Moodle in the Classroom: An "in the trenches" perspective

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Abstract

This paper focuses on an "in the trenches" perspective of a pre-service teacher and his use of Moodle to teach three subjects to year nine students at Heathfield High School, a public school in South Australia. This case study looks specifically at how Moodle can be used to support, enhance and extend student learning. The "in the trenches" perspective will show Moodle can be an effective tool in the classroom. Students enjoy this approach and are motivated to learn when the course is designed well, tailored and populated with activities and resources that create engagement and enrich the learning experience. The pre-service teacher's observations, conversations with teachers and students and feedback responses from 3 teachers (100% response) and 69 students (83% response) are drawn upon and form the basis of this paper.

Keywords

Moodle, pre-service teacher, course design, course content, pedagogy, student learning

Background

In the classroom, information and communication technology can be used to support teaching and learning across all areas of the curriculum (Bate 2010). To achieve this, a well-balanced approach to incorporating technology, pedagogy and content needs to exist in order to provide an effective learning environment for students (Koh & Chai 2011). Students need opportunities to work with technology so they can gain the skills and confidence they need to, not only support their learning, but to equip them with the skills they need for life after school. To accomplish this, it requires teachers to have a good understanding of how information and communication technologies (ICTs) can be used and the skills to be able to incorporate it into learning and teaching (AITSL 2012). Teachers who have a strong combination of ICT skills and pedagogical knowledge will be better prepared to "effectively use today's technologies in the classroom as well as continue to develop and adapt to new technologies that emerge in the future" (Gill & Dalgarno 2008).

Students who are studying to be teachers have the opportunity to not only obtain these skills and knowledge, but to put these into practice in the classroom. A student who undertakes a Bachelor of Education degree at Flinders University must, as part of their studies complete a Professional Experience (PE) program (Flinders University, n.d). In the final year of this degree, a student is allocated to a placement where they must spend ten days in term one and six weeks (as one block) in term two. For the duration of the six week block, it is expected that a pre-service teacher will have a weekly class contact equivalent to 80% of a teacher's full teaching load.

This paper will detail an "in the trenches" perspective of a pre-service teacher who used Moodle in the classroom during his 6 week block at Heathfield High School.

Heathfield High School is a comprehensive secondary school of 870 students, in Years 8 to 12, located in the Adelaide Hills. It is a vibrant social environment that reflects the highly desirable features of the local Hills community. The school places great emphasis on ICT use and has successfully implemented a 1:1 wireless laptop program for all students and teachers and an e-learning program. The program comprises ten teacher e-coaches with time provided to support staff to implement and continue development of 1:1 learning technologies. It specialises in Advanced Technologies, linking Mathematics, Science and 21st Century technologies in new and exciting ways, and has a Special Interest Volleyball Program that is Australia's premier school-based program, enhancing the pursuit of sporting excellence along with academic success. The school's International Program recognises the educational value of exposure to other cultures through short term visits from schools worldwide and the opportunity for students to tour Asia and Europe. Students at Heathfield High School are able to explore flexible and multiple pathways through their extensive and creative curriculum

linking them into university pathways, trades and traineeships or direct employment opportunities (Heathfield High School n.d.).

In this environment, the pre-service teacher used Moodle to provide students with a technological experience that would help and encourage them to actively engage with the content-based learning materials, interactive activities and their peer learners (Kennedy 2005). In this case study, the pre-service teacher, with the guidance of three mentoring teachers, was given three classes of year 9 students to teach for a 6 week period. The subjects taught were Robotics (29 students), Digital Photography (16 students) and Advanced Technology, in which Microsoft OneNote was the focus (24 students). As the pre-service teacher had a strong background in information and communication technologies and expertise in e-learning, the opportunity was used to determine the extent to which Moodle could be used in the classroom to support, enhance and extend student learning. Initial observations revealed that the potential of Moodle was not being maximised and Moodle's full potential was not being realised.

Methodology

In South Australia, the state Department for Education and Child Development made a decision to provide each public school with an online learning environment created in Moodle and this is what was used for this case study. At this point it is important to note that at the time the pre-service teacher's 6 week teaching block (at the start of term 2) commenced, there were issues with the Moodle site that had been in existence for some time. Although these were rectified by the end of the first week, a negative impression on the use of Moodle amongst the teachers and students had already developed. Secondly, teachers were using a local network drive as a repository for the content students needed to access and were receiving submitted work from students as a hardcopy, email or USB drive they were using an Excel spreadsheet to maintain student completion and grades.

This case study examines three Moodle courses that were created from "scratch" (ie using a typical Moodle default course settings) by the pre-service teacher, with the aim of supporting, enhancing and extending student learning in three subjects. As the Moodle site had been in existence, it was confirmed in the first lesson of each subject that all students had a very basic understanding of Moodle and had used it before. During the 6 week teaching block, the pre-service teacher had a maximum of five lessons, two double lessons and one single lesson with the students and Moodle was used on most occasions. In the last lesson in week 6, the pre-service teacher asked the students and mentoring teachers to complete a survey which was used as the research model. These responses, in addition to the pre-service teacher's observations, have been drawn upon to form the basis of this paper. Table 1 provides a summary of the number of responses received.

Table 1: Feedback Survey

Teachers	3 teachers completed the survey (100%)
Students	Advanced Technology – 17 out of 24 students completed the survey (71%)
	Digital Photography – 14 out of 16 students completed the survey (88%)
	Robotics – 29 out of 29 students completed the survey (100%)

Moodle – look and feel

The Moodle site had to be easy to use otherwise students would be less inclined to use it (Arteaga Sanchez & Duarte Hueros 2010). Therefore the Moodle site needed to be visually appealing, simple to navigate, tailored to the user and contain information that was relevant and up-to-date. Unfortunately, the feedback from teachers and students about the 'look and feel' of Moodle (see Table 2) revealed this was not the case and a sense of frustration at how difficult it was to find things was a re-occurring theme. A Moodle front page that contained the whole structure of the Moodle site (learning areas were added as a category, year levels as a sub-category and then subjects as a course) proved to be unworkable. In addition, what was compounding the confusion was

the fact that a course was visible to teachers and students when it did not have to be, because the course had already been completed or was a course they did not need to undertake. This highlighted the need to have a Moodle site that helped the teacher and was student focussed which meant it needed to be personalised and tailored to the specific needs of each person (Arteaga Sanchez & Duarte Hueros 2010).

Table 2: Feedback about the Moodle look & feel

Teachers	"It is difficult to find things … why do I see all these old courses from last year?
	"So how do I find things? The site has a number of categories/sub categories and but I can't seem to find my courses … I can see lots of other courses I can't get access to"
Students	"It was hard to navigate around … it has too much depth in it and I feel it has to be simplified"
	"It is designed very confusingly and when it finally started working it wasn't user friendly …"
	"It was horrible … it gets confusing at times like a giant maze …"

Moodle – course design

Teachers are finding that Moodle is a great way to organise, manage and deliver course materials (Martin-Blas & Serrano-Ferandez 2009). Using Moodle to create a student-focussed environment will enable students to build up their understanding based on their knowledge and skills (Arteaga Sanchez & Duarte Hueros 2010). The feedback, particularly from students revealed the importance of getting the course design right. The pre-service teacher had designed each course so it was clear, not too text heavy, included lots of white space and specific icons to indicate key things (eg tasks to do, assessment tasks) to make it easy to navigate. Originally, all three courses were created with the same design – the format selected was "Topics" and the course layout option selected was "one section per page" in order to eliminate the "toilet roll" navigation scenario.

The course layout option was quickly changed to "show all sections on one page" in two subjects (Advanced Technology and Digital Photography) in order to combat student navigation difficulties. Students were more comfortable with this layout and found the navigation easier, enabling them to find things more quickly. This was important to establish, as "perceived usefulness is considered to be an extrinsic motivation for the user" (Arteaga Sanchez & Duarte Hueros 2010). The three mentoring teachers agreed (one strongly) that the layout and structure was clear, simple and well-organised as supported by the majority of students (some strongly) as shown in Figure 1
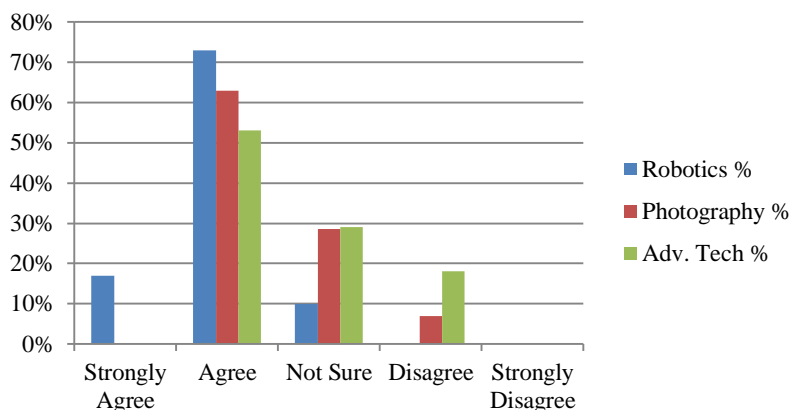

Figure 3: The layout of the course and the way the topics were organised made finding things easier

A review of the comments from students, shown in Table 3, substantiated the view that a well-designed course can have an impact on the enjoyment levels of a student and are therefore more likely to like the Moodle experience (Arteaga Sanchez & Duarte Hueros 2010). The students warmed to the idea of a "one stop shop", to be able to find everything they needed for that subject in the one location. One area of the course design that was observed as causing some confusion was the use of conditional activities (Moodle n.d.) and course completion (Moodle n.d.). Students struggled initially with the concept that the subject they were undertaking had been tailored specifically to their learning needs. A number of the students had difficulty understanding why they had more or less course materials than their peers and why they had to complete activities, tasks and assessments that were different.

Table 3: Feedback about course design

Students	
	"This so far is the only layout I like in Moodle … because it was easy to understand and was easy to find stuff"
	"I like that coming straight onto the page, it is laid out clearly, is neatly organise and it's easy to navigate around"
	"Things that made me enjoy using Moodle was the user friendly interface …"
	"The way the teacher has set it all up is easy, practical and efficient …"
	"I liked the way that everything was in one spot"

Moodle – pedagogy

Advanced Technology, Digital Photography and Robotics are subject areas that appeared to provide a lot of scope to creatively use Moodle to engage the learner and enrich their learning experience. However it was not just a case of using technology for technology's sake either (Borsheim, Merritt & Reed 2008) as a "backwards by design" approach (Wiggins & McTighe 2005) was used for each subject. As a result, the pre-service teacher created learning objectives based on the South Australian Curriculum Standards and Accountability Framework (SACSA n.d), then the formative assessment tasks were developed and then the course material and interactive activities required to provide students with the knowledge and understanding they needed to successfully complete the subject was added. With this in mind, Table 4 provides an overview of the extent to which each course was used to support, enhance and extend student learning.

Table 4: Use of Moodle to support, enhance and extend learning

	Support	Enhance	Extend
Advanced Technology	70%	15%	15%
Digital Photography	60%	20%	20%
Robotics	40%	30%	30%

The feedback received from the three mentoring teachers revealed that they agreed (one strongly) that Moodle can be used effectively to support, enhance and extend the learning of students. Some of the comments they provided to substantiate this viewpoint are provided below in Table 5. In addition, all three mentoring teachers agreed (and strongly) that the use of Moodle in the classroom worked extremely well in their subject area and they all agreed (two strongly) that the students were more engaged because of the way Moodle was incorporated. From their observations of students during the lessons, they agreed (one strongly) that the students were motivated and enjoyed using Moodle in the course, which aligns to what other studies have found (Horvat et al. 2013; Arteaga Sanchez & Duarte Hueros 2010). However, it was noted that the enjoyment levels

of some students were higher than others who still needed information vocally explained to them, required more direction or were unable to self-regulate their work output as well.

Table 5: Use of Moodle to support, enhance and extend learning

Teachers	"Easy to provide extension activities and add extra resources"
	"Less chance of losing stuff … put ownership of learning and responsibility on the students and hence they had no excuse!"
	"… freed up to work with the students giving support and assistance where needed"
	"Provided a more structure activity and students could work through at their own pace and revisit resources, when and if they needed to"
	"Some students thrived off the ability to access the results of tests instantly"

The feedback from students on how they viewed the effectiveness of Moodle to enrich their learning experience (see Table 6) is of particular note as it almost mirrors the pedagogy applied to each of the courses in Table 4.

Table 6: Use of Moodle to support, enhance and extend learning

	Support		Enhance		Extend	
	Agree	Unsure	Agree	Unsure	Agree	Unsure
Advanced Technology	59%	29%	35%	41%	29%	47%
Digital Photography	66%	14%	29%	36%	29%	57%
Robotics	69%	21%	72%	21%	69%	24%

In Advanced Technology and Digital Photography, Moodle was used predominantly to support rather than enhance or extend student learning and this is very similar to the view students held. In Robotics the approach was more evenly spread, to use Moodle to support, enhance and extend student learning and again this closely resembles the feedback provided by these students.

A sample of the comments provided by students on the way in which they felt Moodle was used to support, enhance and extend student learning is provided in Table 7. One of the predominant themes was the ease in which they were able to find out what they had to do and to track what they had completed. Another positive was that students were able to access the course from anywhere at any time, which they did to download, check, and reread things instead of having to keep asking the teacher in class. However, some students did like the fact they could communicate with the teacher outside of the classroom (Martin-Blas & Serrano-Fernandez 2009). In relation to this, one of the mentor teacher's did not realise how much time could be spent with students as a result of the use of Moodle in the classroom.

Table 7: Use of Moodle to support, enhance and extend learning

Students	"If I am worried, I can login and find out what I have to do … or communicate with the teacher or students"
	"It was self-explanatory … I can see what I had to do and what I had not done"
	"… the assignments … many links to help us understand what we were doing"
	"reading each other's blogs to understand each other's point of view"

> "to track what I had completed"
>
> "to receive timely feedback on things I submit for marking"
>
> "has enabled me to reread things … includes templates, videos and extra websites for better understanding"
>
> "having all the links provided has helped … I have not had to Google search as much"
>
> "always had access to the instructions and to check something … and could easily hand up work"
>
> "… it was easier having the instructions on Moodle because I did not have to keep asking the teacher"

Moodle – course content

In each subject, a variety of activities and resources were incorporated into the course to enrich the learning experience and to engage the learner in the process of learning. Figure 2, summarises how comfortable students were in using these tools that were provided in Digital Photography and Robotics, despite very little instruction being provided. The frequency of use also has some bearing of how comfortable students were with the tool.
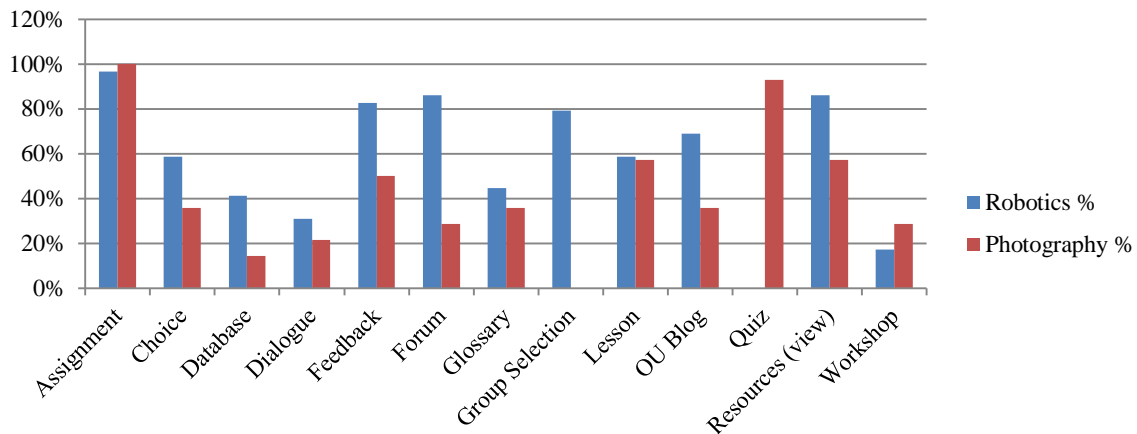

Figure 4: I am comfortable using the following Moodle tools

From observations during the 6 weeks, it was interesting to watch the level of engagement as students undertook many of the activities. The tools that generated a high level of interaction included Choice, Feedback and Workshop modules, possibly because it was a new learning experience or because the results each produced were immediate and thought provoking. Students appeared to enjoy working at their own pace and the interactivity Moodle provided, especially with activities that enabled them to compare what they were doing with others, providing the environment was non-threatening. This compares favourably with other studies which have shown that one of the key factors of student satisfaction is that interactivity and autonomous learning modes can also have an influence (Drennan, Kennedy & Pisarski 2005; Bolliger & Martindale 2004). The feedback from students revealed, being able to find out what they had to do, track progress, submit work, view grades and read feedback were things they enjoyed most about Moodle (see Table 8).

Table 8: I enjoyed using Moodle to …

	Advanced Technology		Digital Photography		Robotics	
	Agree	Unsure	Agree	Unsure	Agree	Unsure
Communicate with the teacher & students	41%	24%	43%	29%	66%	21%
Find out what I had to do	53%	29%	79%	21%	79%	14%
Track my progress	53%	35%	50%	43%	79%	7%
Submit my work	65%	35%	57%	21%	62%	21%
View my grades and feedback	65%	24%	43%	29%	76%	10%

Moodle was used really effectively to keep students informed on what they needed to do and by when, which was a view shared by all three mentoring teachers (two strongly). One mentoring teacher provided the following comment, "being able to use Moodle to track student progress and submitted work, worked amazingly well, as this put the responsibility back onto the students to ensure tasks and assessments were completed on time". Being able to use Moodle to grade and provide feedback to students in a timely manner was another area all mentoring teachers agreed with (one strongly). Furthermore, the ability to use this information to identify "at risk students" and provide additional support, either online or in the classroom, was seen as a real positive. The pre-service teacher found this in particular to be invaluable, as quality time was spent with students "in need" as a consequence appropriate action could be taken. Learning resources and activities were adapted to different learning styles with the view of leading to significant improvement in learning results (Despotović-Zrakić et al. 2012). The amount of one-on-one time the pre-service teacher was able to spend with students as a result was another observation that was noted by all three mentoring teachers.

All three mentoring teachers agreed (all strongly) that providing students with a way to access their course at any time and from anywhere had merit and the student feedback as shown in Table 9 supports this. Moodle not only allowed students the ability to access their course from home but enabled them to show others what they were doing.

Table 9: Because of Moodle, I …

	Advanced Technology		Digital Photography		Robotics	
	Regularly	Never	Regularly	Never	Regularly	Never
Accessed my subject from home	29%	53%	21%	21%	83%	0%
Showed someone else what I was doing	24%	59%	7%	71%	45%	38%

The feedback from students about the use of Moodle in the classroom revealed that the majority of students, particularly those undertaking the Robotics subject enjoyed the Moodle experience. It has been shown, that if students have a positive view of Moodle then it is anticipated that they will use it again (Damnjanovic & Mijatovic 2013). However, there was no overwhelming support from students wanting to use Moodle in all subjects. One of the reasons for this is because almost students believe that Moodle is not well suited to all subjects, see Table 10.

Table 10: In relation to Moodle, I …

	Advanced Technology		Digital Photography		Robotics	
	Agree	Unsure	Agree	Unsure	Agree	Unsure
Enjoyed using it	47%	41%	43%	36%	72%	36%
Would like to use it in all subjects	6%	47%	7%	36%	34%	28%

In contrast, all three mentoring teachers agreed (two strongly) that they would like to use Moodle in all of their subjects. The "one stop shop" had an appeal but if courses were presented in exactly the same in Moodle, then lessons could become very repetitive, leading to boredom and less enjoyment. The feedback from teachers and students about the use of Moodle in all subjects is provided in Table 11.

Table 11: Feedback why you would/wouldn't like to see Moodle used in all of my subjects

Teachers	"… like to use it in different ways and in different extents depending on the subject and the topics, however I would need to make sure I didn't use the same course design all the time as I believe if I did then the students may get bored"
	"it is an invaluable link between school and home … it provides access to students who are away from school and allows parents to get involved in the student's learning"
	"I would use it as a basic spot to go to access all major assignments"
Students	**Would like to use**
	"Because of the simplicity of it … because everything would be in one spot"
	"To access it when I am not in the lesson"
	"To upload my work … to make it easier to gain timely feedback …"
	"… prefer everything organised online rather than having it in a mess on paper in books"
	Would not like to use
	"I don't think it will work in all subjects …"
	"It would make the lessons too computerised"
	"I would prefer the teacher explain the subject"
	"I like to hand up hard copies and I like to be creative, like hand in work, instead of electronically"
	"It would obstruct my learning"
	"It would get very boring … and tedious"
	"It would get annoying ... I like to learn in different ways and have some variety"

Finally, one of the assumptions made at the very beginning was the level of knowledge and skills that a student has of Moodle. At the end of the six weeks, when students were ask to self-assess and rate where they thought they were at the start of the six weeks and where they thought they were now, almost all students believed they

had improved, some more than others (see Figure 3). When the feedback was reviewed, it was interesting to note that at no stage was lack of Moodle knowledge and skills seen as a barrier for students.
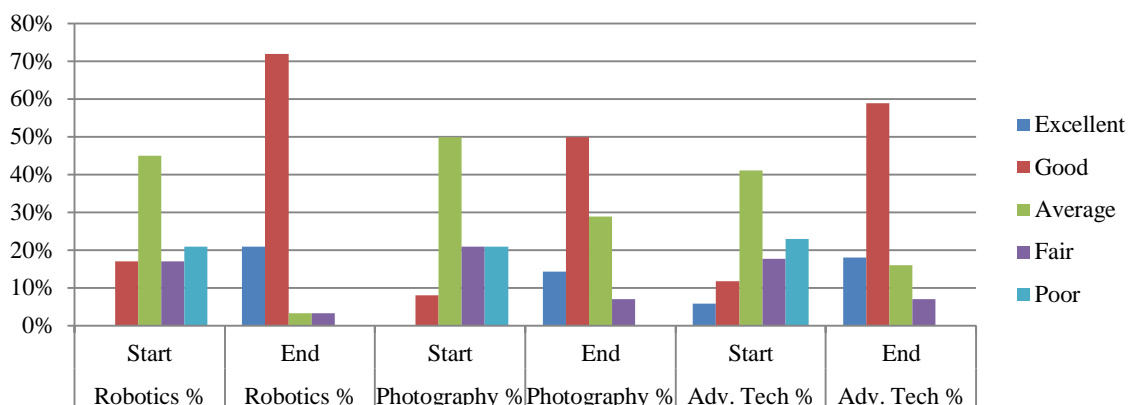

Figure 3: Knowledge of Moodle at the start and end of the 6 weeks

Conclusion

This case study on an "in the trenches" perspective of using Moodle in classroom has shown that Moodle can be used effectively to support, enhance and extend student learning. Furthermore, creating a student-focussed environment can motivate students and generate an engaging and enriching learning experience that students will enjoy providing they find it easy to use. To achieve this, Moodle courses need to be well-designed, easy to navigate, tailored, populated with activities and resources that students can access at any time and from anywhere. It is important that teachers vary how they develop their course and use Moodle in the classroom as students may potentially lose interest and find it hinders their learning. Although students are able to quickly familiarise themselves with Moodle, the use of some course formats, conditional activities and completion status to tailor student learning can also impact negatively on the student's experience. When Moodle is used well, students are provided with a "one stop shop" they can access at any time and teachers can track student progress, identify at risk students more easily and spend more time in the classroom interacting with students.

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