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Implementing a Project-Based Learning Approach in an Introductory Property Course

Lee Hong Sharon Yam

Centre for Accounting, Governance and Sustainability

University of South Australia

&

Peter Rossini

Centre for Regulation and Market Analysis

University of South Australia

ABSTRACT

Project-based learning (PBL) is a student-centred instructional approach used to promote active and deep learning by involving students in investigating real-world issues in a collaborative environment. In Property programs, PBL is particularly appropriate as it exposes students to experiential learning in which they experience a 'feel' for the activities involved in the property profession. In this paper, we discuss how PBL was implemented in an introductory property course running in semester one, year one, which is offered in multiple modes of study. This course also serves as an introduction to University study and the property profession. Two qualitative student surveys were conducted during the study period to explore students' feedback on their learning experience. Feedback from students suggested that PBL provides good insights to the valuation process and the field work involved and that group exercises help to motivate students and make the subject matter more interesting. As well, we have identified challenges in implementing PBL; these include workload issues, teachers' content knowledge, lack of experience from both teachers and students and the need to develop specialised material for off-campus study.

KEYWORDS: Project-based learning, active learning, deep learning, constructive alignment

INTRODUCTION

Today's higher institutions embrace various teaching and learning policies to enhance students' learning outcomes; one of the important strategies is to use assessment to engage student. Assessment is about understanding the processes and outcomes of student learning, and understanding the students who have done the learning (Ramsden 2003, p. 180). As suggested by Tyler (1949, p. 63),

'Learning takes place through the active behaviour of the student, it is what he does that he learns, not what the teacher does.'

Building on that, Biggs (2003, p.1) puts forward that 'Constructive alignment is an approach to design a curriculum that optimises the conditions for quality learning. He argues that students are the one who construct meaning through relevant learning activities; thus, what is important is what the student does. On the other hand, 'alignment' means what the teacher does is to provide a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes (Biggs 2003, p.1).

Inevitably, assessment has been acknowledged as a critical factor in stimulating student learning activities (Biggs & Tang 2007; Ramsden 2003; Shuell 1986). From the student's point of view, the assessment is the curriculum (Ramsden 2003). They will learn what is assessed, not what is in the curriculum, or even what has been covered in the class (Biggs 2003, p. 3). Put simply, improving student learning means improving the way how we assess students (Havnes 2004).

In order to promote active learning, Project-Based Learning (PBL) approach was introduced in an introductory property course to engage first-year students from their first day of study. PBL is a student-centred approach that engages students in exploring important and meaningful questions through a series of investigations and collaborations (Krajcik, Czerniak & Berger 1999). The main objectives are to expose students to experiential learning, and to provide them an overview of activities involved in valuation profession. Feedback from students suggested that PBL provides good insights into the valuation process and field work with group exercises helps to motivate them and make the subject more interesting. Also, we have identified challenges in implementing PBL; these include workload issues, teachers' content knowledge, and lack of experience from teachers and students as well as the need to develop specialised material for off-campus study.

The structure of this paper is as follows. First, we discuss past literature on assessment and PBL. We then illustrate how PBL was implemented in the 'Introduction to Property and Valuation' course, followed by discussions on student feedback and staff reflection followed by the conclusion.

LITERATURE REVIEW

Assessment

Assessment is about getting to know our students and the quality of their learning (Rowntree 1977). Therefore, assessment should be used as an approach to teach more effectively by knowing exactly what students know and do not know (Ramsden 2003). As Ramsden (2003, p. 177) explains:

'Assessment is about reporting on students' achievements and about teaching them better through expressing to them more clearly the goals of our curriculum. It is about measuring student learning, diagnosing misunderstandings in order to help students to learn more effectively.'

Because students' perceptions on assessment have a considerable impact on their attitudes to learning (Struyven, Dochy & Janssens 2005), it should be used to encourage deep-learning to achieve intended learning outcomes (Ramsden 2003). Therefore, in defining intended learning outcome, we have to specify not only the topic content, but also the level of understanding that we want our students to achieve (Biggs 2003). In other words, we design an assessment task that will inform us whether they have achieved those outcomes.

Students are going to learn what will be assessed (Biggs 2003); hence, we have to ensure that the assessment tasks are aligned to the intended learning outcomes. A good assessment encourages students to adopt deep learning processes. One of the most important influences on the students learning approach, is the assessment strategies used (Rust 2002). Students are more likely to use deep learning 'if they can see the relevance and importance of what they are required to do' (Rust 2002, p. 150). Thus, assessment tasks should reflect realistic problems whenever possible to encourage deep learning (Orrell 2008; Ramsden 2003).

It is also important to show student that the assessment is non-threatening (Rust 2002) which will lessen their anxiety (Ramsden 2003). To facilitate learning process, rubric or grading criteria must be made explicit and public (Brown 2004; Ramsden 2003; Rust 2002) so that students can better understand lecturer's expectations. As well, timely and good feedback, linked to the assessment criteria, is crucial to encourage student engagement (Brown 2008, 2004; Rust 2003). Nevertheless, without requiring students to engage with the feedback, it will have a limited effect (Rust 2002). Hence, we must create activities to drive them to reflect and improve on their mistakes.

Put simply, active learning is crucial in constructing knowledge and student engagement. Learners construct knowledge through their own activities, and building on what they already know (Biggs & Tang 2007). Building on that, PBL is a teaching approach that emphasizes student participation in the learning process to construct their knowledge in an active learning environment (Hadim & Esche 2002).

Project-based Learning (PBL)

Definition and elements of PBL

Constructivism has a long history. As early as 1900s, John Dewey, the father of progressive education supports 'learning by doing'; he promotes teaching strategies that helped students actively engaged in learning about topics relevant to their lives (cited in Krajcik, Czerniak & Berger 2003; Grant n.d.). Teaching is not a matter of transmitting knowledge, but requires students to construct knowledge with their own activities, building on what they already understand (Biggs & Tang 2007).

PBL is a comprehensive, deep learning approach to classroom teaching and learning that engages students in the investigation of authentic problems (Blumenfeld et al. 1991, p. 369). Adderley et al. (1975, p.1) put forward an important definition of PBL:

1. It involves the solution of a problem, though not necessary set by the student himself/herself;
2. It involves initiative by the student or group of students, and necessitates a variety of educational activities;
3. It usually results in an end product (e.g., report, computer programme, a model);
4. It often goes on for a considerable period of time;
5. Teaching staffs assume advisory roles instead of authoritarian.

Problem-solving is essential to the development of expertise; thus, students should be exposed to real-world problems from the outset of tertiary education (Helle, Tynjala & Olkinuora 2006). The driving question or problem is essential in PBL as it helps to drive activities in creating the final product that address the questions (Blumenfeld et al. 1991). As well, it is imperative to provide students with appropriate goals from the outset to help them to understand the relevance and importance of the project (Barron et al. 1998).

As defined by Krajcik, Czerniak & Berger (1999), PBL approach engages students in exploring important and meaningful questions through a series of investigations and collaborative activities. These students ask questions, collaborate with each other in designing their investigation activities, collect and analyse data, share ideas, draw conclusions and create final products (Blumenfeld et al. 1991). These active investigations enable them to learn concepts, and apply information in creating their final products (Houghton Mifflin n.d.) which is vital in constructing new knowledge.

PBL is an instructional approach centred on learners' learning activities where the learners are more autonomous as they construct meaningful artefacts through their learning process (Grant n.d.). Autonomy helps to maintain learners' interest and motivate them to take responsibility for their own learning (Worthy 2000). Furthermore by giving control to the student they maximise their opportunity to utilise prior knowledge and experience in finding solutions to the problems (Morgan 1983).

To make PBL effective, teachers play important roles in motivating students and creating a classroom environment conducive for students learning (Yam & Burger 2009). Collaboration among the students, teachers and others in the community is important so that knowledge can be shared and distributed among the members (Houghton Mifflin n.d.). In addition, students' progress need to be observed so that problems can be detected early (Winn 1995). Therefore, teachers' support as well as continuous tutorial discussions involving teachers and students is imperative to sustain students' motivation in the PBL process (Blumenfeld et al. 1991). For instance, teachers can help by providing access to information, and support learning by scaffolding instructions to make the tasks more manageable. It is argued that teachers should break down tasks to make it manageable, coaching students in formulating strategies to solve problems, and gradually releasing responsibility to the students (Blumenfeld et al. 1991).

Benefit and challenges of PBL

There are various benefits associated with PBL approach. With real-life applications of principles learnt from the course, PBL improves students' motivation and gives students a sense of satisfaction (Blumenfeld et al. 1991; Green 1998; Hadim & Esche 2002). Krajcik et al. (1999) note four benefits of PBL: students develop integrated understanding of materials; students learn to collaborate with each other in solving problems; it promotes independent learning as students assume greater responsibility in their learning; and as PBL involves various types of tasks, it satisfies different learning needs of students.

PBL has the potential to enhance deep learning as students have to acquire and apply concepts and principles in solving authentic problems; and it also promotes critical and proactive thinking as they have to formulate plans and evaluate solutions (Blumenfeld et al. 1991). In addition, PBL moves students from passive learning to active learning and is able to improve knowledge retention and the learners' ability to apply prior knowledge in creating their final products (Felder et al. 2000). Besides enhancing students' participation in the learning process (active learning and self-learning), it also helps to improve communication and collaborative skills that are important in their working life later (Hadim & Esche 2002).

Despite numerous benefits of PBL approach, it presents several challenges for the teachers; these include: teachers' content knowledge, students' lack of experience in PBL and their preferences for traditional-structured approach that emphasize passive learning, in addition the organisation and administration of PBL can be very time-consuming (Frank, Lavy & Elata 2003; Helle, Tynjala & Olkinuora 2006).

It is important that projects be designed to sustain student motivation, thus teachers must be supported by the management in creating this type of learning tasks (Blumenfeld et al. 1991). They propose a number of factors to be considered in project design to make sure the intended outcome is attainable. These include whether the students find the project to be interesting and worth doing;

whether they have the competence to complete the project, and whether they focus on learning rather than on grades.

Besides that, due to the constraint of time and resources, PBL project need to be feasible and manageable for both teachers and students (Blumenfeld et al. 1991). Also, students who are inexperienced in collaborative learning environment may find difficulties in working in groups (Johnson & Johnson 1989). In this regards, teacher should provide support for group work and conflict management to facilitate the process.

IMPLEMENTING PBL IN A PROPERTY COURSE

The use of PBL in the Property Program at the University of South Australia (UniSA) goes back to the 1970's however changes to the tertiary education sector in the 1990's lead to severe cut backs and it being completely removed from first year with the requirement for students to take a common first year core of business courses. After some years and declining student satisfaction it was decided to reintroduce a basic property course into the first semester of study and that this would use a PBL approach. Introduction to Property and Valuation is a first semester first-year course for students in the Bachelor of Business (Property) program. This means that the course needs to meet a broad range of objectives, additional to courses that are typically taken by students later on in their program or course offered as electives. The course aims specifically to create a "road map" for future studies, to introduce students to tertiary education, to provide them with an environment where they develop strong peer groups, and to have an opportunity to meet with members of the property profession and property industry. At the same time, the course needs to deliver a significant body of knowledge, as well as meeting other graduate qualities.

The staff expect that students will gain significant graduate qualities from this course, in particular:

1. a significant body of knowledge which includes a broad introduction to the various aspects of property; legal, social, economic and physical aspects; as well as basic valuation principles and practice together with an understanding of national and international valuation standards.
2. that students begin their long road on their discovery of how to be a lifelong learner probably more so than any other first-year course which are taken in large classes across the business faculty. It should assist students to develop a more adult style of learning, showing them how to approach problems and challenges involved in study, and being able to meet challenges at a personal level, by drawing upon a wide range of experience and resources.
3. a significant develop in the students' ability as effective problems solvers. As course is designed using a PBL approach, students are set, a major assignment, which they work at progressively across the semester, and this major assignment requires them to engage

with the material. The assignment involves an individual real-world problem for each student, which requires them to find a property, describe and assess it against each of the major aspects of property and produce a simple valuation using at least two valuation approaches. This involves collecting primary and secondary data, analysing this and reporting in a client focused manner.

4. an improved ability to work as a collaborative team to solve workshop problems and then transfer this to an autonomous environment to solve their own personal project.
5. a grasp of ethical and professional standards that are required in all personal interactions and in dealing with any data that they collect. They must also work within the necessary valuation standards and ethics.
6. better skills in written and diagrammatic communication. In particular, we enhance their ability to draw plans and diagrams and communicate with a client using effective figures and charts as addition to improving professional written communication.
7. the comparison of local and international valuation standards and practice, which enables students to see an international perspective.

These aspects, address all of the seven graduate qualities required at the University of South Australia. However, we believe that the course develops other significant qualities.

As a first semester first year course, Introduction to Property and Valuation serves as an introduction to University style study and helps students to develop a peer group in an environment (very large business core courses) which is not conducive to this. The course also offers students the opportunity to interact with the profession and property industry.

Staff hope that by students taking a personalised individual project as a means of learning the materials that they will develop personal confidence in dealing with challenging situations, as well as providing an environment where they can adapt to a university style of education in a supportive environment. This is particularly important when students are faced with all other first semester courses being a part of a broad Business core where internal classes are generally well over 500 and external classes may approach 200.

The course is based around a major project that is submitted near the end of the course. This project is focused around a different residential property for each student so that they must collect and analyse their own data and reach their own conclusions. The project is broken down into a series of smaller tasks to make the overall project more manageable but the final output is one client focused project which is reported at professional standards and assessed as such. A series of lectures is delivered to provide an overview of all material and this is supported by reading. The key element of the course is weekly workshops. These require students to apply the principles and concepts covered in lectures to a series of simple problems that they tackle in groups. Collectively each of these simple problems addresses same aspect in their individual assignment. Workshop assessment provides almost immediate feedback and the workshops are also an environment for students to seek advice on their personal projects.

To enable the same approach for online (external) students a significant web site has been established with weekly workshops that address the same issues. In some instances these are the same as for internal students but where the workshop includes a field component they will differ. In order for students to complete the workshop tasks there are online audio and video presentations as well as numerous animated examples. A student discussion forum is very active and an essential element is very fast feedback from staff.

The end of semester examination focuses on understanding principles and concepts and solving simple problems while the more complex task of assembling all the parts together is assessed in the project.

EVALUATION OF PBL IMPLEMENTATION

This is an exploratory qualitative study which a case-study method was used to understand how students responded to PBL adopted in their first year of study (see Silverman 2000 and Yin 2003). This qualitative approach is complimented by standards University evaluations of the course and staff which enable comparison with other courses at the same level and in the same general field of study.

For the initial qualitative study two groups of students were involved: Group One consisting of 36 internal students and Group 2 consists of 12 students who studied online (external). In each instance an open-ended questionnaire survey was carried out in week 6. The questions are shown in the appendix.

At the end of the study period the standard University student evaluation of teaching (SET) was given to all students in the course and they could also choose to complete a Course Evaluation Instrument (CEI). The questions for both instruments are shown in the appendix.

Preliminary Student Survey (Week 6)

Of the initial survey with a potential of 36 students, 28 internal students provided written feedback while only five of the 12 external students did. This probably reflects the situation of the survey – in class for internals and online for external students. Most students who completed the survey made useful written comments in the open ended questions.

The preliminary survey allowed the students to give feedback at a very early stage and before any major assessment had been carried out but after 6 workshops which involve in-class assessment and feedback.

Timely and good feedback is crucial for student engagement (Brown 2008; Rust 2003). The provision of helpful feedback was commented on by almost 50% of students (13/28 internals and 4/5

externals) and compared (positively) against other courses which are not based on a PBL approach. Comments from students included

"It helps to receive feedback within in a short time period because it is more meaningful whilst topics are still fresh in your mind." (External student)

"The tutor being helpful and providing feedback and support is important to help you settle in and understand expectations of university courses." (External student)

And from a mature internal student

"Positive feedback builds self esteem and interesting topics keep students focused"

Internal students generally found the style of study, particularly the workshops, made study more interesting and that group discussion helped both in learning and in adapting to a University style of study. On working in groups internal students commented that it was *"more interesting especially in groups"* and that *"working in groups helps provide confidence"*. It also enhances discussion, helps to improve communication and collaborative skills (Hadim & Esche 2002), and brings a feeling of inclusiveness:

"group work means you don't have to do everything on your own". (Internal student)

and

"group work creates discussion about the topic". (Internal student)

Students can easily identify that this course is taught using a different approach and seem to associate this as being more interesting.

"this subject has a different approach to others and it seems to be much more interesting and fun. I look forward to this class every week" (Internal student)

and

"You feel more motivated and engaged" (Internal student)

In total 15 of the 28 internal students made positive comments about the approach in terms of motivation, interest and encouraging groups work.

An important aspect of the use of PBL in this first semester first year unit is the opportunity to allow students to see links with real world practice (Helle, Tynjala & Olkinuora 2006). Much of this occurs in workshops through practical exercises. These add a dimension to study that a typical lecture/tutorial situation does not allow. This leads to genuine excitement from students: *"Practical exercises are exciting"* and *"Practical exercises breakup the tute routine"*. Even at the early stage in the course (week 6) students could see "real world" context in their study.

"Seeing how things work in the real world through practical exercises is a great way to learn as too often I feel that the learning as Uni is to far detached from how things are in reality." (Internal Student)

Also the teaching method:

“allows me to learn at a good pace rather than cramming and gives me an ability to take a real interest in topic I’m able to understand how to apply the concepts”

Student’s induction to a “University style” of study in a less confrontational manner was also an important factor in course design. The survey being conducted in week 6 was deliberately designed to gather thoughts of new students about their adaption to university study. The staff hoped that students would find the style to be challenging, but achievable with staff support (Blumenfeld et al. 1991). One internal student commented that the:

“structure makes it similar to high school but with more of a Uni feel involving more freedom but increased responsibility” (Internal Student)

Another noted that

“encouragement to go through tough tasks makes it helpful to continue this University journey”

In practice for PBL to be effective the students need to feel that staff are approachable and accessible (Blumenfeld et al. 1991; Yam & Burger 2009), and this was mentioned by 12 of the 28 internal students. The interaction also helps to focus students on their study

“Constant interaction between teachers and students means that the students always have to stay focused.” (Internal student)

For external students this is achieved though online discussions and 4 of 5 external students mentioned its importance

“Prompt response to questions on discussion board are helpful, especially being external, the tutor is showing they are interested in your learning and outcomes.” (External student)

also

“... was very helpful and answered queries or questions a lot quicker than other courses I have, this was great and the turnaround for feedback on assessments was also quick and I think this makes it more effective.” (External student).

Overall the student were very satisfied with the course after 6 weeks, they could clearly identify the approach as being different from other courses and found the group work in workshops and practical exercises to be helpful in learning as well as establishing their peer group. Many new students found it to be a more friendly way of introducing the greater responsibility involved with University learning but much of this may have been because they found the staff to be approachable and accessible through the process.

Student Evaluation of Teaching (end of study period)

At UniSA student and course evaluation takes place automatically at the end of each study period. The course is evaluated as a whole (questions are shown in the appendix) and then staff are evaluated for each teaching “class”. This means that there are separate evaluations of the lecturer, external-online coordinator and workshop tutors. Only the staff involved in the paper are considered here, which covers the lecturer, external coordinators and one of the workshop tutors.

Course evaluation

The course evaluation instrument (CEI) has 10 questions with a 5-point scale and 2 open questions. The 5-point Likert items are then “averaged” to create a scale from -100 to +100 with 0 being satisfactory. They are compared against all other courses at UniSA in Business at the same level to establish a relative level. The results show that:

- For questions 1, 2, 5 and 9 results were in the top quartile of courses suggesting that overall students had a very good idea of what was expected of them, there were strong opportunities to peruse their own learning, it greatly helped develop students understand concepts and principles and they felt that staff took a strong interest in their teaching.
- For questions 3, 4, 7 and 8 the course set a benchmark, it had the highest scores when compared to all other similar courses. These are exceptional outcomes and suggest the course is a faculty leader in the application of graduate qualities, a genuine interest in students learning needs and progress, feedback that is constructive and helpful and had assessment tasks related to graduate qualities.
- The course was average on question 6 which asked about relative workload which students found to be relatively heavy. This is to be expected in a learning approach which is focused on assessment.

Student evaluation of Staff

As with the CEI the student evaluation of teaching (SET) has 10 questions with a 5-point scale but with 3 open questions. The 5-point Likert items are then “averaged” to create a scale from -100 to +100 with 0 being satisfactory and as with the CEI are compared against all other staff at a similar level in the same faculty (Business).

For internal students every question scored in the top quartile for both lectures and workshops. This means that the student see the staff in the top 25% of in the faculty in all aspects including; making aims and objectives clear; making subject matter interesting; motivated students; providing opportunities for student own learning; developing an understanding of concepts and principles; displaying a genuine interest needs and progress; providing helpful feedback; using up-to-date teaching and learning approaches; showing how the graduate qualities applied and being satisfied

overall. They found the feedback and use of modern approaches to be near a benchmark level for the individual staff.

For external students Question 1,2,4 and 5 (making aims and objectives clear;. making subject matter interesting; providing opportunities for student own learning; developing an understanding of concepts and principles) were in the top quartile with the other six questions setting a benchmark against other faculty staff and courses! It is expected that the characteristics of PBL together with enthusiastic staff provides many of these outcomes including better motivation and higher levels of interest; feedback, use of up-to-date methods, developing graduate qualities and overall satisfaction.

Staff reflection on the course

Staff teaching in Introduction to Property and Valuation have found that the introduction of PBL has provided significant rewards, both in terms of the academic achievement of students and the personal satisfaction from using this approach. The adoption of PBL has brought many of the anticipated advantages such as more active learning and evidence of deeper understanding the material. Students seem more motivated and developed a broad range of qualities in addition to acquiring knowledge. Many of these advantages manifest themselves in the attitudes and behaviour of the students. The following points of interest were found from staff, on reflection of teaching this course.

- Student attendance and participation in workshops is a feature of the course and this is probably due to the use of PBL. In most cases attendance is near 100%, and students will often apologise for missing workshops. This compares favourably with other courses, where staff report poor tutorial attendance.
- Students appear to have developed a significant respect for staff and develop an expectation that the outcome of their performance (particularly the final grade) is due to their own attitude and effort. As examples of this, we find that having discussed poor performances with students they inevitably accept responsibility for their poor result, do not request formal re-marks and accept that their performance is inadequate. Student, who retook the course, invariably did well and continued through the remainder of the programme with significant success. These outcomes are considered to be more significant than students simply achieving high grades, which could simply be the result of low standards.
- In all classes and on the external student discussion board there is a significant “buzz”. Students appear to genuinely enjoy engaging with the material, and this is reflected in their evaluation comments. It is significant that students find the course to be both challenging and time-consuming yet still provide positive feedback on all aspects of the course.
- PBL seems to be an important approach considering the changes in student attitudes, which seem to have emerged with the arrival of Gen-Y students at University. Students appear to

require more motivation and inspiration in order to maintain focus and find that learning in group environments provides a significant advantage over self-study. Student's commitment to study has a lower priority than in the past and social activities and work seemed to be more important. Given these circumstances, it is easy for students to decide not to attend class, and not to engage with the material. The inevitable outcome is that students will fail courses and leave the tertiary education system. By engaging students through PBL, we find that the attrition rate has decreased, particularly in the long term and students more rapidly adapt to a University style of study and accept responsibility for their own outcomes.

While there are these significant advantages in adopting a PBL approach there are also a number of challenges which need to be considered before implementing such an approach.

- PBL will inevitably require heavier workloads than the traditional lecture-tutorial format and this will involve more continuous development of materials and projects (see Frank, Lavy & Elata 2003; Helle, Tynjala & Olkinuora 2006).
- This situation will be compounded, where students are given individualised projects, and where engagement of students does not occur in the classroom, such as external and online delivery.
- PBL is dangerous to implement without suitably qualified staff, with a significant content knowledge and real world experience. The use of teaching assistants and graduate students, who lacked real world experience, may not be appropriate. In many circumstances the effective PBL teacher has to “think on their feet” and will need to be able to explain how to solve problems in a real world context, in a number of different ways, without time for preparation.
- In addition to content knowledge teachers require understanding and experience of how to deliver PBL. It is not sufficient to “talk at students” and then set them a project task. Teachers need to learn how to engage students in the classroom without simply telling them what to do. In the same way they cannot simply give them a written task and expect them to work at it on their own. The delicate balance in deciding when to intervene takes experience as does the role of the teaching staff as adviser for the student discovery process. Students may also find the method to be unfamiliar and their ability to learn through PBL will increase with their experience of the approach.
- Using a PBL approach for external and online students requires the development of significant materials, which specifically link the project to the materials they need to engage with. The experience with this course is that a week by week teaching format does not work effectively, with most online students because they lack the weekly structure of classes. External students need to be able to engage with the material in different ways, and at different levels. This requires not only a significant volume of material but also careful consideration about how they are linked and accessed by students. The need to

communicate with students on a regular basis also has considerable workload implications. Staff endeavouring to introduce a PBL approach with external or online students need to accept that it is more time-consuming than dealing with students in the classroom.

- In a typical university context, where resources are scarce and there are pressures on staff to produce high level research outputs as well as quality teaching, it is essential that university management support, initiatives such as PBL, in order for them to be successful (Blumenfeld et al. 1991). It is very easy for University management to suggest that teaching needs to improve through better student engagement and motivation and by implementing practice based and experiential teaching. It is a different matter for management to create an environment where this can take place. PBL is a method that can provide these outcomes in certain circumstances. However, there are significant constraints and risks implicit in the introduction of such methods and management can not simply expect that staff can move from a traditional teaching style to a PBL style without increases in teaching resources, better staff mentoring and the occasional mishap.

CONCLUSIONS AND RECOMMENDATIONS

PBL is a teaching approach that has significant potential to transform teaching from a dull and mundane process of passive learning to one where students actively engage with the material, resulting in deeper learning and significant other outcomes. The use of PBL is re-emerging as a teaching approach as universities strive to incorporate experiential learning into a broader range of university programs. Evidently, the experience of the introduction of PBL to an introductory property course at UniSA has resulting in many positive outcomes for students and staff; however, there remain to be challenges that we have to address to make it a successful teaching approach.

REFERENCES

- Adderley, K, Ashwin, C, Bradbury, P, Freeman, J, Goodland, S, Greene, J, Jenkins, D, Rae, J & Wren, O 1975, *Project methods in higher education*, Society for Research in Higher Education, Working Party on Teaching Methods: techniques group.
- Barron, BJS, Schwartz, DL, Vye, NJ, Moore, A, Petrosino, A, Zech, L, Bransford, JD & The Cognition and Technology Group at Vanderbilt 1998, 'Doing with understanding: lessons from research on problem- and project-based learning', *The Journal of the Learning Science*, vol. 7, no. 3 & 4, pp. 271-311.
- Biggs, J 2003, 'Aligning teaching and assessing to course objectives', in *Proceedings of Teaching and Learning in Higher Education: New Trends and Innovations Conference*, Univeristy of Aveiro, 13-17 April.

- Biggs, J & Tang, C 2007, *Teaching for quality learning at university: what the student does*, 3rd edn, Society for Research into Higher Education & Open University Press, Maidenhead.
- Blumenfeld, PC, Soloway, E, Marx, RW, Krajcik, JS, Guzdial, M & Palincsar, A 1991, 'Motivating project-based learning: sustaining the doing, supporting the learning', *Educational Psychologist*, vol. 26, no. 3 & 4, pp. 369-398.
- Brown, S 2004, *500 Tips on assessment*, Taylor & Francis Routledge, London.
- Brown, S 2008, 'Fit-for-purpose assessment', paper presented at ATN Assessment Conference: Engaging Students in Assessment, University of South Australia, Adelaide, 20-21 November.
- Felder, RM, Woods, DR, Stice, JE & Rugarcia, A 2000, 'The future of engineering education II: teaching methods that work', *Chem. Engr. Education*, vol. 34, no. 1, pp. 26-39.
- Frank, M, Lavy, & Elata, D 2003, 'Implementing the project-based learning approach in an academic engineering course', *International Journal of Technology and Design Education*, vol. 13, pp. 273-288.
- Grant, MM n.d., *Getting a grip on project-based learning: theory, cases and recommendations*, Meridian, A Middle School Computer Technologies Journal, viewed 5 September 2009, <<http://www.ncsu.edu/meridian/win2002/514/>>.
- Green, AM 1998, 'Project-based learning; moving students towards meaningful learning', ERIC Database, ED422466.
- Hadim, HA & Esche, SK 2002, 'Enhancing the engineering curriculum through project-based learning', in *Proceedings of the 32nd ASEE/IEEE Frontiers in Education Conference*, Boston.
- Havnes, A 2004, 'Examination and learning: an activity-theoretical analysis of the relationship between assessment and educational practice', *Assessment and Evaluation in Higher Education*, vol. 29, no. 2, pp. 159-177.
- Helle, L, Tynjala, P & Olkinuora, E 2006, 'Project-based learning in post-secondary education – theory, practice and rubber sling shots', *Higher Education*, vol. 51, pp. 287-314.
- Houghton Mifflin n.d., *Project-based learning space*, viewed 5 September 2009, <<http://college.cengage.com/education/pbl/index.html>>.
- Johnson, DW & Johnson, RT 1989, *Cooperation and competition, theory and research*, Interaction Book Company, Edina, MN.
- Krajcik, JS, Czerniak, CM & Berger, CF 1999, *Teaching science: a project-based approach*, McGraw-Hill College, New York.
- Krajcik, JS, Czerniak, CM & Berger, CF 2003, *Teaching science in elementary and middle school classrooms – a project-based approach*, 2nd edn, McGraw-Hill, New York.
- Morgan, A 1983, 'Theoretical aspects of project-based learning in higher education', *British Journal of Educational Technology*, vol. 14, no. 1, pp. 66-78.

- Orrell, J 2008, 'Assessment: Achieving improved efficiency, effectiveness, educational integrity, equity and ethical practice', a paper presented at University of South Australia, Adelaide, 9 December.
- Ramsden, P 2003, *Learning to teach in higher education*, 2nd edn, RoutledgeFalmer, London.
- Rowntree, D 1977, *Assessing students: how shall we know them?* Harper & Row, London.
- Rust, C 2002, 'The impact of assessment on student learning', *Active Learning in Higher Education*, vol. 3, no. 2, pp. 145-158.
- Shuell, T.J 1986, 'Cognitive conceptions of learning', *Review of Educational Research*, vol. 56, no. 4, pp. 411-436.
- Silverman, D 2000, *Doing qualitative research: a practical handbook*, Sage Publications, California.
- Struyven, K, Dochy, F & Janssens, S 2005, 'Students' perceptions about evaluation and assessment in higher education: a review', *Assessment & Evaluation in Higher Education*, vol. 30, no. 4, pp. 325-341.
- Tyler, RW 1949, *Basic principles of curriculum and instruction*, Univeristy of Chicago, Chicago.
- Winn, S 1995, 'Learning by doing: teaching research methods through student participation in a commissioned research project', *Studies in Higher Education*, vol. 20, no. 2, pp. 203-214.
- Worthy, J 2000, 'Conducting research on topics of student interest', *Reading Teacher*, vol. 54, no. 3, pp. 298-299.
- Yam, LHS & Burger, P 2009, 'Student engagement & teacher's 'self': a case study of inclusive teaching', in *Proceedings of the 15th Annual Conference of the Pacific Rim Real Estate Society*, Univeristy of Technology Sydney, Sydney.
- Yin, RK 2003, *Case study research: design and methods*, 3rd edn, Sage Publications, London.

APPENDIX

Student Evaluation Survey Questions (after 6 weeks)

This survey contained coded and open ended questions.

Question 1	Gender	Coded
Question 2	Age	Coded
Question 3	Student status (international – domestic)	Coded
Question 4	Student load (full or part time)	Coded
Question 5	Year in University (first year or other)	Coded
Question 6	Previous highest level of education	Coded
Question 7	Is English your first language	Coded
Question 8	Are you working	Coded
Question 9	If working - Number of working hours	Coded
Question 10	Name three best aspects of teaching that help to motivate and engage you in your study. (E.g. helpful feedback, the tutor makes the subject interesting, approachable, etc)	Open
Question 11	How do the aspects from Question 10 assist in motivating and engaging you in your study?	Open
Question 12	How do the aspects in Question 10 aid your transition to the university learning environment?	Open
Question 13	Name two things that you would like the tutor to do to assist you in this transition to university learning	Open
Question 14	Overall, how satisfied are you with your learning experience in the tutorials/workshops?	Open
Question 15	Any other comments?	Coded

Student Evaluation of Teaching (SET) standard questions

This evaluation instrument has 10 questions with a 5 point “scale” and 3 open questions. The 5 point Likert items are then “averaged” to create a scale from -100 to +100 with 0 being satisfactory.

1. The staff member made the aims and objectives of the course clear from the outset.	5 point scale
2. The staff member made the subject matter interesting.	5 point scale
3. The staff member motivated me to do my best work.	5 point scale
4. The staff member provided adequate opportunities for me to pursue my own learning.	5 point scale
5. The staff member helped me to develop my understanding of concepts and principles.	5 point scale
6. The staff member displayed a genuine interest in my learning needs and progress.	5 point scale
7. The staff member gave me helpful feedback on how I was going.	5 point scale
8. The staff member used up-to-date teaching and learning approaches.	5 point scale
9. The staff member made it clear how her/his teaching developed the qualities of a University of South Australia graduate .	5 point scale
10. Overall, I was satisfied with the performance of this staff member.	5 point scale
11. What were the best aspects of this staff member's teaching?	Open
12. How could this staff member improve their teaching?	Open
13. Any other comments?	Open

Course Evaluation Instrument (CEI)

This evaluation instrument has 10 questions with a 5 point “scale” and 2 open questions. The 5 point Likert items are then “averaged” to create a scale from -100 to +100 with 0 being satisfactory.

1. I have a clear idea of what is expected of me in this course.	5 point scale
2. The ways in which I was taught provided me with opportunities to pursue my own learning.	5 point scale
3. The course enabled me to develop and/or strengthen a number of the qualities of a University of South Australia graduate .	5 point scale
4. I felt there was a genuine interest in my learning needs and progress.	5 point scale
5. The course developed my understanding of concepts and principles.	5 point scale
6. The workload for this course was reasonable given my other study commitments.	5 point scale
7. I have received feedback that is constructive and helpful.	5 point scale
8. The assessment tasks were related to the qualities of a University of South Australia graduate .	5 point scale
9. The staff teaching in this course showed a genuine interest in their teaching.	5 point scale
10. Overall I was satisfied with the quality of this course.	5 point scale
11. Overall, what are the strengths of this course?	Open
12. Are there any ways this course could be improved?	Open