow "flexibility, multiplicity and new ideas about ability" (p. 7). Technological advances evident in education of the twenty-first century learner, such as the increasing use of web 2.0 tools that facilitate collaborative learning and the growing interest in developing virtual learning communities (Elgort, Smith & Toland, 2008; Gilbert, 2005) has led to an acknowledgement of the need for both a philosophical and pedagogical paradigm shift associated with teaching and learning in an online environment (Gibson, 2008; Kumar, 2008; LaPointe & Reisetter, 2008). The shift towards collaborative learning communities ensures that all students continue to be engaged in learning in relevant and meaningful ways – not just those who recognise the value of the online community (Gilbert, 2007; LaPointe & Reisetter, 2008). The move to the collaborative community model is described by Chatti, Dahl, Jarke and Vossen (2008) as a shift in emphasis from *technology-driven* to *people-driven* models of online teaching and learning. Effective practice in *people-driven* virtual learning is supported by the development of pedagogies that encompass the formation of collaborative learning communities (Correia & Davis, 2008; Solomon & Schrum, 2007).

Learning communities

In developing effective learning communities it is important to provide students with a sense of connection and belonging that develops over a period of time, with a group of participants who are committed to pursuing a common goal (Conrad, 2005; Correia &

Davis, 2008; Osterman, 2000). Whilst the essence of connection and belonging underpins both face-to-face and virtual learning communities, Lapointe and Reisetter (2008) remind us that, in an online learning environment, teachers and learners (and to some degree learners and learners) begin their interactions in different learning spaces to those involved in face-to-face interaction. While convenience and accessibility are recognised as advantages of virtual course delivery, the potential lack of rich contextualised cues from physical interaction, feelings of separation and isolation from both classmates and lectures, and the technological difficulties that may occur are all factors that may disadvantage participants within virtual learning communities (Jones & Khan, 2009; McInnerney & Roberts, 2004). It may be necessary to consider how to support participants, both socially and academically, in these virtual learning communities. This support may be a component of course planning, delivery (McInnerney & Roberts, 2004) or facilitator support and guidance (Schroeder, 2009).

Collaborative learning

In acknowledging that learning is essentially about people and occurs within a social context, Chatti et al. (2008) advocate for a shift in thinking from *eLearning* to *weLearning* suggesting the move towards a collaboration culture could foster knowledge networking and community building. The idea of the people-driven *weLearning* model promotes a shared, or blended, approach to teaching and learning. Shea (2006) suggests virtual learning communities need to reflect this changing nature of learning and should therefore accommodate the move towards social constructivist approaches to teaching and learning. However, this could present a significant philosophical shift in thinking for many teachers and some may struggle to make the pedagogical move necessary in supporting a socially constructivist learning environment.

Although a social constructivist approach provides a suitable foundation on which to develop effective virtual learning communities, questions remain about the individual's role within the collaborative community and the degree to which the processes involved in virtual learning are clarified (Chatti et al., 2008; LaPointe & Reisetter, 2008). When

individuals are required to construct knowledge through interaction via virtual learning communities, then the learning environments are best to be designed in a way that supports this kind of learning (Shea, 2006). To encourage effective participation in virtual learning communities, it is important to model a social constructivist discourse, which may include a number of explicit strategies that enhance collaboration and cooperation (Chatti et al., 2008; LaPointe & Reisetter, 2008; Schroeder, 2009).

One strategy that can be used to enhance collaboration in online environments is to use web 2.0 tools designed for this purpose. One such tool is the wiki. Wiki has been described as "a place where information can be dynamically collected, verified and updated by a large number of individuals" (Elgort et al., 2008, p. 195). Foley and Chang (2008) believe the strength in wiki is that it can be used to simply deposit ideas, opinions and knowledge through to more advanced *knowledge building* and *collaboration.* This is consistent with the social constructivist approach and is one important component of a virtual learning community. Liu, Kalk, Kinney, Orr, & Reid (2009) identify the following benefits of using a wiki:

- It empowers the creation of knowledge
- It facilitates peer to peer learning
- It enables collaborative authoring.

Context and research question

Davis (2010) recognises that because of the "permeation of ICTs in society" (p. 4) it is likely that the use of technologies in pre-service education will continue to grow. However, the application of these tools in tertiary educational learning environments is still emerging as teacher educators prepare pre-service teachers who are capable of meeting the educational technological needs of their students (Teras, Myllylä & Nevalainen, 2010; Williams, Foulger & Wetzel, 2009). The move to a new Learning Management System (Moodle LMS) has prompted our university to explore ways of developing virtual learning communities and social constructivist pedagogies.

However, using web 2.0 technological features that are available within the Moodle LMS is a new experience for both students and course instructors. This pilot research project seeks to assess the students' and instructors' perceptions of the implementation of technologies that may facilitate collaborative learning focusing on where the use of web 2.0 technologies within the Moodle LMS system promotes (or does not promote) a collaborative learning environment. In particular the intention of the research was to explore students' current experiences and perceived confidence and competence in using a range of ICT technologies, as well as their expectations and perceptions of working in an online collaborative environment. Authors intended to explore the idea that working within a shared space, such as a wiki, may encourage the students to develop higher-order cognitive responses to the tasks. This information will help inform future course design as instructors move towards integrating on-campus and at-a-distance student learning.

Methodology

Participants

First and second year on-campus students enrolled in two courses towards a Bachelor of Teaching and Learning degree in primary education were invited to take part in the study. Ten first year students (2 male, 8 female) taking a Health Education course (HE1) and eight second year students (2 male, 6 female) taking a Physical Education course (PE2) volunteered to take part in this project. Ages in both groups of students ranged from 17–40 years. The HE1 group consisted mainly of 17–20 year olds (60% of the group) whereas the majority (60%) of the PE2 group were over 36 years of age.

Data collection

Prior to the start of each course, the volunteers completed a pre-survey. The initial online student questionnaire was designed to explore the learners' current experiences and perceived confidence and competence in using a range of ICT technologies and was based on the survey used by Elgort et al. (2008) in a previous study. Questions were

also asked to gather students' expectations and perceptions of working in an online environment using collaborative web 2.0 tools, such as a wiki and forum. The survey consisted of a combination of Likert scales and open-ended questions. Students' demographic information was also collected.

At the conclusion of the 10 week courses (HE1 & PE2), students completed a post-survey that explored the factors and attitudes associated with their interaction with the wiki and forum. This survey was also based on the survey used by Elgort et al. (2008). The wikis and forums for each group were examined, and information about the number and content of forum posts, wiki history and wiki content recorded.

Throughout the duration of the course the instructors, who were also the researchers, made anecdotal notes based on their facilitation of the wiki tasks and forums. These notes have also been used as data in this research.

Developing the wiki task

Each group of students was asked to develop a response to a question based around their course (either HE1 or PE2). Groups were provided with their own wiki and an associated forum to respond to the question. The forum provided an opportunity for the learners within a group to discuss and share ideas, based around the question, prior to uploading their work onto the wiki for further editing and development. The forum also gave students the opportunity to discuss other issues, such as problems with the technology. Groups were given three weeks to respond to the first question before another question, wiki and associated forum was posted. The initial question posed to participants from both courses was similar and designed to be open-ended allowing students to gain experience and confidence to write to the wiki, whereas the second question was more focused on encouraging collaborative writing and higher level thinking.

Wiki groupings

Initially the HE1 students were randomly divided into two even groups. The eight PE2 students were also randomly divided into two equal groups. After the first wiki task it became clear that not all the group members were participating and we, the authors, believed that there was a high probability that the second wiki would not be developed because there were too few participants. It was then decided that the two smaller groups would be merged into one larger group for each of the courses (HE1 and PE2).

Wiki writing

To enable them to develop the skills to work within the wiki, both groups were given two wiki tasks. The first wiki task required students to make a group response to the question 'Why is Health or Physical Education important in primary schools?' Students were not required to edit other group members' responses to the question as the purpose of this task was to encourage students to engage with the wiki technology. The second wiki task was designed to move students towards collaborative authoring and they were asked to create a one page set of guidelines relating to sharing good Health or PE practise in schools. This structured framework is designed to help students move towards collaborative writing (Schroeder, 2009).

To support the students whilst they worked in a collaborative environment, they were also provided with guidelines that explained wiki etiquette and conventions associated with working successfully in groups (Schroeder, 2009). The wiki used in Moodle LMS did not have a comments or discussion thread feature associated within it. Therefore a separate forum was provided for each wiki task where students were encouraged to discuss ideas prior to entering content on the wikis. On completion of the tasks, students' postings to the forum were analysed and categorised into themes.

To encourage student autonomy, responsibility and collaboration whilst they were writing to the wiki, instructors from each course (HE1 and PE2) interacted with the students using a facilitator approach as advocated by Kennard (2007). This approach

was chosen as it could provide support for students and encourage them to develop, as Kennard suggests, "a community of their own making" (p. 3567) without feeling overpowered by instructor interaction.

Results and discussion

Computer experience

Prior to the start of both the Education courses, over half (67%) of the students surveyed agreed or strongly agreed (using a five point Likert scale) when asked if they found computers easy to use and about half (55%) of students agreed or strongly agreed that their level of computer literacy was high. Students were more comfortable using familiar computer tools such as word processing, using the Internet and current university LMS (StudentNet) (see Table 1). However, fewer students had experienced social Web 2.0 tools such as blogs and wikis.

Table 1: Student use of a range of computer tools

	Experience Mean (SD)	**Confidence Mean (SD)**
Email	3.6 (0.7)	3.5 (0.7)
Wordprocessing	3.5 (0.6)	3.5 (0.7)
Internet	3.5 (0.8)	3.4 (0.8)
LMS (StudentNet)	3.2 (0.6)	3.4 (0.7)
LMS (Moodle)	2.4 (0.8)	2.7 (0.8)
YouTube	2.7 (0.9)	2.8 (1.0)
Bebo	1.8 (1.1)	2.3 (1.3)
Facebook	2.9 (1.2)	2.8 (1.2)
Blog	1.5 (0.5)	1.9 (1.0)
Wiki	1.5 (0.5)	1.8 (0.8)
Twitter	1.2 (0.5)	1.5 (0.9)

n.b. Students were asked to rate their experience and confidence using a Likert scale (where 1 = none and 4 = heaps)

Working in an online collaborative environment

Two predominant themes emerged when students were asked what they were looking forward to when working in an online collaborative environment: Developing *technological skills* and *connectivity*. In the first theme, developing technological skills, the opportunity for students to learn and develop new skills relevant to their own personal learning was a key feature. As one student stated, "… learning about new tools that are available and looking at how I can use them to make life easier socially, academically and professionally". Many students were still very wary of working in a collaborative environment, especially as they had little previous experience, as shown in Table 1. This was exemplified by another student, "… sure I'll make mistakes, but then I want to experience the workings of this new tool. Besides, I consider the computer my magic box. At a click something pops up … I'm at the crawling stage but that's OK, everyone needs to start somewhere."

Students also considered the possible outcomes of using this style of learning and use of wiki within their own classrooms to support their pupils. Therefore, these students were considering engaging themselves not only as learners but as teachers. As one student explained, "I am looking forward to learning new ways of enhancing students' learning that I may be able to use in my classroom one day."

The second theme identified within the data was that of connectivity. The ability to communicate quickly and remotely with colleagues was identified by a number of students, for example, "I can use them [working with Web 2.0 tools] to make life easier socially, academically and professionally and working with new people with different perspectives" and "… Online is great at least the answers come pretty much straight away instead of waiting."

Another key element acknowledged was not having the issue of trying to find time to meet and having the opportunity to interact with peers from outside their social groups. As one student stated, "[I am looking forward to] … different ideas from people that I cannot or do not get the chance to discuss issues with around the Uni."

The concerns students had about working in an online environment included issues with personal confidence, awareness of the audience, inclusivity, the security of the site, the need for respect of individual ideas and the concern that they may be judged in a negative way through contributions. As one student said, "If I submit a comment I would expect that others would chat back to me if they did not agree rather than discuss it with others outside of the forum." These concerns reflect the little experience students have of using collaborative learning tools and the importance of developing clear group guidelines to ensure that the students had a greater sense of comfort when working within the wiki or associated forum.

Wiki use

When specifically asked about how they would feel contributing to, manipulating and editing a wiki, there were twice as many responses that identified positive emotions (11 responses) compared to a negative or neutral response. Students identified the value of collaboration, inclusion and teamwork as possible key outcomes of wiki writing. However, their underlying concern was having their responses scrutinised within a public arena. As one student explained, "Bit nervous about putting my stuff out there. I like to take time to mull things over before putting anything down in print. [I am] unsure how I will feel if someone changes stuff I have written – will have to wait and see." And another, "I am excited to be involved in this wiki. I think that when I contribute I will be anxious about how others feel about my comments. I need to make sure that I am clear in my comments especially when I am offering up a different opinion." Students were more apprehensive about the process of developing the wiki and initiating the writing. They were also concerned about manipulating and editing one another's ideas, which they believed could lead to tension within the group.

Pre-service teachers' experience of using a wiki

The role of the forum

Students were asked to contribute to two wikis throughout the duration of each of the courses. As the wiki used in the Moodle LMS did not have a threaded discussion or comments facility, the instructors felt it necessary to provide the students with an opportunity to discuss or make comments on their contributions. These provided students with a place to discuss their responses and ideas prior to publishing to the wiki. The facilitators monitored the forum and as the conversations grew around the wiki task, they asked the students to transfer their ideas to the wiki for further editing and development. The content of the postings was examined and simply categorised into either comments relating to the technology (issues related to using forum, wiki or editing, etc.) or subject content (related to the question or task posed). Student conversations, or responses to a posting (referred to as a thread) were also identified.

Students only made postings to the forum in relation to the first wiki task, with no forum posts made for wiki 2 by either group. All except one student made at least one posting to the forum for the first wiki. Students in HE1 course made twice as many forum posts compared to the PE2 course (26 posts compared to 12 posts), and this group was the only one to post regarding technical issues (35% of total number of postings). However, this was because of instructor inexperience with using the Moodle LMS environment resulting in all the initial forum posts being lost and then later recovered.

The discussions in the forum postings led to a number of conversation threads for both HE1 (9 threads) and PE2 (4 threads). The threaded conversations contained detailed and thoughtful responses to the questions and were usually between 3 or 4 students. An example of a typical thread is provided (Figure 1).

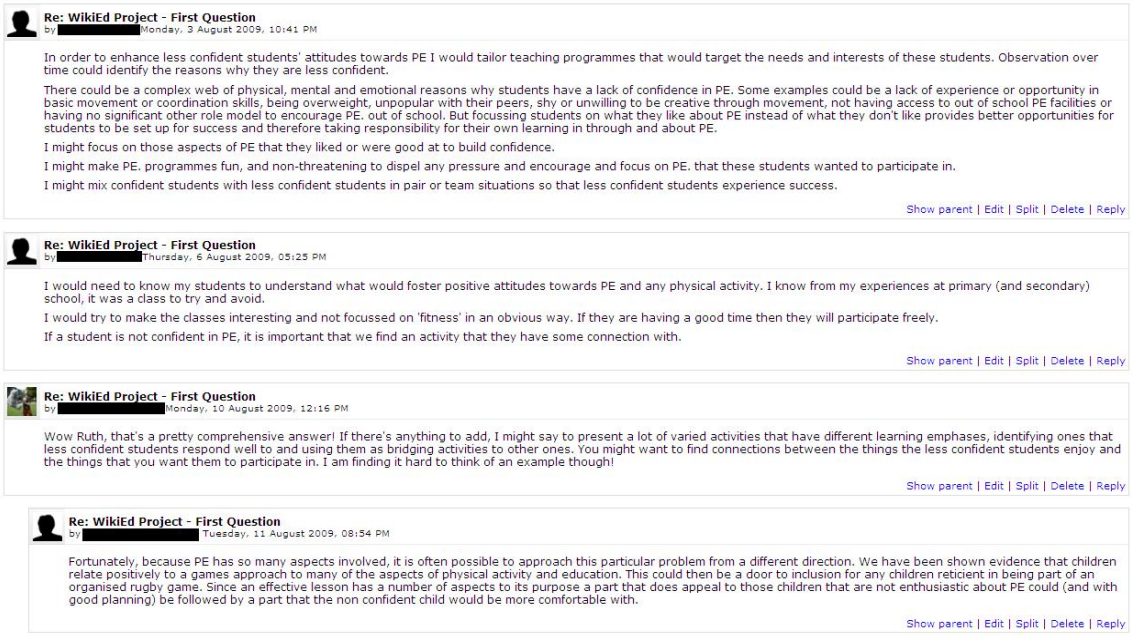

Figure 1. A screenshot showing an typical forum thread in response to the first wiki question: What would you do to enhance less confident students' attitudes towards PE?

Working collaboratively

As using a wiki was a relatively new experience for all students the two wiki tasks were chosen to allow the students to gain experience with working in a wiki environment. The first wiki task consisted of a question posed to the HL1 (Why is Health Education important in primary schools?) and a similar question posed to the PE1 students (What would you do to enhance less confident students' attitudes towards PE?). This wiki task was designed to allow students to respond to the question, based on their experiences, and simply place their ideas within the wiki. In this case we, the instructors, believed that the wiki would only be used as a repository of ideas and we did not expect to see much editing or manipulation of text. The second wiki task was designed to allow the students to engage in a higher level of thinking and they were required to manipulate and edit group ideas. The HL1 students were asked to create a one page set of guidelines to support a school taking a 'Health Promoting Schools' approach to addressing the issue of bullying, The PE1 students were asked to create a one page set of guidelines entitled 'Sharing good PE practice in schools.' It was expected that the students would work on developing the wiki response to the question collaboratively.

Of the two student groups only the HE1 group created a wiki, with this being in response to the first wiki task. On analysis of this wiki history, there was no evidence to suggest that any editing of the text had taken place. Even the addition of the text was linear and students made no attempt to write or edit collaboratively Students had just used the wiki to record their ideas and this was a replication of the postings from their associated forum.

The students from both courses generally felt dissatisfied with the way they worked as a group. Over half of the students (53%) expressed their dissatisfaction with working in an online environment. The main issue was that not all group members contributed equally to the wiki task. One student commented, "Wikis work well in this way, especially for group assignments etc. However, like most group activities, the final product is only maximised if ALL members contribute fully, and there are always some who are happy to be 'carried' by the efforts of others." Another student stated, "One person tended to dominate and everyone didn't comment to all the different ideas that were put forward. This resulted in me personally deciding not to contribute much anymore."

Two main challenges made it harder for the students to contribute to the wiki with the first being time constraints. Students from both courses identified that they had underestimated the amount of time that was required to work within the wiki and forum; "It has been very difficult to give the time needed" and "lack of time was a significant deterrent to me even going to it [the wiki]." Students commented that the wiki tasks were not completed because they were not a requirement of the course. As one student stated, "… contributing to the wiki did not feel or demand as 'high priority' until closer to the assignment time, because by then it had more relevance and immediate benefit." And another "Finding time when I already had a lot on and it was not compulsory for our education [course].'

Students also perceived that it not only took time to understand and learn how to use these web 2.0 tools but there were also time delays in writing and responding to the forum and/or wiki. As one student stated, "The whole concept of the wiki was new …

there was little time to get to know and see the benefits of its true worth." and another, "Contributing to the wiki is dependent on waiting for other people's responses since it is group based reflective learning tool".

The second challenge identified was the lack of extrinsic motivation. Another student explained, "… I believe the wiki is an incredibly powerful tool and should be incorporated into an element of one subject and made compulsory. i.e. marks go towards it." Students were not as keen to participate and contribute to either the forum or wiki because it did not attract course marks and did not contribute towards the final assessment grade.

This initial pilot study was conducted to allow the instructors to investigate the usefulness of two interactive and collaborative online components, wiki and forum, within the university LMS. The study found that although students had positive initial perceptions of their own skills and confidence in using computers, their understanding of the use of web 2.0 tools as a collaborative learning resource was limited. As the Moodle LMS had only just been introduced by the university, instructor understanding of the use of web 2.0 tools within the academic learning environment was also still emerging. This move to a Moodle LMS also provided a challenge to course instructors as they tried to find effective uses of constructivist pedagogical approaches that could utilise the potential of this type of social networking software for improving student collaboration.

The forums associated with each wiki appeared to provide a more 'secure' place for students to respond to the question as well as somewhere for them to make suggestions and comments about one another's ideas. Wheeler and Wheeler (2009) acknowledge that some students may find the move to wiki writing more of a challenge because of the level writing and editing required and the large public element, related to web use, that they describe as the *hidden audience*. Students in this study were willing to contribute to, and engage in, this type of collaborative learning process through the forums, however, they were less likely to develop their ideas and respond to the question using the wiki. Similarly Kennard (2007), in a study with postgraduate

students, found that they did not engage with the wiki, instead preferring the discussion forums, or in one case a chat room.

Students in this pilot study had experience with, and were fairly confident using recreational social networking sites such as Facebook and this may explain why students were more willing to engage with the forum tool than the wiki. Instructors made the assumption in this case that students may transfer previously learnt skills from their experiences with web 2.0 tools in the social environment to the academic learning environment. This was not the case and is supported by McLoughlin and Lee (2008), who acknowledge a gap between formalised educational interactions with web 2.0 tools and the learning, socialisation and communication that occurs in students' social worlds. The challenge proposed by Wheeler and Wheeler (2009) is for academics to discover how universities can harness the social power of informal web 2.0 tools within the formalised structures of the institution. We have identified several factors that appeared to create challenges for students as they moved towards working collaboratively within a wiki environment.

The influence of personal feelings on successful wiki writing

Students' *personal feelings* were identified as one challenge that appeared to prevent students writing to the wiki. Students lack of experience and perceived low confidence and competence with using web 2.0 tools led them to comment on a feeling of inadequacy, especially when challenged with writing to a wiki. This is consistent with Bandura's (1986) views associated with self efficacy. He suggests that many students have difficulty in school not because they are incapable of performing successfully but because they are incapable of believing that they could perform successfully. It appeared that in this study students' perceptions of their ability to write effectively to the wiki may have contributed to the limited amount of wiki writing attempted. Such a feeling of lack of competence from the students led the instructors to acknowledge the need to provide opportunities for students to develop and improve their feelings of perceived ability. This could be achieved through controlled and progressive use of the wiki tasks in a collaborative learning environment. Such sequential development of wiki

use requires instructors to explicitly implement a series of *wiki activities* that allows students to develop the social, emotional and academic skills and attitudes towards collaborative group work. Elgort et al (2008) recommend scaffolding through using *mini wiki tasks* to help students prepare for group assessments. Such a series of wiki activities could be underpinned with the recently revised Blooms Framework (Anderson & Krathwohl, 2001). This would allow instructors to simply scaffold tasks using a hierarchy that guides students from using a wiki to create knowledge and understanding through to using a wikis to analyse, evaluate and create new content. This should result in a shift towards higher levels of thinking related to the wiki tasks.

Whatever strategy is used to structure the wiki, there is a belief that successful wiki use requires students to be provided with detailed wiki instruction and practice using wiki software (O'Bannon, Baytiyeh & Beard, 2010; Schroeder, 2009; Williams et al., 2009). In this study there was a clear difference in the way the students used the forum and wiki. This may be related to students not understanding how to use a wiki, but authors were left wondering whether the forum provided too much security. Student perception of safety in the forum may leave them feeling less confident to shift towards collaborative authoring, that is the move from writing and responding to comments in a forum to collaboration, authoring, editing and construction of ideas within the wiki. Modelling collaborative activities and related strategies for students, and having defined roles for all participants including facilitators has been identified as necessary in attempting to improve students' feelings of confidence when using collaborative tools (Foley & Chang, 2008; Lin & Kelsey, 2008; Schroeder, 2009). As the wiki in Moodle LMS did not have a comment or discussion thread facility and a separate forum had to be constructed, the instructors perceived that the students found it more difficult to move from one tool to the other. In this study, the instructors' role was clearly administrative. Therefore, further thought needs to be given to the social and emotional elements of support necessary in a collaborative learning environment. Course facilitators provided some initial instruction on accessing, writing and editing the wiki but in this study it appeared more important to provide preliminary instruction as to what a wiki was, how it was different to a forum, how to use the tool and how to move between these tools.

Students' confidence to write in a public forum and comment or edit fellow students' contributions has been recognised previously as a barrier to wiki use (Wheeler & Wheeler, 2009; Schroeder, 2009). This public element appeared to increase students' feelings of being under pressure to be right and decrease their risk-taking activity, especially for those who also lacked confidence in their writing ability. In this study, avoidance behaviour (not writing anything on the wiki) may have been a ploy by students to eliminate any chance of public failure. This reinforces the need to provide students with a learning process that guides them towards effective collaborative work and contributes to the development of risk taking attitudes and behaviours when writing in a public forum.

Time associated with successful wiki writing

Busy academic schedules are only one aspect of the lifestyle students are managing while studying. Students have many academic and social commitments and these were clearly factors that contributed to the lack of wiki use in this study. Pre-service teacher education courses attract a wide age range of students with varying backgrounds. The dynamics of academic study, social commitments and family were factors that impacted on students' time and were identified as challenges to wiki use. While students' attitudes and intentions towards wiki use appeared to be positive, the practicality of *time* was the determining factor as to whether the wiki task was attempted and/or completed. This illustrates the complexity of the lives of contemporary students and provides some indication as to why students may feel forced to prioritise study commitments. In addition, academic tasks that do not attract reward such as in the form of marks appear to be given a lower priority in an attempt to ensure graded academic requirements are met.

Students also acknowledged that other factors such as 'learning new technological skills' and 'working and reflecting with others' in a collaborative learning environment required additional *time.* It could be argued that assessments that credit participation and acknowledge the development of students' technological skills are more likely to

encourage students to embrace the use of web 2.0 tools and respond more positively to the use of social constructivist pedagogies in their online course work.

The need for purpose for successful wiki writing

Another challenge that appeared to prevent student participation in wiki writing was *wiki purpose*. Although wiki construction, as a learning experience, should be meaningful and authentic (Schroeder, 2009) the process of writing the wiki is just as important as the text making. In this pilot study, we believed that scaffolding the wiki tasks would enhance students' contribution; however, this was not the case. The first wiki focused around a question that would allow the students to learn how to interact with the Web 2.0 tool and provided greater opportunity for students to be able to post and complete basic editing responses. The question used for the second wiki was structured to enable the students to work more collaboratively, allowing for reflection and evaluation of information.

Conclusion

In attempting to explore pre-service student teachers' and instructors' perceptions of using collaborative learning tools in an academic learning environment it was necessary to acknowledge the learning needs of students in the twenty-first century. Gilbert (2007) has discussed this in terms of a shift from independent learning associated with knowledge gaining to the collaborative nature of knowledge building. Accommodating this shift within the virtual learning environment meant a change from what Chatti et al. (2008) described as a *technology-driven* philosophy to a *people-driven* philosophy and a greater understanding of the pedagogical framework that has the potential of enhancing *social learning* within an academic learning environment.

Those pedagogical approaches adopted by contemporary learners that cater for the collaborative knowledge building process are more likely to meet their social, emotional and academic needs within the virtual learning environment. Pedagogical approaches that have the potential of enhancing feelings of belonging and connectedness within a

virtual learning environment could enhance the educative value of collaborative, social learning (LaPointe & Reisetter, 2008; Shea, 2006). The need to underpin course work within the virtual learning environment with the philosophy associated with communities of learning was recognised as necessary as was the need to enhance virtual learning opportunities within the pre-service environment with a strong and developing community of practice.

If used correctly, social learning tools, such as wiki, have the potential of enhancing social, emotional and academic learning within the virtual learning environment. This is becoming increasingly important when developing communities of learning that accommodate the blending of distance and on-campus students in large pre-service education courses.

Further research

This pilot study explored a sample group of student's perceptions of wiki use and collaborative learning as instructors were exploring new ways to integrate web 2.0 tools within their courses. Based on our findings from the pilot study, a larger project involving a whole cohort of first-year students from one course has been developed to explore the use and application of wiki within a pre-service education environment.

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