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The impact of Blended Learning and Team Teaching in tertiary pre-service music education classes

Louise E. Jenkins Dr
Monash University, louise.jenkins@monash.edu

Renee Crawford
Monash University, renee.crawford@monash.edu

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Abstract
The nature of tertiary teaching is metamorphosing at a pace consistent with the expectations and requirements of an innovative society. This is due to more accessible advanced technology, the targeted use of online learning, student expectations for a flexible learning environment and the pressures of faculty budgets. As a result, more innovative approaches to teaching and learning are required. In response, a project is investigating the implementation of a Blended Learning process within tertiary pre-service music education classes, underpinned by Team Teaching strategies. This paper will report on some of the findings of the project's first two years of research.

Keywords
Blended Learning, Team Teaching, flexible learning and teaching, action research methodology

Introduction

The nature of teaching within the tertiary education system is gradually metamorphosing due to the provision of more-accessible advanced technology, the targeted use of online learning, student expectations for a flexible learning environment and the growing pressures of faculty budgets. In response, two lecturers specialising in music education have developed an approach to teaching and learning in the pre-service teacher-education setting that supports their own professional development as teacher educators. This resonates with the professional development of teacher educators as a "touchstone for not only what it means to become, but also to learn, as a teacher educator" (Bates, Swennen & Jones 2011; Smith 2003, both cited in Loughran 2014, p.272). Internationally it has been suggested that teacher education needs to improve, resources to be expanded and barriers to the development of teacher education to be overcome (Hokka & Etelapelto 2014, p.39). The current project seeks to respond to this by combining a traditional approach with an innovative approach that uses modern resources to improve teacher education. This discussion will consider the related literature, the methodology and the results of the first two research cycles.

The research questions are:

- What is the impact of blended learning on music-education tertiary students?
- What is the impact of team teaching on music-education tertiary students?
- How can blended learning and team teaching be combined to affect the learning of pre-service teachers positively?

Team teaching is not a new concept; however, blended learning is a more recent term, entering the education vernacular in the early 2000s in response to the increase in classroom technology and its impact on classroom practice. This project brings together these two elements in an exploration of the impact of blended learning in a team-teaching environment. The participant groups were pre-service secondary music teachers in an Australian university's faculty of education.

Context

Education practitioners and researchers use various terms for approaches identical to or closely resembling team teaching. These include "cooperative teaching" (Bauwens & Hourcade 1995), "collaborative teaching" or "teacher collaboration" (Welch & Sheridan 1996; Boulay 2005) and "co-teaching" (Friend & Cook 2007). Co-teaching is described as two or more people sharing responsibility for teaching some or all of the students assigned to a class (Fuller & Bail 2011). At the university level, team teaching could be two or more academics members working together teaching one course or "planning several classes as cluster courses" (Letterman & Dugan 2004, p.76). Team teaching essentially describes a teaching approach in which two or more teachers share planning, presenting and assessing.

Team teaching has received some enthusiastic analysis, but this incorporated a particular pragmatism about the associated pitfalls. Early research identified circumstances such as staff cuts, resource reductions, course changes and reluctance by staff to teach in front of others (Freeman 1969). More-recent research has found that differences among team members may cause insurmountable friction, and the management of large groups of students can be problematic (Geen 1985). However, many benefits of team teaching have been recorded, including access to extra resources, the pooling of expertise and the increased sense of security that comes from the shared responsibility for the students' intellectual and emotional growth (Farey 1974).

In universities, team teaching enhances "professional development because of the opportunities it offers for collaborative reflection" (Knights & Sampson 1995, p.58). It also allows for more immediate feedback to students (Fuller & Bail 2011; Haddon 2011), both online and in the classroom. Significantly, tertiary team teaching may also support an increased focus on learning instead of merely accumulating knowledge (Shibley 2006), leading to improved student engagement (Donnison, Itter, Edwards, Martin & Yager 2009). The presence of two or more teachers provides a wider range of teaching ideas and pedagogy, which has a positive impact on students (Haddon 2011).

Academics are currently being asked to find new ways of teaching to deal with "large classes, and…new technologies" (Benjamin 2000, p.192). While team teaching may be a tool to support these demands (Benjamin 2000, p.192), Yanamandram and Noble (2006, p.1) argue that the success or failure of a team-teaching effort is the actual composition of the team; expertise as such is not as critical as having skilful teachers who work well together as a cohesive unit, and who link learning concepts for the students (2006, p.1). Combining team teaching with blended learning presents additional complexities that require a foundational understanding of blended learning.

A "recent wave of interest" (Mirriahi & Alonzo 2015, p.11) in blended learning in the higher-education sector is not necessarily underpinned by a definitive agreement on what this approach incorporates. Robison (2004, p.1) describes a blended-learning course as:

> *one in which a faculty member meets...students a percentage of the regularly scheduled course time in a face-to-face setting. The rest of the time the students fulfil the course requirements by accessing course materials online and participating in class discussions over the Internet.*

O'Keefe et al. suggest that blending learning "implies mixing or combining different types of learning experiences", but acknowledge that the literature includes definitions of various "scope and focus" (2014, p.1). This is exemplified by Thorne, who describes it as a mix of traditional on-site instruction with innovative learning technologies (2003), and Picciano, who suggests that it is a substantial integration of technologies into on-site instruction (2006). What is reasonably certain is that it involves deriving benefit from the inclusion of technology and social networks as an integral component, taking advantage of the current focus on social networking (Rosenburg 2006).

An increasing number of students study online (Moller et al. 2008, cited in Spiliotopoulos 2011), and many students who commute to campus and "expect flexible, innovative and engaging learning experiences with technologies that they commonly use" (Spilotopoulos 2011, p.1). Blended learning has many advantages, particularly as it allows for an expansion of faculty, library and classroom facilities and a maximisation of resources through technology (Robison 2004). Academically, blended learning offers opportunities for academics to rethink their course planning and how they design their unit materials in a way that supports students in their preparation for contemporary society (Singleton 2012; Hoic-Bozic, Mornar, & Boticki 2009). Some suggest it might be "the future" of education (American University of Beirut 2010, p.2).

Fuller and Bail claim that there are three basic team-teaching styles (2011, derived from White, Henley & Brabston 1998 and Letterman & Dugan 2004):

1. Participant-observer – each teacher/lecturer is present for all classes and both teacher/lecturers teach and instruct. However, they work independently, not together.

2. Interactive – each teacher/lecturer is present and they work together to teach, instruct and engage with students in discussion.
3. Rotational – each teacher/lecturer teaches different parts of the course, only being present when it is their time to teach. This method requires an excellent level of planning to ensure that there is no overlap or repetition of material, as well as consistency in assessment.

For this project these three team-teaching styles were combined with blended-learning techniques, as detailed in the next section.

Methodology

In response to a changing tertiary environment, the researchers investigated the impact of a combination of blended learning and team teaching in their pre-service classroom. Whilst the study used elements of mixed methodology, the overall methodological framework was action research.

Objectives

The main objectives of this project were to:

- explore the impact of combining a blended-learning approach with team teaching in a pre-service music-education class
- discover how blended learning and team teaching can be combined and implemented to positively affect the learning of pre-service music teachers

Participants

The research participants were two separate student cohorts in two consecutive years of a pre-service music-teaching course. The students were studying for a Bachelor of Education degree or a Graduate Diploma of Education at an Australian university. Both groups had 28 participants. Whilst these were relatively small sample sizes, the numbers were appropriate for the chosen research model.

Planning for the project

Cycle 1 of the research took place in the second semester of the academic year, within the one class. During the first semester, each lecturer had taught one class of pre-service music students. The researchers became interested in working more closely as a team to respond to the changing tertiary environment. They began to consider more-innovative approaches to teaching and learning, including the concept of researching their own work while implementing these approaches. They joined the two classes and taught as a team while implementing a more blended-learning approach. In cycle 2 the researchers continued to work with one larger class.

Action research

Action research is essentially a symbiotic relationship in which the researcher takes action based on research and researches the action taken. Pelton (2010) stated that action is what one does as a professional, and research includes the methods, habits and attitudes needed to be a reflective practitioner. This is based on the premise that local conditions vary widely and that the solutions to problems in both research and praxis cannot be found in generalised truths that disregard local conditions. Action-research methodology was appropriate for this project, as the researchers had a localised situation that, whilst repeated in a general sense across many universities, was influenced by specific local issues within the particular university, faculty and classroom.

Action-research model

Action research is recursive and cyclical in nature. It is very systematic, involving specific stages or processes that are strategically repeated in response to research findings (Stringer 2008; Pelton 2010; Alber 2011; Johnson 2012). While the models of action research may differ, the cycle and its processes appear to have common elements. These common elements have been used to develop the action-research model used in this project. Figure 1, outlines this cycle and its individual processes.

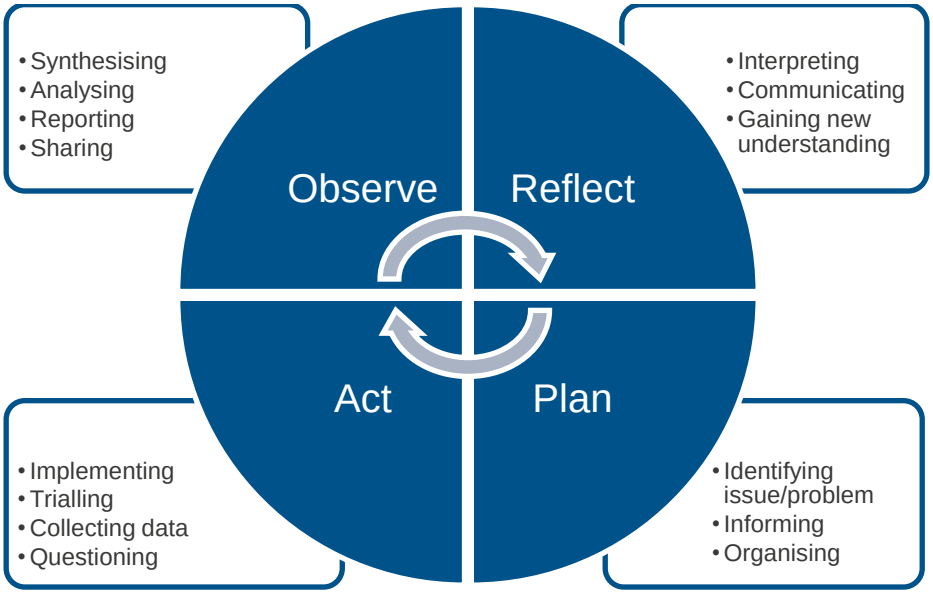


Figure 1. Action research cycle – outline of model applied to this project

Hendrick's "classroom action research" approach (2009) was applied. This involves teachers in their classroom, examining issues and problems and finding innovative solutions. The primary purposes of this approach are to improve classroom/tutorial or school/university practice and to change theory and practice (Hendricks 2009). For this project the researchers used the research results to improve their teacher-education practice.

The cycle begins with a process of reflection from which a problem or issue is identified. In the localised university environment applicable to this project, there were budgetary concerns, a need to devise ways of including more-accessible advanced technology and targeted online learning and the desire to create a more flexible learning environment. The plan was developed and implemented, or "acted upon", and results collected. The findings from the results were synthesised and interpreted, leading to the next cycle, which was reflective of a new understanding of the nature of the problem. Figure 2 represents an outline of the research design and tools used in this project.

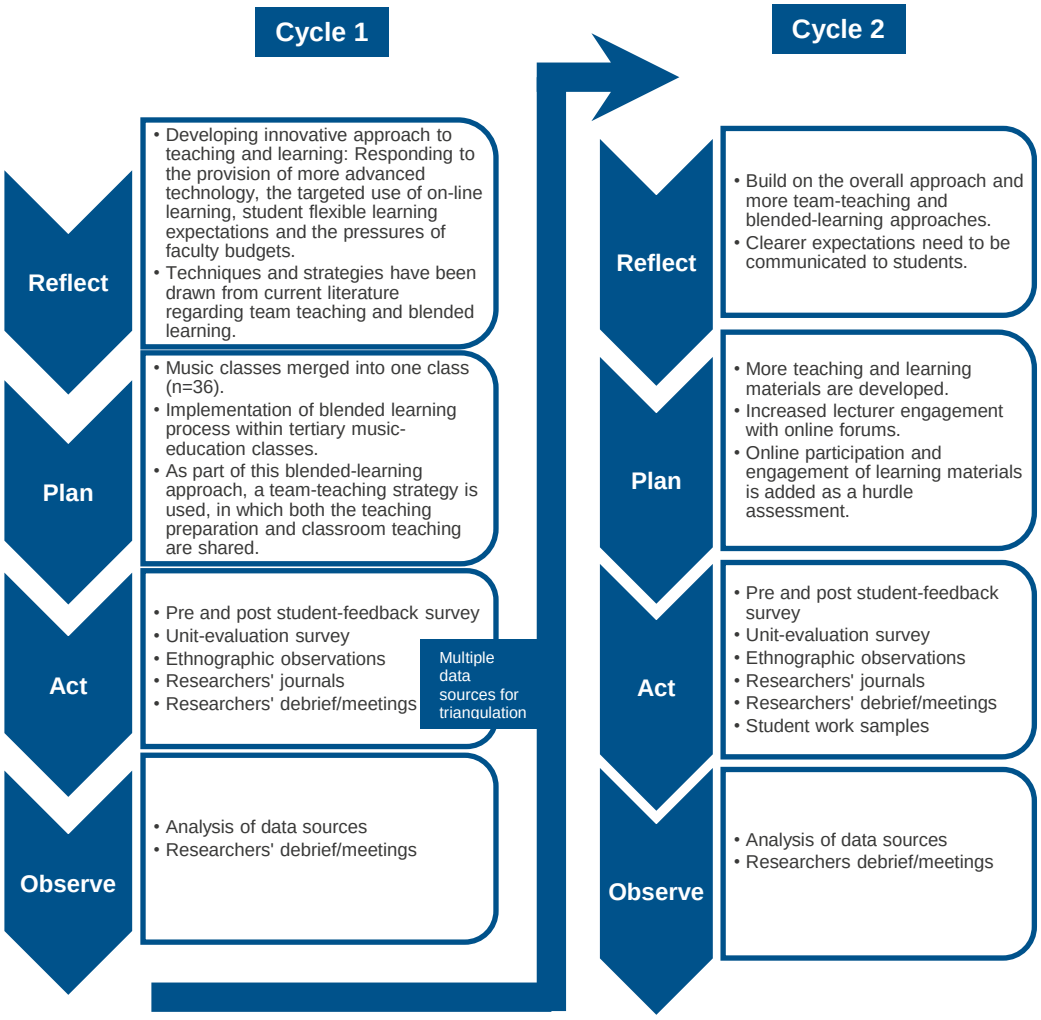


Figure 2. Research design and tools used within an action research model

Research tools

It should be noted that the unit-evaluation surveys are not considered in the findings.

Surveys: cycles 1 and 2

In cycle 1, two surveys were implemented. The first survey (pre) took place at the beginning of semester 2, and survey 2 (post) at the end of semester 2. In cycle 2, which took place in semester 1 of the following year, this process was repeated, but with some development of the survey. Cycle 1 results informed further development of the cycle 2 survey and the researchers' teacher-education practice (Hendricks 2009).

Survey 1: beginning of semester

In survey 1 the researchers explored the participants' notions of team teaching and blended learning. Section 1 included questions about participants' expectations for learning, including

"What do you expect to learn from this unit?" and "What is one thing you would like to learn from this unit?" The participants were also asked to rate their expectations for learning in the unit.

Section 2 aimed to explore the participants' understanding of the concepts of blended learning and team teaching. They were asked if they had any ideas about why these separate approaches had been chosen by the lecturers and whether they had any associated concerns. Participants were asked to define these terms in their own words to allow for an analysis of the development in their understanding throughout the semester. Section 3 included the opportunity for students to provide ideas for the use of the learning space and to offer any other comments.

Survey 2 – cycle 1: end of semester

Survey 2 provided data about the impact of team teaching and blended learning in the classroom and how they can be combined and implemented to positively affect learning. The survey was divided according to the particular aspects of the teaching and learning approaches being researched.

Section 1: Students were asked "Did you learn what you expected to learn from this unit?" They were also asked if combining the two music classes had a positive impact on their individual learning, and were asked to identify the level of this impact on a Likert scale. Comments were also invited to allow for a further exchange of thoughts about the changes and processes.
Section 2: Having experienced blended learning and team teaching, participants were asked to review their understanding of the terms and to reflect on why they thought the lecturers chose to implement these approaches. They were also asked whether they now had any concerns with these approaches.

Surveys 1 and 2 – cycle 2

The first survey (pre) in cycle 2 was very similar to that implemented in cycle 1. However, enough data had been gathered at this stage to inform some new inclusions.

Participants were asked to indicate the terms that resonated for them in relation to blended learning. These were taken directly from cycle 1 data. Participants were also asked to compare their experience of the blended-learning approach in the music unit with any previous tertiary experience of blended learning. Similarly, a question was asked about concepts associated with team teaching, derived from cycle 1 data.
Cycle 1 data had indicated that the team teaching experienced in class had built confidence in some participants to implement team teaching in their own future classes. This finding was fed back into the cycle 2 survey (post), and a new question included to address this. A new section was also included in the cycle 2 survey (post) that explored the students' online activity levels and experience. This incorporated questions as to the value of the online unit materials and the frequency of participation online.

Journals

The researchers/lecturers kept a journal about their experience. This was a valuable process, as journaling "enhances one's learning through the 'examination, clarification, and critique of pedagogical ideas and practices'" (Kaplan, Rupley, Sparks & Holcomb 2007, pp.358-359, quoted in Humble & Sharp 2012, p.3). Through the process of reflection, the researchers/lecturers were able to examine their own work, clarify matters of concern and critique their own practices.

Through these processes of examination, clarification and critique a process of metacognition took place (Humble & Sharp 2012). The journals afforded the researchers/lecturers the opportunity to

become more aware of their level of knowledge and understanding prior to the project, and how this developed during the process of research and journaling. This focused the researchers/lecturers on what they needed to do to learn new knowledge, as well as ways they could think about this new knowledge. The written process enabled a fuller awareness of the thinking processes taking place, an awareness that was regularly fed back into the research (Wilson & Bai 2010).

Debrief meetings

Following each class the researchers/lecturers debriefed, either in person immediately or via email or phone. Various aspects of the class were discussed, including the joint management of class activities, student interaction with the lecturers, role-sharing, managing online activities and sharing resources and ideas. This allowed for a more developed awareness of the thinking processes taking place. The promptness of the discussions about the classroom work informed the ongoing process of improvement and allowed an opportunity for a release of emotions.

Analysis

Three types of coding were used in the analysis of the qualitative data: open, axial and selective. Coding data is fundamental to much qualitative research data analysis; it was a key analysis strategy in this study. Open coding is used to reduce and categorise data into manageable segments. Axial coding is used to reassemble the data to make connections between and across categories. Selective coding is also used if a category has been previously been identified as having a clear and selective focus; data is reviewed systematically for that specific category.

The quantitative data was calculated using frequency distributions of both absolute and relative frequency. In this study a relative frequency describes the number of times a particular value has been observed to occur in relation to the total number of values for that variable. Percentages have been used to express values in relation to the total number of values as a fraction of 100.

In-class changes: blended learning

The change to a more blended-learning approach included:

- an increased use of electronic devices in the classroom (laptops, smart phones, tablets, iPads) and a virtually paper-free classroom environment;
- an emphasis on the sharing of students' ideas and student-developed teaching and learning resources via an online community of pre-service teachers;
- a synergy between the online resources and the workshop activities to ensure both on- and off-campus students were engaging with the same materials and discussions;
- real-time posting of workshop discussion and activity material into dedicated forums;
- increased lecturer engagement in online activities and discussion both within and outside of workshops;
- increased posting of new resources and external workshops helpful to both pre-service teachers in general and developing music educators specifically;
- an increased use of literacy and terminology pertaining to lecturer pedagogical thinking and content related to blended learning and team teaching; this included the role-modelling of blended learning and discussion about the purpose of particular activities and processes. This helped to provide clarity regarding the expectations and a refinement of terminology related to blended learning;
- encouragement for students to share resources, including those they were using in their instrumental and /or ensemble teaching; and
- support for the online advertising of performances and concerts.

The last two processes helped to promote a sense of networking and building of a supportive community.

Team teaching

As outlined previously, the researchers used a model of team teaching based on the Participant-Observer, Interactive and Rotational approach (Fuller & Bail 2011, derived from White, Henley & Brabston 1998 and Letterman & Dugan 2004). For this project, all three components of this approach were used:

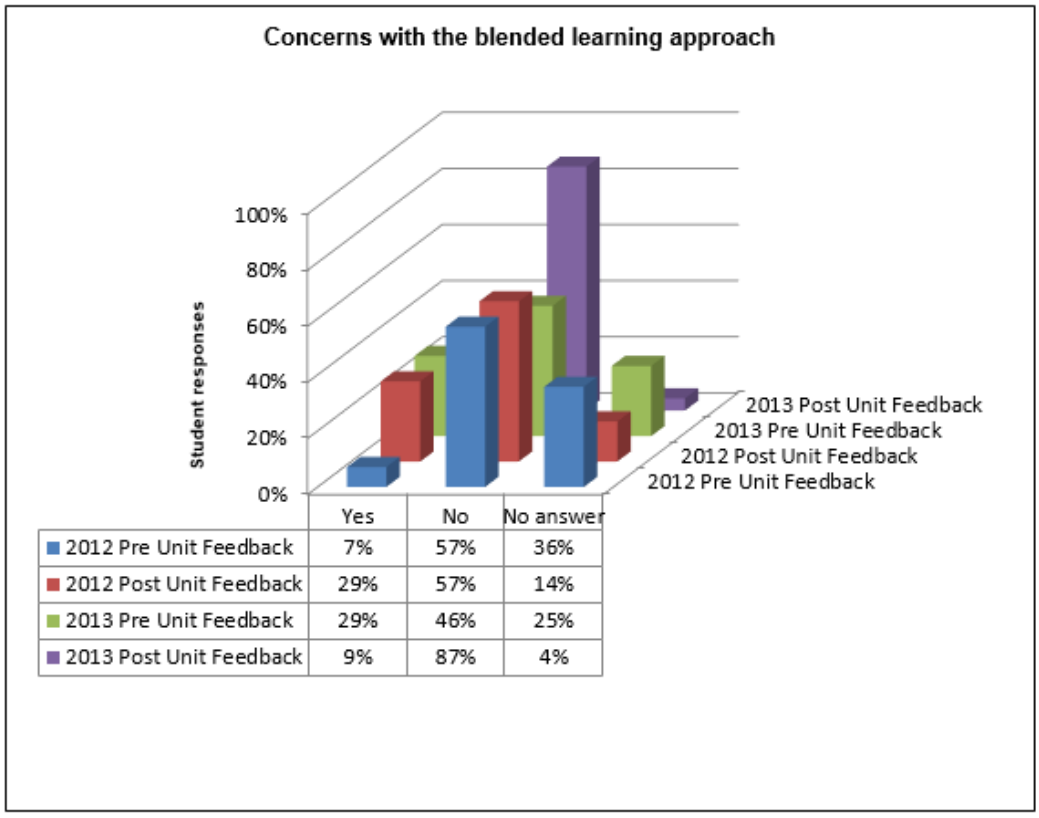
1. For most classes, both lecturers were continually present (participant-observer). One lecturer would present and teach the materials and lead activities while the other would sit at the back of the class observing the progress.
2. Although it was intended that the observer would be just that, this was difficult to maintain. Students would ask the observer questions throughout the activities if the participant lecturer was otherwise occupied. In addition, the observer was sometimes included as part of the discussion when the participant lecturer addressed a question directly to them.
3. During interactive team teaching, both lecturers/researchers either stood together at the front of the class and took it in turns to present materials, or walked around the room separately facilitating activities. During whole-class discussion, the lecturers generally took it in turns to respond to student contributions, working with each other to decide who would speak. This process developed as the lecturers became more experienced in working with each other, but included eye contact, hand gestures, turning, nodding or verbally inviting the other to respond.
4. The rotational style was implemented on an occasional basis, but it was not the favoured style for various reasons. Most importantly, it meant that the researchers could not debrief immediately following the class, and thus could less easily identify areas where classes were and were not successful.
5. In addition, the lecturers worked together to plan all classes and design all activities and assessment tasks. Together they planned, structured and implemented the online site, chose readings and shared marking and responding to emails. The lecturers cc'd each other into each email response to ensure that vital information was shared.

Cycle 1 and 2 results and discussion

This section will provide a comparison of selected data from cycles 1 and 2 to illuminate the development of understanding as well as the similarities and differences between the two cohorts.

Concerns about blended learning

Participants in both cycles were asked whether they had any concerns about the blended-learning approach. Figure 3 compares the two sets of data.



	Yes	No	No answer
2012 Pre Unit Feedback	7%	57%	36%
2012 Post Unit Feedback	29%	57%	14%
2013 Pre Unit Feedback	29%	46%	25%
2013 Post Unit Feedback	9%	87%	4%

Figure 3. Concerns with the blended-learning approach, Cycles 1 and 2

The data showed that not all the students found this mode of learning to be positive. In cycle 1, 57% did not have concerns with blended-learning either before or after the unit. Disappointingly for the researchers, 7% of students did have concerns about blended learning prior to its implementation, and this increased to 29% after they had experienced it for a semester.

In response to this data, the researchers planned a more active approach to blended learning for cycle 2. This included an increase in an active role-modelling of blended learning and more-focused discussion about the purpose of implementing particular activities and processes. The results in cycle 2 were more positive, with the percentage of students who had concerns about blended learning falling from 29% in the pre-survey to 9% in the post-survey. This suggested that the researchers' efforts had a positive effect.

Qualitative data from cycle 1 demonstrated that most participants understood the researchers' motivations for using blended learning.

Table 1. Concerns with the blended-learning approach –qualitative data, cycle 1

	Pre-unit student response		**Post-unit student response**	
Student	**What is your understanding of the term "blended learning"?**	**Why do you think your lecturers have chosen to take a blended-learning approach?**	**What is your understanding of the term "blended learning"?**	**Why do you think your lecturers have chosen to take a blended-learning approach?**
No. 1	Integrating different areas of learning, as well as different modes of delivery and technologies.	In order to give us the opportunity to learn from this strategy and then implement it in our own teaching.	Integrating different subject areas, different resources and media to offer a program that is relevant to all areas of our teaching.	To help us to help ourselves, to offer different sources for learning. Sometimes Moodle can be a little overwhelming with all of the forums. It can be difficult at times to source the right information.
No. 4	Learning through more than one teaching style? Unsure….	So the students have access to as much information as possible.	The use of online learning and learning in person.	To take advantage of our ICT skills and the fact that we're online often.
No. 11	Using a variety of ways to teach and learn (through materials such as computers).	Build familiarity with technology and how to incorporate it usefully and successfully in classes.	Computerised resources plus face-to-face classes.	University policy! Plus developing their own skills at using Moodle…and encouraging us to use/accept technology for learning not socialising etc.

Participants discussed the development of technological skills, modelling the use of technology, responding to changing university models and policy and taking advantage of students' well-developed ICT skills. Participant 4 made the connection between students' high level of online activity and its inclusion in the teaching approach. Participant 11 referred to the use of technology both as a social and learning tool. These comments resonated with Rosenburg's assertion (2006) that the mutual reinforcement of technology and social networking supports blended learning as a current teaching approach. Qualitative data from cycle 2 for this question was similar to that from cycle 1.

Table 2. Concerns with the blended-learning approach – qualitative data, cycle 2

	Pre-unit student response		**Post-unit student response**	
Student	**What is your understanding of the term "blended learning"?**	**Why do you think your lecturers have chosen to take a blended-learning approach?**	**What is your understanding of the term "blended learning"?**	**Why do you think your lecturers have chosen to take a blended-learning approach?**
No. 6	Everyone works as a group to learn. People sharing their views and opinions.	More interactive approach to teaching, students can learn [from] each other.	Integration of ICT in both in class and out of class activities/tasks/assessments.	Encourages collaboration. Better and increased access to resources, ideas and discussions. Access to lecturers.
No. 15	Education that combines face-to-face classroom methods with computer-mediated activities.	Because we can compile all the discussions we had in class and share the resources online.	ICT incorporation and online shared resources.	To encourage personal reflection and peer collaboration.
No. 22	I have no clue whatsoever.	No response	No idea!	That wasn't made clear.

The comments overall showed that at the end of the semester, most participants did understand what blended learning was and why the lecturers implemented this approach in class. However, participant 22 was an exception. Despite a dedicated effort by the researchers to role-model this approach and to use the term in class regularly, this student did not connect with it. It could be conjectured that this participant was perhaps not focused in class and even disgruntled; however, their other responses indicated that they enjoyed classes and appreciated the team-teaching approach. For this reason the researchers conjectured that their emphasis on blended learning just did not resonate with all participants.

The focus on technology through the blended-learning process did cause some mild concerns for the researchers/lecturers. Kate (pseudonym for lecturer 2) discussed in her journal her desire to revamp areas of the unit's technology in relation to the composition component, but was reluctant to suggest this in case she sounded critical of Susan (pseudonym for lecturer 1), who had taught the unit before. She resolved this concern via a direct conversation in a debrief meeting two weeks into the unit. Susan was pleased to have this input, and both lecturers agreed that their ability to address issues in an honest and direct manner was crucial to the success of their work. Their rapport enabled both of them to feel comfortable, and ameliorated any sense that either was being threatened or criticised.

Cycle 2 – blended-learning themes

Based on cycle 1 data, in cycle 2 participants were asked to identify the themes that resonated with blended learning.

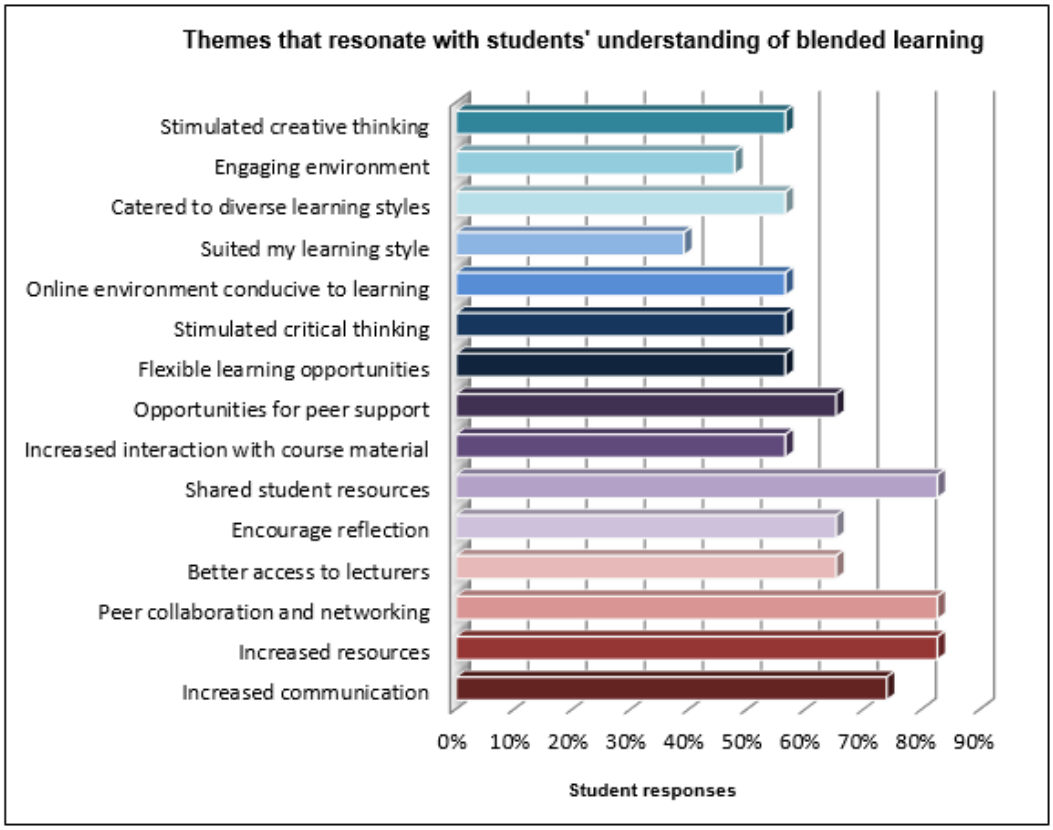
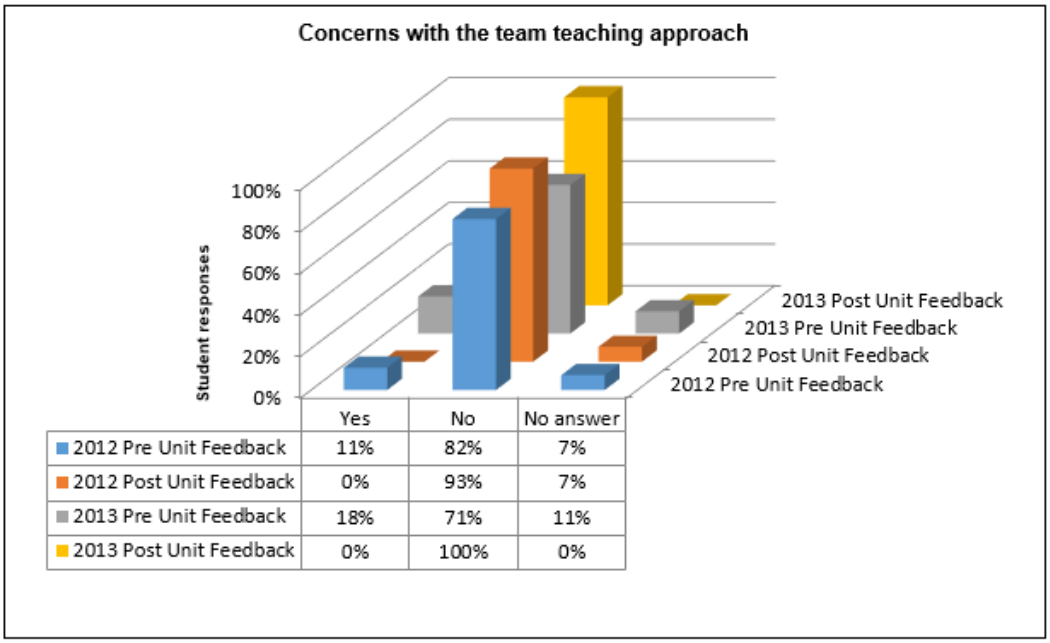


Figure 4. Themes that resonated with blended learning – Cycle 2

Only 55% of participants thought the online environment was conducive to learning. The dedicated effort to encompass a more blended-learning approach did not necessarily have the positive impact that the researchers had hoped for. Whilst 55% is not an indication of unsuccessful learning, it did inform cycle 3 of this project and the ongoing development of the unit teaching materials and approach. Students identified peer collaboration and networking communication and resources as most valuable in this approach. This data provides valuable input into the development of the on-campus and online student interaction, the planning for collaborative assessment tasks and the devising of innovative ways to share resources in future unit work.

Concerns about team teaching

Figure 5 shows students' responses in relation to team teaching before and after the unit in cycles 1 and 2.



	Yes	No	No answer
2012 Pre Unit Feedback	11%	82%	7%
2012 Post Unit Feedback	0%	93%	7%
2013 Pre Unit Feedback	18%	71%	11%
2013 Post Unit Feedback	0%	100%	0%

Figure 5. Concerns with the team-teaching approach – cycles 1 and 2

A positive outcome was that in survey 1 of cycle 1, 11% of students were concerned about team teaching, but by survey 2 the percentage of students who were not concerned rose from 82% to 93%. In cycle 2 the results were similar. At the beginning of the semester 18% had concerns about the team-teaching approach, and 71% had none; by the end of the semester, 100% had no concerns.

In cycle 1, there was a consistent understanding among the students of some of the elements of a team-teaching approach. These themes were identified, among others, as collaboration, shared knowledge, the value of more and different experiences/perspectives/opinions, the importance of rapport between the educators, increased assistance and modelling team teaching. These align with the benefits of team teaching that other researchers have identified (Fuller et al. 2011; Shibley 2006; Donnison et al. 2009; Boulay 2005; Farey 1974; Haddon 2011; Mansell 2006), and exemplify the impact that team teaching can have on the future work of pre-service teachers. Role modelling team teaching in pre-service classes exemplifies alternative structures, strategies and approaches for teaching. This impact extends to the schools where the pre-service teachers eventually practice their craft.

The researchers' journals indicated that in the same way that some of the students had concerns with the team-teaching approach, so too did the lecturers. Susan discussed her uncertainty about where she should stand when Kate was responding to a student query in class. Both lecturers felt there was an issue with being seen as trying to take the limelight from the other; this potential had been mentioned by a participant in the pre-survey cycle 2. Both researchers had noticed that students were sometimes confused about who to look at when responding. This was resolved by Susan deciding to stand to the side of the room when Kate was responding and move forward

when it was her time to speak. The lecturers learned to read each other's cues during group discussion.

Team-teaching themes

Data from cycle 1 was implemented in cycle 2. In a new section in the survey (post) cycle 2, the students were asked to indicate which of a list of terms resonated with them in relation to team teaching (Figure 4).

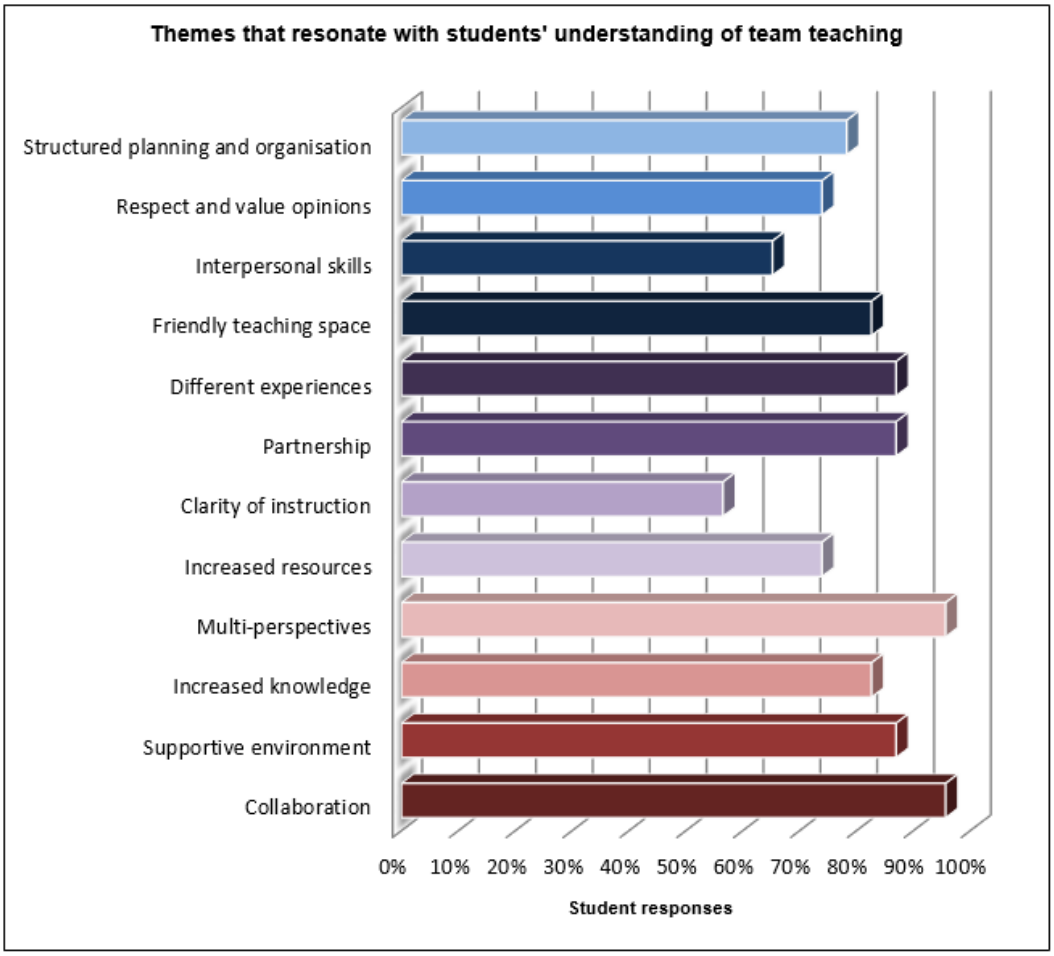


Figure 6.Terms that resonated with the concept of team teaching – cycle 2

Cycle 2 results indicated that collaboration and multi-perspectives were the two most significant aspects of team teaching: 95% chose these themes. Approximately 85% chose supportive environment, partnerships and different experiences. These results were encouraging, as the researchers had particularly focused in cycle 2 on encouraging a level of support for students through the sharing of resources and the provision of two lecturers with quite different life and work experiences. They also encouraged partnerships among students as a means of support

throughout the semester. These cycle 2 themes were taken from cycle 1 data, and suggested that for both cohorts the experience and positives of team teaching were similar. The lowest result was for clarity of instruction, at 65%; while this was a lower score, it still suggested that the extra clarity provided by having two lecturers was part of the positive experience for students.

Modelling blended learning and team teaching

In cycle 1 the data showed that the experience of team teaching within pre-service classes became a modelling exercise for the participants' own teaching. This was particularly so for student 18, who explained, "During my placement I was able to team teach with my mentor. Having that initial example from Teacher 1-Teacher 2 and Teacher 2-Teacher 1 really helped."

The participants' thoughts about the modelling of team teaching were extended by the researcher/lecturer journal entries. The lecturers' development as teacher educators was documented throughout the process. These entries addressed the difficulties, misunderstandings and mishaps along the way as the two researchers learnt to work together effectively. Both lecturers learnt to deal with, and avoid, common communication problems and to allow each other space to respond to student queries without undermining the other. They developed a process to combine their expertise in the most effective manner. A series of communication tools developed between the two lecturers, including eye contact, hand gestures and nodding, let them understand if the other person was reluctant or enthusiastic to respond. This system allowed the lecturers to work in harmony and draw on each other's strengths rather than trying to compete with each other or expose each other's weaknesses. Through a process of getting to know each other in a more complex way, the lecturers were able at times to predict where their colleagues would value the chance to give input and where perhaps they would prefer not to be put on the spot. The survey responses indicated that the implementation of the approaches and the process of the lecturers' understanding each other better increased the focus on learning and improved students' engagement; the students were able to fully engage with the concept of team teaching and watch the development of their lecturers as they learnt to manage the class together (Fuller et al. 2011; Shibley 2006; Haddon 2011; Donnison et al. 2009).

The cycle 1 data about role-modelling was implemented in cycle 2. The participants were asked if they were confident to try team teaching themselves in their own classes. As Figure 7 shows, 70% responded that they would.

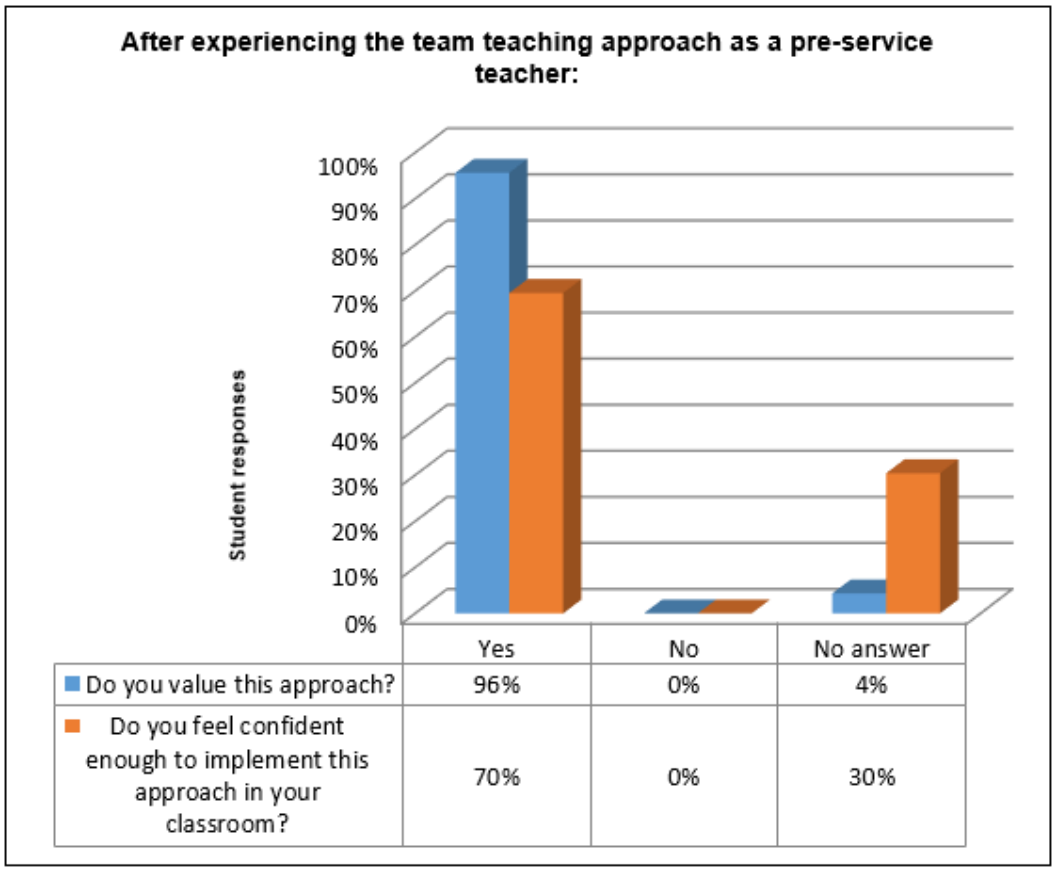


Figure 7. Participant confidence about implementing team teaching in their own classrooms

No participants stated that they would not feel confident; however, 30% did not respond. The reasons for the participants not responding were not documented, so any comment on this result is conjecture. This data is useful in planning for teaching, as it suggest that perhaps the students would benefit from practising team teaching themselves in class as part of activities. This is underpinned by 96% of participants stating that they valued the approach, thereby suggesting that further work with this approach is valuable.

Role-modelling blended learning

Similarly, participants were asked about their confidence in implementing blended learning in their own classrooms.

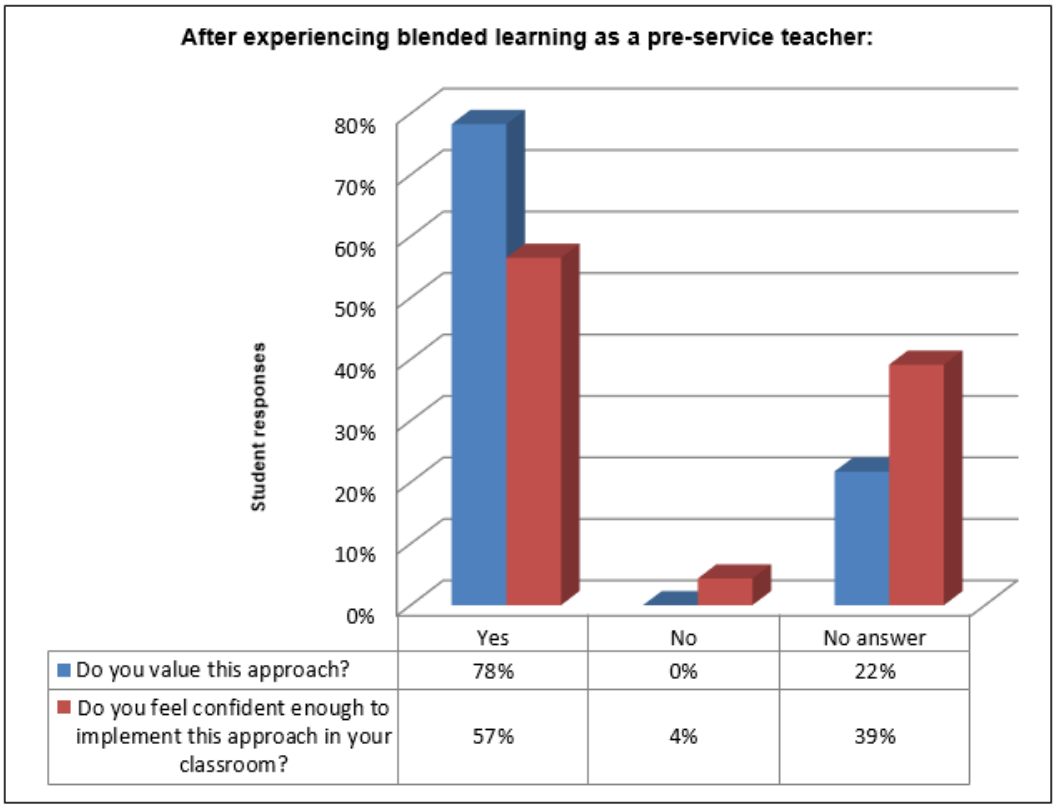
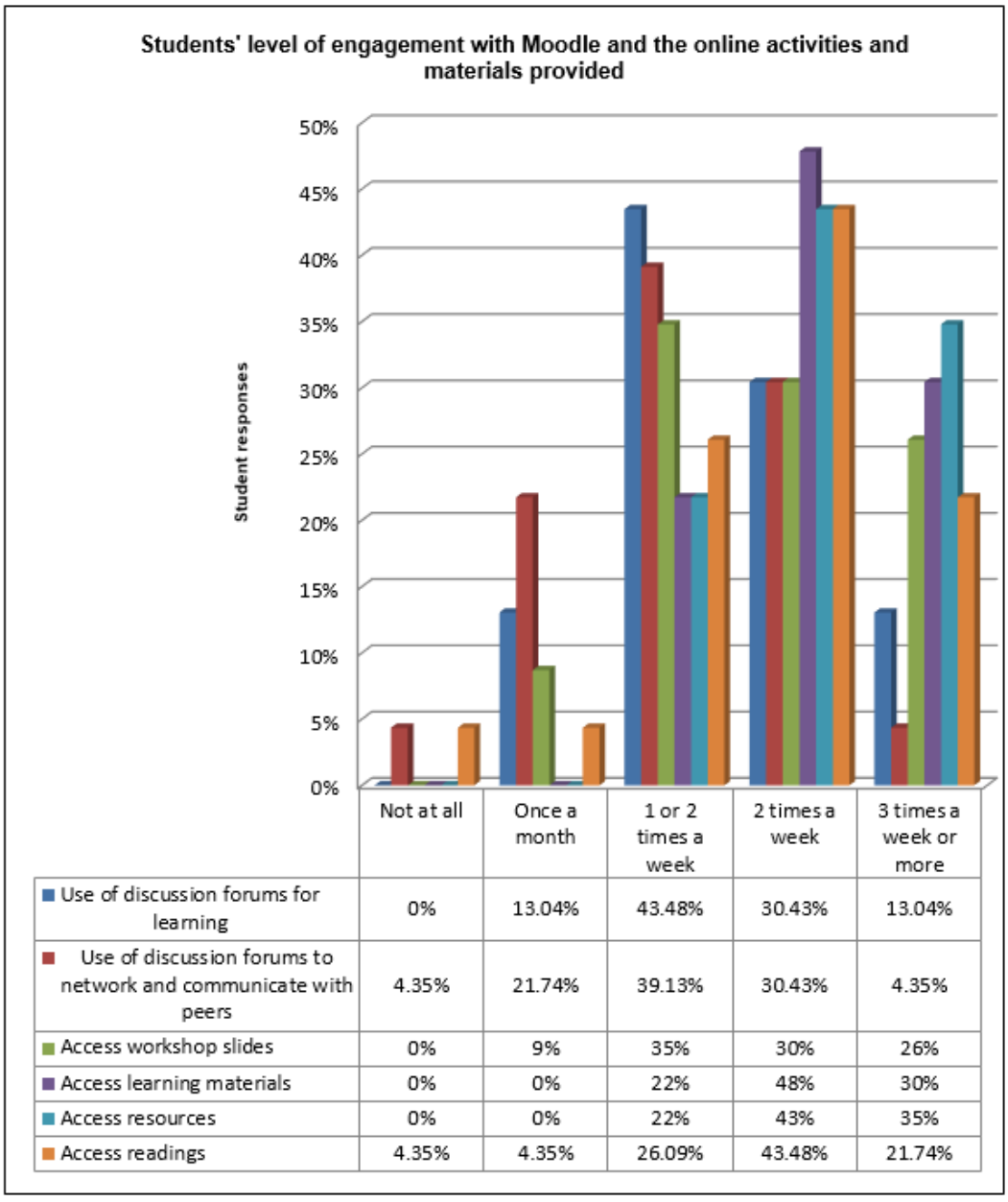


Figure 8. Participant confidence about implementing blended learning in their own classrooms

While 78% supported the approach, only 57% felt confident to try it themselves –less than those who felt comfortable using team teaching themselves. This was a valuable contribution to the thinking about blended learning. Overall, fewer students felt comfortable using blended learning than team teaching. Also, more participants had concerns with blended learning than with team teaching. The researchers will use this data about blended learning to revise the approach in class during cycle 3. The researchers need to ensure that students understand the value and purpose of blended learning and feel comfortable using it themselves.

Blended learning and student online engagement

The implementation of the action-research model supported the inclusion of a new question in cycle 2. The cycle 1 data had made it clear that a crucial part of this research was to ascertain the students' level of engagement with the online materials, as this supported an understanding of how well the students were comprehending this approach. Quantitative data was collected in cycle 2; Figure 9 indicates the percentage rates of student engagement on a weekly and monthly basis.



	Not at all	Once a month	1 or 2 times a week	2 times a week	3 times a week or more
Use of discussion forums for learning	0%	13.04%	43.48%	30.43%	13.04%
Use of discussion forums to network and communicate with peers	4.35%	21.74%	39.13%	30.43%	4.35%
Access workshop slides	0%	9%	35%	30%	26%
Access learning materials	0%	0%	22%	48%	30%
Access resources	0%	0%	22%	43%	35%
Access readings	4.35%	4.35%	26.09%	43.48%	21.74%

Figure 9. Students' level of engagement with Moodle and online activities and materials

The results indicated that the students engaged with the forums and discussions on a regular basis, with 39.13% using the forums to network and communicate with peers once or twice a week and 43.48% using the discussion forums for learning once or twice a week. Students showed a strong inclination to access learning materials online, with 48% doing so twice a week and 30% three or more times a week. Of concern were the 4.35% who claimed they had not accessed the readings or discussion forums at all during the semester. This was difficult to reconcile with the unit results, as

the assessment process necessitated students engaging with the readings and citing and discussing these in their essays, as well as contributing to forums. As all students passed the unit in this semester, it has to be assumed that the respondents had misunderstood the survey question about readings and incorrectly responded that they had not accessed unit materials. This may have been because they did not understand that unit materials included the readings and discussion forums.

The accessing of resources was encouraging, as 43% did this twice a week and 35% three or more times a week. Part of the blended-learning approach was to include more online resources, making these part of the ongoing learning process. This aspect of the newly implemented blended-learning approach appeared to be working effectively and achieving its purpose of creating a synergy between the online resources, the workshop activities and a virtually paper-free environment. The activity in the forums helped students reach the goal of sharing student ideas and student-developed teaching and learning resources via an online community of pre-service teachers.

A supportive approach

More generalised data from the journals and debrief meetings included an emphasis on the power of the informal and instant feedback following classes. Susan documented her response to a class in which she felt the process, activities and the student response to the work was disappointing. She was deflated following the class and was harbouring a sense of frustration and failure. The promptness of the response from Kate, who sat down and debriefed with Susan as soon as the students left, provided a welcome level of support and encouragement. Both lecturers discussed the class, why it had not gone as well as hoped, how the activities could have been tweaked and where blended learning could have been used in a more effective way. Whilst Susan was very disappointed in the class, her attitude toward it was greatly improved by discussing it immediately with Kate.

Many journal entries elucidated the value of these immediate debrief sessions in terms of providing support, encouragement, immediate review of class work and a means for the colleagues to bond. The bonding that resulted from this process avoided any potential for either lecturer to feel the need to undermine the other in class or to allow any of the students to attempt to set the lecturers against each other. The approach in which both lecturers were cc'ed into every email response to students also made it clear to students that the lecturers were in constant contact and there was no point in trying to manipulate either lecturer in any way. The debrief sessions also allowed for immediate discussion of any student who the lecturers felt was struggling or needed further support or intervention of any sort.

The debrief meetings were extremely important, as the learning gained was often immediately fed back into the planning for classes. The information and understandings gathered in these meetings became part of the data that informed the research; the lecturers took action based on the data gathered in the debrief meetings and continued to research the action taken in subsequent classes.

Conclusion

The three project questions were focused on ascertaining the impact of the implementation of team teaching and blended learning in the classroom, and ways these two approaches could be combined to positively affect the pre-service teachers' learning. The findings concluded that team teaching had a positive impact overall, while blended learning had a positive impact for most of the participants. To enable a continued positive implementation of these approaches, the researchers need to maintain high levels of peer collaboration and networking. This will support a higher level of interaction with the course materials, which the data suggests results from the

combined approaches. The multiple perspectives that team teaching provides positively affects the classroom and contributes to the supportive environment that the researchers encourage.

The themes evident in the cycle 1 data in regard to blended learning and team teaching were included in cycle 2 surveys with positive results, suggesting that the approaches were valuable and supported good student learning. In cycle 1, team teaching was better understood than blended learning; however, by making use of social networking (Rosenburg 2006) and increasing the use of innovative learning technologies (Thorne 2003), this approach will likely become an embedded part of the tertiary learning process, leading to a more developed understanding of the term within tertiary student cohorts.

The data has illuminated the ways these two teaching approaches can be combined to allow for positive outcomes, but cycles 3 and 4 will illuminate this even further and show areas of consistency and contrast in the student experience from year to year. Thus far it is clear that exposure to different styles of teaching is valued, and that modelling good practice is an important part of pre-service teacher education. The participants experienced blended learning from a student perspective, something they can take into their own classrooms when they are teachers themselves. The participants also observed the lecturers' rapport in the classroom and commented on this in the surveys. The researcher journals supported the notion that the lecturers needed to be able to communicate in a meaningful way with each other during the planning and debriefing processes and be honest about their concerns. At this stage of the project it is clear that the way the lecturers interact both in and out of the classroom significantly affects the overall success of implementing the combined approaches.

For the researchers, these findings substantiated the benefits of combining the blended-learning and team-teaching approaches in the pre-service classroom, but also suggested that certain aspects needed to be refined and modelled. In particular, future cycles will focus on enabling a more sophisticated and meaningful understanding of the term "blended learning" among the student cohort. Additionally, the research needs to develop a more sophisticated understanding of the reasons the students found (or didn't find) the approaches beneficial. Research supports the notion that blended learning and team teaching in isolation result in many benefits for students and teachers. However, research has not as yet provided insight into the impact of the combination of the two approaches, a research gap that this project addresses. As this longitudinal project progresses, a more refined model of teaching practice that combines blended learning and team teaching will be developed.

References

Alber, S M 2011. *A toolkit for action research*. Rowman & Littlefield, Lanham, MD.

American University of Beirut 2010. New Blended Learning teaching approach enthusiastically received. *News*, 29 April. Viewed 7 September 2015, http://www.aub.edu.lb/news/Pages/106523.aspx.

Arnold, J & Jackson, I 1996. The keys to successful co-teaching. *Thought and Action*, 12(2), pp. 91-98.

Bates, T, Swennen, A & Jones, K (eds.) 2011. *The professional development of teacher educators*. Routledge, London.

Bauwens, J & Hourcade, J L 1995. *Cooperative teaching: Rebuilding the school house for all students*. Pro-ed, Austin, TX.

Benjamin, J 2000. The Scholarship of Teaching in Teams: What does it look like in practice? *Higher Education Research & Development*, 19(2), pp. 191-204.

Boulay, M 2005. Teacher Content and Pedagogical Learning in Secondary Team Teaching Settings. Unpublished dissertation, Boston University School of Education, Boston.

Bondy, E & Ross, D 1998. Teaching teams: Creating the context for faculty action research. *Innovative Higher Education*, 22(3), pp. 231-49.

Brady, L 2004. Toward optimal student engagement in teacher education. *Australian Journal of Teacher Education*, 29(2), pp. 1-10.

Donnison, S, Edwards, D, Itter, D, Martin, D & Yager, Z 2009. Reflecting on improving our practice: Using collaboration as an approach to enhance first year transition in higher education. *Australian Journal of Teacher Education*, 34(3).

Farey, J 1974. Openness and Team Teaching, Education 3-13. *International Journal of Primary, Elementary and Early Years Education*, 2, pp. 94-96.

Freeman, J 1969. *Team Teaching in Britain*. Ward Lock, London.

Friend, M & Cook, L 2007. *Interaction: Collaboration skills for school professionals* (5th ed.). Allyn & Bacon, Boston.

Fuller, R & Bail, J 2011. Team Teaching in the online graduate learning environment: Collaborative instruction. *International Journal of Information and Communication Technology Education*, 7(4).

Gray, W A 1978. Open areas and open education re-examined: A research study. *Australian Journal of Teacher Education*, 3(1), article 4.

Geen, A G 1985. Team Teaching in the Secondary Schools of England and Wales. *Educational Review*, 7(1), pp. 29-38.

George, M A & Davis-Wiley, P 2000. Team Teaching a graduate course: Case study: A clinical research course. *College Teaching*, 48(2), pp. 75-80.

Haddon, E 2011. Multiple teachers, multiple gains. *British Journal of Music Education*, 28(1), pp. 68-95.

Hendricks, C 2009. *Improving schools through action research: A comprehensive guide for educators.* Pearson, Upper Saddle River, NJ.

Hoic-Bozic, N, Mornar, V & Boticki, I 2009. A blended learning approach to course design and implementation. *IEEE Transactions on Education*, 52(1), pp. 19-30. doi:10.1109/TE.2007.914945

Hokka, P & Etelapelto, A 2014. Seeking new perspectives on the development of teacher education: A study of Finnish context. *Journal of Teacher Education*, 65(39).

Humble, A & Sharp, E 2012. Shared journaling as peer support in teaching qualitative research methods. *Qualitative Report*, 17(96), pp. 1-19.

Johnson, A P 2012. *A short guide to action research* (4th edn.), Pearson, Upper Saddle River, NJ.

Kaplan, D S, Rupley, W H, Sparks, J & Holcomb, A 2007. Comparing traditional journal writing with journal writing shared over E-mail list serves as tools for facilitating reflective thinking: A study of preservice teachers. *Journal of Literacy Research*, 39, pp. 357-387.

Knights, S & Sampson, J 1995. Reflection in the context of Team Teaching. *Studies in Continuing Education*, 7(1 & 2), pp. 57-69.

Letterman, M & Dugan, K 2004. Team Teaching a cross-disciplinary honors course. *College Teaching*, Spring, 52(2), pp. 76-79.

Lim, D H & Yoon, S W 2008. Team learning and collaboration between online and blended learner groups. *Performance Improvement Quarterly*, 2(1), p. 3.

Loughran, J 2014. Professionally developing as a teacher educator. *Journal of Teacher Education*, 65(4), pp. 271-283.

Mansell, J 2006. Team Teaching in Further Education. *Educational Research*, 17(1), pp. 19-26.

McNiff, J & Whitehead, J 2000. *Action research in organisations*. Routledge, London.

Mills, G E 2003. *Action Research: A guide for the teacher researcher* (2nd edn.), Merrill Prentice Hall, Upper Saddle River, NJ.

Mirriahi, N & Alonzo, D 2015. Shedding Light on Students' Technology Preferences: Implications for Academic Development. *Journal of University Teaching & Learning Practice*, 12(1). Viewed 23 May 2016, http://ro.uow.edu.au/jutlp/vol12/iss1/6.

Moller, L, Wellesley R F & Huett, J 2008. The evolution of distance education design on the potential of the web. *TechTrends*, 52(4). pp. 66-70.

Noffke, S & Somekh, B (eds.) 2009. *Handbook of educational action research*. Sage, London.

O'Keefe, P, Rienks, J & Smith, B 2014. Use of resources, people and approaches by accounting students in a blending learning environment. *Journal of University Teaching & Learning Practice*, 11(3). Viewed 23 May 2016, http://ro.uow.edu.au/jutlp/vol11/iss3/5.

Pelton, R P 2010. *Action research for teacher candidates: Using classroom data to enhance instruction*. Rowman & Littlefield, Lanham, MD.

Picciano, A G 2006. Blended Learning: Implications for growth and access. *Journal of Asynchronous Learning Networks*, 10(3), pp. 85-91.

Robison, R 2004. Selected faculty experiences in designing and teaching Blended Learning courses at Brigham Young University. Unpublished dissertation, Graduate College at the University of Nebraska, Nebraska.

Rosenburg, M J 2006. *Beyond E-learning: Approaches and technologies to enhance organizational knowledge, learning and performance*. Jossey-Bass/Pheiffer, San Francisco.

Sagor, R 2000. *Guiding school improvement with action research*. Association for Supervision and Curriculum Development, Alexandria, VA.

Shibley, I A 2006. Interdisciplinary Team Teaching: negotiating pedagogical differences. *College Teaching*, 54(3), pp. 271-274.

Singleton, D 2012. The Transition from Traditional to Blended On-Campus Learning Experience. Abstract of a dissertation, Nova Southeastern University.

Smith, K 2003. So, what about the professional development of teacher educators? *European Journal of Teacher Education*, 26(2), pp. 201-215.

Spiliotopoulos, V 2011. Towards a technology-enhanced university education. In Kitchenham, A (ed.), *Blended Learning across Disciplines: Models for Implementation*. University of Northern British Columbia, pp.1-16.

Stringer, E 2008. *Action research in education* (2nd edn.), Pearson/Merrill Prentice Hall, Upper Saddle River, NJ.

Thorne, K 2003. *Blended Learning: How to integrate online and traditional learning*. Krogan Page, London.

Vogler, K & Long, E 2003. Team Teaching two sections of the same undergraduate course: A case study. *College Teaching*, 51(4), pp. 122-126.

Welch, M & Sheridan, S M 1996. *Tele-educational consortium: Strategies for school-based and school-home partnerships*. University of Utah, Salt Lake City.

Wilson, N & Bai, H 2010. The relationships and impact of teachers' metacognitive knowledge and pedagogical understandings of metacognition. *Metacognition and Learning*, 5(3), pp. 269-288.

Winn, J A & Messenheimer-Young, T 1995.Team Teaching at the university level: What we have learned. *Teacher Education and Special Education*, 18, pp. 223-229.

White, C S, Henley, J A & Brabston, M E 1998. To team teach or not to team teach-that is the question, A faculty perspective. *Marketing Education Review*, 8(3), pp. 13-23.

Yanamandram, V & Noble, G 2006. Student experiences and perceptions of team-teaching in a large undergraduate class. *Journal of University Teaching & Learning Practice*, 3(1). Viewed 18 July 2016, http://ro.uow.edu.au/jutlp/vol3/iss1/6.

York-Barr, J, Ghere, G S & Sommerness, J 2007. Collaborative teaching to increase ELL student learning. *Journal of Education for Students Placed at Risk*, 12(3), pp. 301-335.