

Towards a culture of scholarly practice in mixed-sector institutions — support document

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Contents

Instructions to narrative writers	4
Three examples of scholarly practice	6
Example 1: Knowledge building in VET	6
Example 2: Knowledge building in the mixed sector	13
Example 3: Knowledge building in a university	22

Instructions to narrative writers

Purpose of the narrative

The narrative that you are writing is intended to illustrate how you build up your knowledge about teaching and learning in your workplace. Your narrative should reflect the ways you usually do this work, rather than describing an imaginary process that might occur in ideal circumstances.

The process

The task is in two parts:

Part 1 involves writing up a 'case' that describes the process of building the knowledge that informs your teaching and learning practice in your particular context. We suggest that you focus this case on a specific 'critical incident', which you consider reveals the way you build up your knowledge about teaching and learning. For instance, you may have had an experience with a student, or exchanged words with a colleague, that made you reflect on your work and gave you new insights into the way you develop your knowledge about teaching in your workplace. This case should be 2-3 pages maximum.

Part 2 involves answering some questions, having reflected on the case you have written. What you write in response to these questions will provide a reflective commentary on your case. You will find it helpful to take a break between these two parts of the task. So go for a coffee, a walk or have a night's sleep before starting part 2.

Part 1: Describing the case

- 1 Choose a title to capture the case that you have chosen to write about.
- 1 Provide a brief context to explain the case - e.g. what is the discipline area; what were the aims of the case; how did it come about; who was involved?
- 2 Describe how the case unfolded - what were the problems and dilemmas that emerged for you. (Describe your role and actions in rich narrative.)
- 3 End your case by saying what you see as your issue now, after writing the case. Or identify the questions that you are asking now, or invite readers to think about their situation in relation to yours.

Part 2: Reflective critique

After a break, reflect on the following questions and record your responses.

- 1 Why did you engage in the activity described in this case in the way that you did, and what made you confident that this was an appropriate approach? Did you find you had to adapt your approach?
- 2 What is it about these processes that enabled you to build up your professional knowledge? What did you draw on in this work and did you talk to particular people about your ideas?
- 3 Do you consider your processes of building knowledge as a scholarly practice? Why did you answer this way?

- 4 What is it that makes these practices of building knowledge scholarly (if you answered in the negative to Q3, then what would make these practices scholarly)? How have you come to that judgement?
- 5 What values or ideals guided your knowledge-building processes in this case?
- 6 What are your insights into the process of building knowledge that have emerged through your case? Has this case changed your thinking about the way you build your professional knowledge? If so, how?
- 7 What institutional and workplace factors shaped or constrained the way you built up your knowledge in the case? How did they affect your processes of building knowledge and its outcomes?
- 8 Were the processes and/or outcomes of this case shared or made public in any way? If so, how?
- 9 Will your reflections on this case influence the way you build your knowledge around teaching and learning in the future? If so, how? If not, why? What questions and issues do you now think are important?

Three examples of scholarly practice

Example 1: Knowledge building in VET

This portrayal was submitted by a woman from a New South Wales TAFE institute.

Collaborative learning: Bright ideas leading to knowledge and improved practices

This narrative outlines the process undertaken to identify inclusive teaching and learning strategies that improve qualification completion outcomes for social inclusion target groups within a New South Wales TAFE institute.

The case commenced with an exchange of ideas between colleagues in relation to researching the most effective strategies that assist students from a culturally and linguistically diverse background (CALD) to participate more fully in the VET sector and improve their educational and vocational achievements. We had recently reviewed the learner support processes together for multicultural learner support and thought this would extend our knowledge of effective strategies for both groups of students and individual students.

Initially the institute Multicultural Education Coordinator and I prepared an innovation project submission in relation to the CALD area, and presented this to our line manager. After consultation with senior management the project brief was broadened to include all key social inclusion cohorts and formed part of a formal submission for an innovation project. The institute innovation program is an initiative that funds innovative ideas and supports a formal research methodology to address key areas within the institute. The submissions are assessed by a judging panel and project teams are developed after approval. The teams and project managers receive mentoring and professional guidance to frame the project, develop the methodology and guide the research process.

The project team was sponsored by a senior manager and included social inclusion representatives with expertise in Aboriginal, multicultural and disability programs; faculty representatives from vocational faculties as well as employment preparation and vocational access faculties; and a senior TAFE counsellor.

The initial objective had been to produce a best practice guide for socially inclusive teaching and learning strategies. As the project progressed, the complexities of the project were identified and priorities shifted to highlighting the most successful teaching and learning strategies together with recommendations for further evaluation of these snapshots of best practice in 2011.

The action research methodology provided a conventional research framework for the project, commencing with a research question then moving from a literature review to design both quantitative and qualitative data collection instruments. As this project focused on ways to improve qualification completions for students from an equity/social inclusion target group background, the key research question at the centre of the project was: how do teaching and learning strategies contribute to improved qualification completions for social inclusion target groups (equity cohorts)?

To establish correlations between specific teaching and learning strategies and completion outcomes, the project chose to focus on groups of students who participated in customised programs in semester 1 2009.

The project team investigated a number of ways to best define and select social inclusion equity target groups and undertook a literature review to learn from and build on past studies into completions.

A broad definition of social inclusion cohorts was developed, including but not restricted to students identifying as:

- Aboriginal
- Having a disability
- Refugees
- Overseas skilled migrants
- From a CALD background
- Detained in juvenile justice and correctional facilities
- In youth programs
- In other targeted programs for disadvantaged or marginalised groups.

We agreed to focus on the most viable strategies the institute would be able to introduce to improve student engagement, retention and completion of courses and that provided pathways to higher qualifications and employment outcomes. For this reason the project targeted the analysis of available literature on the teaching and learning strategies that would best address:

- Actual learning activities that take place in the classroom
- Local decisions about how a program is delivered
- Resources
- Assessment strategies that complement the delivery model.

Early in the research the decision was taken that the cohorts that ‘stayed together as a group’ would offer the best opportunity to correlate specific teaching and learning strategies with completion outcomes. In studying groups of students, particularly those where the group achieved successful completion outcomes, the project aimed to minimise the influence of individual factors on student outcomes.

Each group was ‘tagged’ as an identified group and this allowed the project team to track individual and group completion and articulation outcomes by cross checking students in these class lists with institute enrolment data. In addition, we were able to identify key individual and group profile characteristics through student self-identification in enrolment statistics, and the qualitative elements recorded by course programmers/deliverers and support providers as part of standard course management practices linked to their input into the survey/interview instruments. This approach also allowed us to document the teaching and learning practices; that is, the key elements of the student TAFE experience which would be common to the cohort as part of a customised program of delivery.

The first phase of the project occurred in July and August 2010 and involved consultation with faculties and the Social Inclusion Unit to identify two project samples:

- Customised programs for social inclusion target groups
- Customised programs for individual students supported in mainstream programs.

The second and third phases of the project used data collection instruments to capture details of the teaching and learning strategies of a smaller sample. In phase 2 a survey was completed by program designers, and the interviews that formed part of phase 3 confirmed the quantitative and qualitative information with program designers, coordinators, teachers and key support staff.

By early October 2010, 23 completed survey responses were received. The interview process for these student groups and the individual student sample were completed in November 2010.

The project resulted in a set of short term and long term recommendations, which were presented to the institute's board of directors in early 2011.

The key challenge was to keep the momentum going, share knowledge gained through the project and further develop teaching and learning strategies across the institute.

In addition to this project the institute also funded investigation into completion outcomes across a number of vocational areas. The findings from these projects were integrated with the findings from this project and a high level peak working group was established to provide a whole of institute approach to the development of strategies for improving completion. This group has been successful in developing a whole of institute plan with strategies identified for each faculty, introducing workforce capability programs and developing a monitoring and evaluation process linked to the institute annual plan. The other major outcomes from this research have been the sharing of knowledge across the institute through formal presentations, and the development of an inclusive teaching practices Moodle site which was launched on 9 December 2011 as a teacher resource.

There are four ongoing working parties looking at developing improved models for collaborative partnerships, pathway programs, student support and a student induction process. These working parties reflect the areas of priority for the institute.

The continuing questions highlighted through this knowledge-building case study are:

- How to collaborate and build knowledge and interrelated teaching and learning strategies across discipline areas
- How, in an increasingly competitive market, to improve flexibility in program design and delivery and improve effectiveness of programs from both a client and an institute perspective
- How to appropriately define and measure successful completion outcomes in the VET sector
- How to develop a pathway analysis to better match student intention with outcomes achieved.

Reflection

1. *Why did you engage in the activity described in this case in the way that you did, and what made you confident that this was an appropriate approach? Did you find you had to adapt your approach?*

The initial drivers were personal interest and a drive to see improved consistency of practice within the Social Inclusion Unit. The unit coordinators had strong personal beliefs in relation to the validity of their own practices and little interaction with others to validate or improve on their teaching and learning practices.

This activity was a logical progression from earlier work I had done in the areas of learner support practices within the unit. The activity was sparked by a request from a colleague to work together on the project and the full dimensions of the project expanded as we discussed our ideas with senior managers.

The project was formalised under the institute's innovation program and this influenced the reporting and project management framework used. The action learning methodology forms part of this institute process.

This was a cross-institute project with a range of discipline experts included on the project team. The confidence in the approach came from a number of factors:

- Collaborative team - a broad multidisciplinary team of key stakeholders were involved in the project from the beginning. The mix of both team member skills and passion for the subject matter provided additional confidence in and commitment to the project outcomes.
- Management support - the project received managerial support, sponsor support, capability building professional development for myself and team members, and funding provision.
- Resourcing - allocated funding was provided under the innovation program and in the later stages of the project I was taken off-line and provided with an opportunity for the time and space to write up the research findings and formal research report.
- Research rigour - access to professional guidance through external consultants in the form of professional conversations to provide advice on research methodology and the design of data collection instruments.
- Professional collaboration - a community of practice was developed as the TAFE NSW Strategy Unit introduced a number of research projects part way through this project and developed a comprehensive literature review in a linked area. This provided useful input to our literature review, linked in with seven other institute research projects and provided an additional avenue for the validation of our experience.

Our approach was modified as we worked through the project. These modifications were based on the outcomes of frank and full discussions with the project team and also with the consultants engaged as part of the innovation workforce capability program. Key adaptations included:

- Scope of project
- Change in timeline and deliverables in 2010, with some elements continuing into 2011
- Definition and selection of target groups and sample

- Definitions of successful completions and methodology for filtering and analysing the data collected
- Decision to produce a public research report.

2. *What is it about these processes that enabled you to build up your professional knowledge? What did you draw on in this work and did you talk to particular people about your ideas?*

As noted previously, the innovation framework enabled a highly supported environment. Regular access to other project managers provided strong peer support and guidance with the methodology. The access to a consultant and researcher review of the research question and methodology at key points in the project assisted in containing the scope of the project and improving the sample size and data collection instruments.

The opportunity for me (as project manager) to work on the project in a full time capacity to document the findings and write up a formal research report and internal reports to the board of directors enabled the project to be completed to a higher level. This in turn led to improved professional knowledge and also the opportunity to share knowledge and receive peer feedback through publication of a research paper at a conference in 2011.

3. *Do you consider your processes of building knowledge as a scholarly practice? Why did you answer this way?*

Yes, I consider this an example of scholarly practice.

I consider this as scholarly practice because the methodology for the project was to use an action learning approach to build knowledge. This knowledge building followed a conventional research framework with a group of discipline experts engaged in an applied learning process of building and validating knowledge about teaching and learning practices. The detailed reasons are outlined under Question 4.

4. *What is it that makes these practices of building knowledge scholarly (if you answered in the negative to Q3, then what would make these practices scholarly)? How have you come to that judgement?*

This process of building professional knowledge represents scholarly practice for the following reasons.

- The research methodology used was action learning which incorporated phases of experiencing, reviewing, concluding and planning, ensuring that the knowledge developed was discussed across the discipline areas and the project methodology was reviewed and adapted based on feedback and reflection.
- The literature review was a key component of the building of knowledge, allowing this study to be placed within a professional research context and allowing comparison with samples in other areas of the VET sector.
- The process of building knowledge was subject to review by expert researchers and advice was provided in relation to scope, questioning techniques and the number of data collection methods applied to ensure the validity of the research sample.
- The knowledge was shared and communicated within the key discipline area of the Social Inclusion Unit, across the institute and in the broader VET sector at two conferences in 2011.

- The knowledge developed through this process also led to new areas of scholarly activity. A new teacher resource was launched in 2011 to provide new teaching and learning strategies for teachers, and new working parties of discipline experts are continuing to progress new areas of knowledge in linked priority areas in 2011.
- The team process was supported by a workforce capability program to address skill development needs in areas of research and technology, ensuring all the team were engaged in areas of new learning.

I have arrived at this judgement through a review of related research literature, both in relation to the broad question of scholarly practice and in relation to the discipline areas represented in this research project. This judgement has been further informed by peer acceptance of the published report and findings through feedback from the presentation sessions at two conferences in 2011 and also from presentations made within this institute and other vocational education institutions.

5. *What values or ideals guided your knowledge-building processes in this case?*

The values that have guided the knowledge-building process relate to the institute's culture and values of integrity, responsiveness, inclusiveness, professionalism, innovation and accountability.

To these institute values I bring my own teaching and learning values or ideals of an inclusive, collaborative and evidence based approach to building knowledge with an emphasis on the importance of communicating and continuously improving and expanding on the knowledge base. The view of the importance of putting the student at the centre of the learning process and recognising that there are a range of factors that influence the achievement of a student's educational goals also guided my approach to look at a range of factors that impact on learning outcomes.

6. *What are your insights into the process of building knowledge that have emerged through your case? Has this case changed your thinking about the way you build your professional knowledge? If so, how?*

The formal approach, regular evaluation of methodology and the rigour imposed by the innovation framework were key factors in building the knowledge but, more importantly, in applying the knowledge across the institute. Previous approaches to building knowledge were effective in the local discipline area or within the Social Inclusion Unit. However, this cross faculty approach achieved a much higher profile for knowledge development and communication.

This approach also achieved a higher level of scholarly practice and consequently far more influence in terms of a broader audience and stronger impact on building skills and changing the practices of teaching staff across the institute through strong communication and documentation of the knowledge.

The key insight and change would be the conscious role of undertaking a literature review and the value of joining NCVET, and a more continuous engagement with professional development by keeping up to date with the latest research papers. This allowed more cross fertilisation beyond my discipline area.

7. *What institutional and workplace factors shaped or constrained the way you built up your knowledge in the case? How did they affect your processes of building knowledge and its outcomes?*

Factors that shaped process: the formal innovation framework was a key factor in the decision to commence the project, build knowledge and deliver outputs and outcomes.

The level of the outcomes achieved and the change impact of the project can be attributed to the vision, support and sponsorship of a senior manager. Without a senior management champion to support the applied research elements of this project, to allow the new ideas and research methodology to follow a scholarly practice approach, and to recognise the potential of the knowledge, a much reduced outcome would have been achieved. It was through this sponsorship and the provision of additional funding support that the knowledge could be documented to such a high degree and result in a published research report. This has laid the groundwork for a continuing passion for building new knowledge in this area with ongoing development of teaching resources linked to this project.

The factors identified in question 1 also apply here.

Factors that constrained the process: the initial size and expectations of the project reflected the importance of this area of endeavour and it took some time to determine the key focus and to scope the project, with some elements being deferred until 2011.

8. *Were the processes and/or outcomes of this case shared or made public in any way? If so, how?*

The knowledge developed through this project is publicly available and has been shared across a number of different audiences.

- Within the institute: The project was documented as part of the innovation framework reporting requirements. A presentation was provided to all institute staff as part of an innovation expo in December 2010, and a further presentation on progress provided to key staff in December 2011. In addition the findings were reported to the institute's board of directors and a peak working group was established in 2011 to implement the findings of this project.
- Across TAFE NSW: The project was showcased at the TAFE NSW 2010 Quality Awards, and a presentation was delivered to the staff of another TAFE institute at an excellence and innovation event in November 2011.
- Broader publication: The findings of the project were published in a research paper and presented at two conferences in 2011.

9. *Will your reflections on this case influence the way you build your knowledge around teaching and learning in the future? If so, how? If not, why? What questions and issues do you now think are important?*

Yes, as indicated in question 6 these insights and reflection will influence the way I continue to build knowledge. The value of undertaking a literature review and the value of engagement with other professionals through the latest research papers and other networking opportunities (both inside and outside my discipline area) are clear outcomes of this learning process.

The ongoing questions in relation to this area of knowledge are outlined at the end of my narrative. The other questions relevant to the general area of scholarly practice as the VET sector moves more into the higher education area are:

- The innovation program has an effective communication and reporting framework for projects that come under this approach. However, how do we share the knowledge that is built up by individuals and teams more broadly across our institute?
- How do we encourage staff to recognise the processes of building knowledge as scholarly practice?

Example 2: Knowledge building in the mixed sector

This portrayal was submitted by a man from a Victorian mixed-sector TAFE institution.

Scholarship in the mixed-sector higher education environment: a case study of a built environment degree program at a Victorian institute

The Bradley Review (2008) is at the forefront of the current educational reforms debate, with the agenda to change the landscape of the Australian education system. This suggests that there are numerous important challenges ahead which will impact on current thinking. The formative purpose of the education system is becoming controlled by the political system as a form of social control by the nation-state. The key function of a nation's higher education system is to attain the necessary knowledge and skills to determine its economic strength and social progress (Brock 2011). There has been international consensus which confirms that the quality and performance of an education system is the key determining factor of its economic strength and social progress (Department of Education Employment and Workplace Relations [DEEWR] 2009).

The report outlines numerous challenges for the higher education sector to become more innovative through teaching and learning practices and research. Amongst the number of recommendations is the consideration of important factors such as student demographics, student pathways and the quality of student performance (DEEWR 2009).

The report raises further questions relating to the effectiveness and the strengthening of the Australian Qualification Framework and the ways in which the regulators use it to reinforce one of the fundamental principles of promoting a better connectedness in the tertiary sector, and of how it will better standardise criteria of learning, funding and quality assurance (Buchanan, Yu, Wheelahan, Keating & Marginson 2010).

In acknowledgement and response to the report, the Australian Government under the leadership of Julia Gillard - as a trajectory towards 2020 - proposes this as a period of expansion, when higher education institutions are to attract more students 'who have not traditionally considered going to university'. It proposes that this should be a period of growth when innovative education programs are required to expand the knowledge and skills, with the purpose of revolutionising and expanding Australia's economic potential.

The government recognises that the growth of society's socio-economic status is built upon its technological capacity and has signalled its commitment to expansion of the tertiary education sector, but indicates that this should be underpinned by putting students clearly at the centre of its educational reforms.

Furthermore, it has suggested that the 'investments and reforms' will drive improvements in productivity and assist in the creation of a smarter, cleaner, more competitive economic future for the country (DEEWR 2009).

Context: higher education within a TAFE environment

In a study conducted by Griffith University it has been established that, as at June 2009, there were ten TAFE institutes in Australia able to offer degree qualifications. The project was shaped by two key questions that were designed to provide insights into the nature of higher education provision in TAFE institutes: 'What type of higher education does TAFE offer?' More importantly, it wanted to establish,

'What was the nature of TAFE and higher education' in terms of the identity in "mixed sector" TAFE institutions?' (Wheelahan et al. 2009).

The report highlighted that higher education institutions in Australia have become the third largest contributor to the country's economic budget and acknowledges this diversity and the creation of mixed-sector institutions is a relatively new occurrence in Australia. Some VET institutions now offer a range of 'niche' higher education programs in applied disciplines with programs that tend to have a more vocationally applied learning focus (Wheelahan et al. 2009).

It goes on to note that the approval processes of all higher education degree programs is an arrangement of a 'complex system' that is considered differently within each state and territory. Registration of TAFE institutions involves a similar process to that of other competing private providers of higher education under National Protocols (DEEWR 2008).

Most importantly the report argues that the consequences of these higher education providers is that 'we do not yet know' a great deal about this type of higher education or about 'how it may be reshaping boundaries' in the tertiary education sector.

Moreover, their arguments challenge the current advancement and developments with questions as to 'whether this is a political manoeuvre by the government to change the landscape of the higher education within Australia' (Wheelahan et al. 2009).

Situating the study

Responding to these challenges, this institute in Victoria is one of the pioneering TAFE institutions that now deliver vocational degrees. In becoming one of Victoria's 'mixed-sector' higher education providers, it has produced its first graduates from its Building Environment Degree Programs (BEDP) in 2008.

The BEDP has been accredited by building professional associations such as the Australian Institute of Building, Australian Institute of Quantity Surveyors and Australian Institute of Building Surveyors. These institutions have been at the forefront of educational change and the current push has been driven by industry professional skills shortages and the aim of maintaining the quality of graduates that enter into the sector.

The institute's BEDP model

The institute's BEDP model could be defined as a progressive applied educational learning program. The program integrates curriculum and is delivered through a mixed modes of study and utilisation of a problem-based learning (PBL) pedagogical approach. A distinguishing innovative feature of this teaching and learning approach is that it emulates similar successful models that have been developed within the Faculties of Architecture and Medicine at the University of Newcastle and Health Sciences at the University of Western Sydney in New South Wales (Chen et al. 1994).

There are a number of distinguishing features about this program. Firstly, it is designed and delivered around a contemporary built environment higher education curriculum. Secondly, in the context of teaching and learning, it is deemed to be of the utmost importance that all participants form part of the learning process. This means that both educators and learners are regarded as 'learning'. Consequently, de facto, the utilisation of the PBL pedagogical approach challenges mainstream thinking.

It is most important that all participants, both educators and 'as learners', are to be involved in lifelong learning. This creates a sense of dualism that exhibits educators becoming co-learners who are constantly guiding their practice through an heuristic process.

Furthermore, good teaching is a form of learning which should be shaped through the transmission of knowledge and this must extend beyond the process of just taking in information. It must create a situation where individuals as learners transform through becoming engaged in their learning journey, at which point those who educate should share their experience in the learning community (Clarke & Erickson 2004).

PBL: a pedagogical challenge

As a PBL pedagogical challenge, my personal interest has been brought about through being involved in the BEDP as a student and now as an educator. It is through having experienced firsthand, as a student, how PBL transformed me as a learner that has led me to conduct a minor thesis through research in my Master of Education. The purpose was to develop a better understanding of the transformative power of this pedagogical approach and to continue in the lifelong learning process as described previously.

My interest was born out of a curiosity, having progressed through the program and now being challenged in the role of an educator. The quest is to establish how/whether PBL as innovative teaching and learning practice assisted me and, most importantly, how I can improve my teaching and learning practice.

The significance of any scholarly activities is in contributing to a body of knowledge in education as they seek to understand how students approach their own learning and to what extent their learning assumptions and beliefs change over time.

This situation all appears to be a normal process in education, but in practice it is a daunting exercise. Students are expected to disrupt their conceptions of learning and re-conceptualise their assumptions and learning beliefs. These conceptions of learning are based on an accumulation of habits that have been built upon over time through their previous learning environments (Loyens et al. 2009).

Students in PBL are required to adapt to a constructivist learning environment by setting goals, planning and monitoring their own progress to satisfy the course learning outcomes (van Berkel et al. 2010).

PBL has challenged institutional thinking for space as an optional pedagogical strategy to teaching and learning practice for the past three decades. Proponents of this pedagogical approach contend that it impacts on student learning, which has been identified as an existential extension of their desire to increase their knowledge and understanding through a developmental process (Boud & Feletti 1997).

Furthermore, it has long been argued through discourse within the realms of the education sector that higher education should ideally provide students with the necessary values, skills and attitudes that are essential for them to cope with the dynamic complexities in the modern world. This places the education milieu in constant flux - where students' learning is obliged to keep up with information growth that is moving at an emphatic pace (Uden & Beaumont 2006).

Critical incident: a personal challenge

My intentions when I entered the program as a student were to further my personal goals as a building practitioner. I was drawn into the challenges of education through default. On completion of my first degree in the BEDP, I was offered an opportunity to take up a position as a sessional teacher.

In the BEDP, owing to the student-centred learning approach, we prefer to use the term facilitator. The program adopts the philosophical conceptual framework of constructivism that is drawn from a number of the powerful pioneers of education reform who contribute through scholarly arguments in the pragmatic tradition, such as Jean Piaget (1967) cited in Brown & Desforjes (1979), Lev Vygotsky (1930/1987) and John Dewey (1916/2009).

Constructivism is the umbrella term that covers various philosophical viewpoints whereby learners create meaning through their active engagement and knowledge construction process. The working definition of constructivism is described as ‘a theory of how we learn which is grounded in philosophy that has led to the development of several educational applications, such as problem-based learning’ (Loyens et al. 2008 p. 446-7).

I was asked to deliver a first year subject in the program called Sustainable Building Services (SBS110). Having trained apprentices over the many years in practical and theoretical aspects of construction, and having just completed the program as a student, I felt confident to take up this new challenge of becoming an educator. It is only when you enter into the teaching and learning environment that you start to understand the magnitude of your role as a teacher/facilitator.

In this new role, I encountered numerous new experiences and challenges, such as the alignment of student expectations with the expectations of the BEDP program. The critical challenge that I faced was not only to gradually build a built environment knowledge base, but simultaneously to allow students to adapt to this new PBL pedagogical approach which is underpinned by constructs of student-centred/self-directed learning.

I found myself trying to expound knowledge to the students at a level that they could not grasp and some of the information appeared to go straight over their heads. This concerned me, as some of the students grasped the information but there were some who just did not understand. They too experienced moments of perplexity which were similar to my experiences with PBL. In my discussions with colleagues, I began to realise that I was placing the bar too high for some of the students.

This critical incident and my concerns, which I regard as scholarly activity, have allowed me to draw upon Vygotsky’s (1930) theory of the zone of proximal development. I now approach my practice consciously identifying the students who appear to be lagging behind and try to gradually build their foundational knowledge to assist their development.

The aims of the BEDP are not only to equip students with the necessary knowledge and understanding of the built environment. It also adopts the premise of student empowerment that allows them to become self-directed learners, which in turn will ultimately lead to their becoming lifelong learners.

These are challenges that teachers/facilitators face in improving their practice and consequently becoming a scholarly educator/practitioner.

Challenges for education

For a modern society to maintain its existence, functionality and sustainable growth, it should constantly transform its education structures and processes that promote communication through scholarly activities and the increase of knowledge transfer, which can be driven through the reforms of its education system (Dewey 1916).

Societies are progressing deeper and deeper into the milieu of the capitalistic world which is impacted by globalisation, and this is placing enormous pressure on education systems. The metaphor 'the devil lies in the detail' challenges educators with the dilemma of consistently transforming their teaching and learning practices (Giroux 2002).

There are ongoing calls from industry for the continuous improvement of student learning outcomes and the alignment of student learning towards economic activity that demands productivity, growth and profit. This is exacerbated by numerous factors such as technological change, information explosion and global economic growth and development.

Adding more fuel to the fire, there are many industries where employers are now demanding that students enter into the workforce at a level where they are not only expected to be equipped with content discipline knowledge and skills, but should also have communication skills, team building skills, critical problem-solving skills and leadership skills (Boud & Feletti 1997).

There are other perspectives which propose that learning should not be regarded as a static process and that there should be continuous research directed towards the improvement of teaching and learning strategies and techniques (Loyens & Gijbels 2008).

The pace and consistency of this change has placed high demands, to the extent that educators are being challenged to rethink both their practice and curriculum as they too are becoming captured by the commoditisation of the educational sector, which is driven through neo-liberal political thinking (Giroux 2002).

Significance of the scholarly activity

Educators are being constantly challenged to ask critical questions about teaching and learning; they are encouraged to simply reflect on critical learning moments and events through their teaching careers. Some of these moments have afforded them opportunities which have challenged their thinking and assumptions (Brookfield 1987) and it is suggested that this very process is to lead one to new and multiple dimensions.

This consistent questioning of reality from the insider perspective allows researchers to discover a greater understanding of what influences these assumptions and more: what can be done to continuously improve one's practice (Brandenburg 2008).

A scholarly academic activity is responsive to those individuals who desire to understand the nature and the practice of their craft to determine to what extent they, as educators, impact on their students' learning. But adding value to this process, it should in turn assist in improving one's own practice which subsequently enhances the quality of education (Loughran 2004).

However, it is suggested that this should be achieved through empirical evidence which promotes discourse, but it is stressed that this should be conducted in a scholastically responsible way to determine a more accurate sense of reality (O'Toole & Beckett 2010).

Engagement in scholarly activities creates discourse which is already evident in educational research environments. The role of any researcher is to become a gatekeeper of information. This is extremely important as it is crucial to brief each individual thoroughly with regard to the purpose of the study to optimise and maximise participation (Barbour 2005).

Conclusions

My quest was to develop a better understanding of PBL so that I could improve my delivery as a facilitator (lecturer) in the BEDP. I believe that this engagement in such scholarly activity has improved my practice, which hopefully should lead to more and new discoveries. This predisposes that any further knowledge will improve the credibility of the PBL pedagogical approach to teaching and learning; it not only adds to the discourse but contributes to the body of knowledge.

If learning is regarded as change and change is learning, then the students' conceptions of knowledge and their conceptions of learning are to be developed through the educational experiences (Hall & Hord 2011 p. 4).

Change processes generally start out with more questions than answers. Therefore if there is any change in direction of institutional or educational goals, this should be followed by changes to teaching and learning practice.

Furthermore, it is broadly argued by Wheelahan et al. (2009) that the boundaries between the education sectors have become 'blurred', with some applauding and others deprecating the development of mixed-sector providers of higher education programs. This dialogue is important in educational discourse as it raises critical questions that impact on the quality of teaching and learning, which implies that there are various aspects of practice that can frequently be assumed to be automatic or are simply hidden.

Therefore, exposing certain learning spaces such as mixed-sector environments through scholarship opens opportunity for activity that adds to the body of knowledge and improves the value of one's practice (Boud & Feletii 1997).

Most importantly, it may be addressing some of the challenges posed through the Bradley review to strengthen the Australian Qualifications Framework.

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Reflection

1. *Why did you engage in the activity described in this case in the way that you did, and what made you confident that this was an appropriate approach? Did you find you had to adapt your approach?*

I adapted my approach because I have respect for those researchers/scholars who engage in this type of activity, the manner in which they approach their craft and their level of understanding and knowledge. And, I suppose, the way in which they inform others helps us improve our practice.

2. *What is it about these processes that enabled you to build up your professional knowledge? What did you draw on in this work and did you talk to particular people about your ideas?*

I suppose (general consensus) is that this activity is about becoming a reflective practitioner - that is, taking an interest in one's practice. To move forward you are obliged to look back for lessons learnt so that what works can be repeated. We are constantly looking for critical success factors that we can repeat. All our judgements are based on our approach around our experiences and when one encounters a problem I believe you are challenged (professionally) to find a solution. This has given me an opportunity to benchmark against other world views and search for more meaning so that I can improve on my outcomes as an educator. I spoke to my colleagues about my experiences and my thoughts and this has positive outcomes. I believe that we undergo similar challenges. We use these experiences to share ideas so that we improve our practice (BEDP). The education profession is in flux due to huge expectations and demands, not only within the sector, but from students.

3. *What values or ideals guided your knowledge-building processes in this case?*

My ideals are simple - just to improve the way I do things and make progress in whatever I do. More importantly, it is the duty of care which is expected from any profession. To become a reflective practitioner - I suppose it is what I have been doing all my life. If you are given a responsibility to do something, you just do it and it defines who you are. The value is one learns through this process and it adds value to what you do, both personally and institutionally. I think it keeps one employable.

4. *Do you consider your processes of building knowledge as a scholarly practice? Why did you answer this way?*

Definitely yes! As an education professional in any other practice, this is expected. Life is changing too fast and we must learn to adapt to changes around us. How else are you going to stay relevant if you do not continue to learn - 'seek and you will find'. I think that I should throw in a PBL cliché: 'life's full of problems, but it's how you address the solution that dictates your success'. As a professional, I believe that we are expected to become reflective practitioners and constantly make improvements to outcomes and objectives. We are in the teaching and learning business, which has become commoditised - I think that we must learn to deal with our own reality. This is a scholarly activity because it involves self-improvement, which in turn adds value to the institution.

5. *What is it that makes these practices of building knowledge scholarly (if you answered in the negative to Q3, then what would make these practices scholarly)? How have you come to that judgement?*

As mentioned previously, technology and regulatory frameworks are in flux and the world is not the same as it was ten years ago - let alone a year ago - so we adapt to the changes around us. It is imperative for the workforce to stay relevant. If you want to be more cautious, then make it part of the job description or make time for people to conduct scholarly activity. Any form of self-improvement contributes in some way to continuous professional development, which I believe can be conducted in a non-formal or informal manner.

6. *What are your insights into the process of building knowledge that have emerged through your case? Has this case changed your thinking about the way you build your professional knowledge? If so, how?*

As a PBL student and practitioner this becomes part of what we do - lifelong learning is a part of building knowledge. It has made me realise as a practitioner (educational professional/any other discipline) you may be expected or more so obliged (requirement) to continuously build knowledge. However, depending on the situation, I believe that you should be provided with compensation - of time perhaps, not necessarily money.

7. *What institutional and workplace factors shaped or constrained the way you built up your knowledge in the case? How did they affect your processes of building knowledge and its outcomes?*

At this stage I have been supported by my colleagues (managers) in terms of understanding the challenges that we all face in dealing with students. I conducted the work in my own time as part of my personal development and interest. I believe that the knowledge gained is shared across the program as we all are becoming reflective practitioners.

8. *Were the processes and/or outcomes of this case shared or made public in any way? If so, how?*

The outcomes were shared as part of my mentoring role, and will be shared in our continuing professional development workshops.

9. *Will your reflections on this case influence the way you build your knowledge around teaching and learning in the future? If so, how? If not, why? What questions and issues do you now think are important?*

Yes! I believe I have developed an interest in research (scholarship - however it is defined) and would like to continue to develop the skill. There are more questions in education than there are answers. In becoming a professional practitioner, I believe that my beliefs and practice will constantly undergo challenges through change. I believe that, through reflection, evidence and benchmarking, one is able to make progress and improve outcomes.

Example 3: Knowledge building in a university

This portrayal was submitted by a woman from a New South Wales university.

Building up knowledge about teaching and learning: a collaborative endeavour

Introduction

Between 1997 and 2005, I coordinated a collaborative initiative between members of the Faculty of Engineering, the English Language Study Skills Assistance (ELSSA) Centre and the Library at a New South Wales university to develop and teach a large (480-530 students per annum) first year Engineering subject, Engineering for Sustainability (Efs). The Efs initiative commenced in 1997 by a small team of Engineering, ELSSA Centre and Library staff as part of a larger faculty wide undergraduate course restructuring and renewal project. At the time, my position at the university straddled two faculties: Engineering and Education. In Engineering, I held the position of Educational Developer and Lecturer. As part of this role, I led the development and coordination of Efs, and coordinated the development of the new undergraduate course. Efs was taught for the first time in 1998 when the new undergraduate engineering course, the Bachelor of Engineering, Diploma in Engineering Practice (BE DipEngPrac) was introduced.

The collaboration involved in Efs was an important process of building knowledge about teaching and learning in the Engineering faculty. The BE DipEngPrac, and Efs as the first year core subject in the course, were designed in response to a National Review of Engineering Education in 1996 which recommended 'no less than a cultural change in engineering education which must be more outward looking with the capability to lead the engineering profession in its involvement with the great social, economic, environmental and cultural challenges of our time'. The Review suggested that engineering education had suffered from a tradition of putting an over-emphasis on narrow technical knowledge and skills development in the course curriculum, and using a limited range of approaches to assessing students' understanding and competencies. The Review involved consultations not only with industry leaders and engineering academics, but also members of the wider community. Many of us at the university interpreted the mandate from the Review as signalling a need for a shift in the way all of us as engineering educators thought about the relationships between the practice of engineering, society and the environment; what learning to become an engineer should mean and entail; what future engineers needed to know; our relationship with students; and no less importantly, what engineering academics needed to know to effectively teach engineering from a broader perspective.

A wholistic view of engineering

The Review recommendations' implication on the teaching and learning activities of the faculty was formidable. This was not a case of a small scale individual teaching initiative, but a faculty wide challenge. An important consideration that went into the design of Efs was the need for sustainability and widespread ownership of the 'cultural change' initiatives within the faculty. This could not be achieved by a single educational developer undertaking subject development and presenting the subject as a 'package' to colleagues to deliver. A way of encouraging ownership of both the process (development) and product (the subject) by my engineering colleagues was needed. Members of the collaborative group came to an agreement that the following principles were important in the content and process of the subject:

- a) A socially contextualised approach to practice-based Engineering education

- b) An integrated approach to developing academic and information literacy of Engineering students
- c) A collaborative approach to subject development
- d) A collaborative approach to teaching and staff development.

We felt that if we were to engender a sense of social responsibility in our students, this needed to be made explicit early in the course. We felt that this could best be achieved by studying engineering as a socially located practice, in ways that exposed how historical, political, cultural and economic, as well as technological factors were continually shaping and being shaped by engineering. However, teaching and learning engineering in this way required significant shifts from the way many of my engineering colleagues had traditionally planned and taught their subjects, namely treating engineering as almost exclusively a techno-scientific study dominated by learning technical and scientific 'facts' and formulae and conducting technical problem-solving activities, rather than as a socio-technical study of people and their interactions with technologies where theories and ideas were often contestable. Different kinds of teaching and learning resources were needed, as well as different approaches to teaching, learning and assessment. Moreover, teaching engineering in a social context with any level of authenticity meant that each engineering academic had to acknowledge (to their students) that most engineering innovations require multidisciplinary teams involving engineers from different fields of practice (e.g. civil, mechanical and electrical), not to mention specialists from other professions. Thus, in EfS, each engineering academic had to be part of teaching about engineering not only from their own specialist perspective, but from their other specialist colleagues' perspectives, in a way that helped students gain a wholistic picture of engineering.

A wholistic teaching and learning approach

To facilitate and encourage the new way of working, and the new kinds of knowledge that needed to be built by the academics and the students, the subject was organised around the kinds of engineering projects and innovations with which the non-expert (for example new first year engineering students) as members of society could readily identify. An expression of interest was sent out to all academics in the faculty, calling for academics from different areas of engineering to form multidisciplinary teaching teams, and for each to propose a 'theme' through which they felt they could engage students in studying engineering in this way. In the first semester, three teams came forward, one proposing 'transport', another proposing 'clean power' and a third proposing 'space technologies and life on Earth'. The teams were different mixes of engineers drawn from the disciplines of mechanical, electrical, telecommunications, computer systems and civil engineering.

To identify some literature that would help the teaching staff as well as those that were appropriate to use as readings for the students, I worked with a colleague who had expertise in the area of science and technology studies (STS). I sought support from the faculty liaison librarian to help the different teams locate interesting case studies related to their chosen themes. Realising that these texts would be different to the kinds of texts both engineering academics and students traditionally read and used, I worked with colleagues in the ELSSA Centre to discuss the suitability of texts and how we might engage students with the texts. The ELSSA staff also helped in designing assessment tasks that reflected the aims of the subjects and the ways in which we wanted students to engage with what they were learning. However, realising that many of the engineering students would find the academic literacy required in the subject difficult, the faculty negotiated to have ELSSA lecturers to team teach with each of the engineering teaching teams: one ELSSA lecturer was assigned to each team.

Except for a few of the engineering academics, team teaching was a new form of teaching practice. Academics who knew lecturing to be an individual performance had to learn how to teach in teams. To help support the team development process, two colleagues from adult education who were strong advocates of team teaching and who had recently published an article about team teaching came to facilitate a workshop on team teaching. They came and shared the benefits they experienced from team teaching and explained some of the models that described how effective team teaching could evolve.

In the first year that EfS was delivered, I took advice from colleagues and focussed on supporting the teaching teams rather than getting involved in the teaching myself. I wrote weekly session outlines that I distributed to each of the teaching teams, who would then interpret and adapt these outlines to teach the content they chose for the week. I produced the session outlines to try to show how the teaching could be interactive and incorporate discussion and debates among students and between students and the academics. I also tried to show how assessment tasks could be scaffolded. I encouraged each team to meet weekly at least to plan the week's session together. All the teaching staff and I met for assessment moderation sessions. These sessions were led by our ELSSA colleagues who modelled the assessment and feedback process on the kinds of assessment tasks that were new to many of the engineering academics. At the end of the semester, the students completed their final assessment task, which was to design and present a poster as small student teams that expressed their vision of a sustainable future, and to argue the rationale behind their vision to a panel of engineering academics from across the faculty.

Outcomes of the collaborative knowledge building

Over the almost decade-long delivery of EfS, some 30 engineering academics participated in teaching in the subject. The following excerpts capture some of the reflections from the staff involved at the beginning of the initiative, and some who were involved six years later.

From 1998 teaching team reflections:

- The team teaching was effective as a peer review process, learning from each other, both about content and about possibilities in teaching approach
- ELSSA staff were great role models. Joint briefing/debriefing and marking sessions were helpful
- This subject demanded a higher than normal 'just in time' staff development on a number of fronts - team teaching, teaching engineering from a social context, learning about and applying criteria-based assessment methods, teaching academic literacy. As several staff mentioned, the team based organisation of teaching staff helped to make the learning less threatening and possible. The support provided by ELSSA and the CLT [Centre for Learning & Teaching] (at workshops) was valued by everyone.

- A greater awareness of issues related to sustainability
- Broadened my approaches to assessment
- Demonstrated nurturing approaches to skill development e.g. in identifying students needing English language support and directing them to that support
- Ability to influence the learning process early and to intervene before problems arise
- Being able to provide early mentoring in technical communication of our students
- Appreciation of difficulties students have in learning at entry to university
- Team teaching
- Opportunity to learn from designers of subject and ongoing process of refinement, review, experiment to achieve objectives
- Opportunity for team based creativity in devising module themes which evolve over 2-3 semesters, incorporate new research, scholarship ... and/or current issues
- Appreciation of team teaching, peer assessment, peer evaluation
- Developing criteria for new Engineering which are different from traditional
- A much better perspective on what Engineering is, and of the complexity of using technologies as a component in human needs addressing. ... I have also greatly valued being part of a team, exchanging ideas and sharing moments of celebration and disappointment with my colleagues. Compared to normal teaching at university, this course is like a breath of fresh air.

2004 staff reflections: What have you gained from your participation in EfS?

Over time, with changes in faculty leaders and the university priorities shifting more aggressively towards research outcomes, and lessons learned from teaching EfS for nearly a decade, EfS ceased to be a first year subject and was reinvented as a later stage subject called Interrogating Technology with a similar socio-technical focus. A little while later, I stopped straddling two faculties and moved full time to working as a lecturer in Adult Education. Interrogating Technology is still running, with some of my former EfS colleagues leading its ongoing development and delivery.

Reflection

1. *Why did you engage in the activity described in this case in the way that you did, and what made you confident that this was an appropriate approach? Did you find you had to adapt your approach?*

It is debatable whether the activity that I described in my narrative constituted one approach; it would probably be more accurate to say it involved several complementary approaches. But a core aspect of the approach(es) was collaboration across a number of different disciplines and areas of expertise: the different fields of engineering; academic literacy teaching and learning; information literacy; science and technology studies; and adult education.

One reason for drawing on the expertise from these multiple areas was pragmatic: the challenge of bringing about a 'cultural change' in engineering education was too big and complex for me as an educational developer to take on board alone. I did not have all the expertise that was needed, and I could not develop the different areas of expertise just by 'reading up' in these areas.

Another reason was that a lot was at stake in EfS. A lot had been invested in the total redesign of the new undergraduate degree, including a restructuring of the faculty to facilitate a new and stronger engineering identity (that was bigger than what was seen as a 'siloed' view of engineering within the former schools of Civil, Electrical and Mechanical Engineering). Predictably, the new course and faculty structure created resentment and resistance among some staff who felt the new directions were misguided. Some talked about the curriculum being 'dumbed down' with 'all that social stuff'. EfS needed to show that engineering academics (and students) from the different specialist fields of practice could productively work together to create something bigger (in vision) than if they were working solely within their specialist domains.

A third, critical reason was that we needed to demonstrate to the students that the kind of learning experience offered through EfS was going to help them make more meaningful contributions in their careers as engineers. Perhaps for some, the imperative was more basic than that: the new course with EfS as the flagship subject needed to help attract more, not fewer students, to ensure the faculty's financial viability. Making the students' learning experience a successful and positive one was therefore economically crucial, even though we knew that the broader social focus of the subject was not something many students were initially seeking or would find easy to engage with.

Having a critical mass of colleagues from across the faculty who showed commitment to working collaboratively and differently to create a different kind of subject and course gave me confidence that what we were embarking on had the robustness that was needed to work through the many difficulties we had anticipated and, indeed, encountered.

Over time, there were many adaptations that I had to make in the way we worked. Although at the beginning, investing adequately to provide a positive learning experience for students and supporting staff in the process seemed to be a faculty priority, I was told that the investment, for example in the level of team teaching with the ELSSA staff, could not be economically sustained. The many challenges of teaching a different kind of subject to initially resistant learners without a lot of support (in workload allocation) meant that several full time engineering academics went back to teaching the technical subjects with which they were more familiar. This then led to the need to hire more casual staff, and the need to have more pre-developed material for them to use because the faculty would not pay them to develop their own authentic materials.

2. *What is it about these processes that enabled you to build up your professional knowledge? What did you draw on in this work and did you talk to particular people about your ideas?*

The areas of professional knowledge that I personally developed ranged from the subject content areas including learning about the wide range of ways in which 'sustainability' was conceptualised, theories of socio-technical change and histories of different areas of engineering; pedagogical approaches, most particularly integrating academic literacy development in disciplinary subjects; and educational 'leadership', specifically facilitating major pedagogical change in a large faculty and the development of teamwork among academics.

At the time of this course change, I was a fractional lecturer in adult education in the Education Faculty of the university. There I was teaching teacher trainees how to teach numeracy to adults. In that work I was not only reading and teaching about social constructivism as a theory of learning, but 'theorising' with my colleague, numeracy as a critical understanding of the mutual political and cultural shaping of mathematics and society. The teaching and research around critical numeracy and teaching numeracy informed the way I thought about how we might teach in EfS. We wanted our students to appreciate engineering as not only a technological project, but as a cultural and political practice. I also drew on the education literature about negotiated curriculum and the importance of students having a sense of ownership about their learning.

Adult numeracy was located within the Language and Literacy Education program of the Education faculty. My colleague and I were surrounded (at times we felt dominated) by linguists and literacy educators. One of the important benefits of that for me was the greater appreciation I gained of literacy development as an important part of 'learning to learn' a discipline. As a result, by the time I was engaged in the EfS development, I had already been drawing on the assistance of ELSSA Centre colleagues for my other Engineering subjects. When EfS had to be developed, there was no doubt in my mind of the central role that ELSSA staff could play in the curriculum development process.

3. *Do you consider your processes of building knowledge as a scholarly practice? Why did you answer this way?*

The EfS development initiative was a scholarly process, but it was not based on scholarship of an individual. The process drew on the existing and developing scholarship of colleagues from a number of different disciplines, bringing their disciplinary expertise and interests together to build something new. Although I did not use the term at the time, we worked as a multidisciplinary community of scholars. New understandings about engineering and how people learn to be engineers were being developed through asking questions together and exploring and reflecting on scholarly literature and our experiences.

4. *What is it that makes these practices of building knowledge scholarly (if you answered in the negative to Q3, then what would make these practices scholarly)? How have you come to that judgement?*

See response to question 3.

5. *What values or ideals guided your knowledge-building processes in this case?*

The values that guided the knowledge-building processes included values relating to:

- The subject content: sustainability and social responsibility of engineers
- Teaching and learning: engendering student ownership of the learning through negotiation of curriculum, learning as active engagement with the subject, literacy as an integral dimension of pedagogy and teachers as learners
- Educational ‘leadership’: leadership as creating collective ownership of curriculum change and development, respect of disciplinary expertise and interests of colleagues.

6. *What are your insights into the process of building knowledge that have emerged through your case? Has this case changed your thinking about the way you build your professional knowledge? If so, how?*

Collaboration can be an effective, exciting and enjoyable way of building knowledge. However, building and sustaining the collaboration takes time that needs to be acknowledged and respected in the broader institution. I have not changed my thinking about the way I build my professional knowledge. I still believe in and value collaboration with people from different disciplinary backgrounds, particularly because my own disciplinary assumptions are questioned and critical insights are provided into what I thought I knew.

7. *What institutional and workplace factors shaped or constrained the way you built up your knowledge in the case? How did they affect your processes of building knowledge and its outcomes?*

The initial impetus for the development of EfS came from the recommendations of the National Review of Engineering Education, and the faculty's decision to endorse the recommendations. There was a critical mass of academics in the faculty who saw the value of the Review recommendations. This allowed us to embark on something radically different to what we had been doing. The strong support from the top (Dean) and the Associate Dean Teaching and Learning, and the public confidence that they showed about my role in coordinating the development of the new course and EfS were important enablers for me to work in the way I did, particularly as a ‘non-engineer’ in an Engineering faculty.

The investment that the faculty was willing to make to support the initial process was significant in ensuring that staff who were developing new ways of thinking about engineering and new ways of teaching felt supported. It was also significant that in the first offering of EfS, the Associate Dean Teaching and Learning, the Associate Dean Research and a professor of Computer Systems Engineering participated fully in teaching teams to work through the challenges with more junior academics. Their engagement in the subject demonstrated that everyone in the faculty had to learn, and that the learning was exciting and worthwhile.

External contexts such as the increasing emphasis on research outcomes, declining funding per student and changes in the faculty senior management contributed to the level of investment that could be made to EfS. The lack of time staff had to invest in continuing to develop the case studies they used, as well as to work with each other as a team, negatively affected the collective knowledge building in the subject. It turned more into a subject that ‘got delivered’ rather than a subject where everyone teaching it had ownership in its creation.

8. *Were the processes and/or outcomes of this case shared or made public in any way? If so, how?*

In the first year of the new course, a paper written by the Dean, Associate Dean and myself about the new course and EfS was presented at an Australasian Association of Engineering Education conference. As well, the faculty prepared a submission which led to an inaugural award from the Institution of Engineers Australia for cultural change in engineering education.

In 1998, I was asked to write a case study based on EfS for an Australian Technology Network project. This project sought to feature curriculum development that was based around graduate attributes - a relatively new approach at the time.

As 'sustainability' as a course focus was also quite novel in engineering courses at the time, the Director of the then Centre for Learning and Teaching at the university and I wrote a paper for a Higher Education Research and Development Society of Australasia conference on the ways that students developed concepts of sustainability in EfS. Later on, two other colleagues who were involved in the teaching of EfS and I published an article about the political dynamics of the evolution of EfS within the faculty.

9. *Will your reflections on this case influence the way you build your knowledge around teaching and learning in the future? If so, how? If not, why? What questions and issues do you now think are important?*

The EfS experience was a significant professional experience for me, and I have wanted to share insights from it in a way that 'mattered' although I never quite knew what that would be. In 2009, an adult literacy colleague and I were successful in obtaining funding to undertake a research project on 'Integrated Literacy and Numeracy Support in VET Courses'. This involved a national environmental scan; interviews with literacy and numeracy teachers and vocational teachers, VET managers and students; and three case studies. When we were examining our data and identifying some emerging features of ways in which integrated literacy and numeracy support were being provided, I remembered two papers that I had looked at four or five years earlier when I was contemplating writing a journal paper about the integrated academic literacy development in EfS. Those two papers provided critical insights and models for talking about the data that we had on integrated vocational literacy and numeracy development. One of the papers we wrote at the end of the research project analysed the different ways in which literacy and numeracy, and vocational teachers 'worked together' in the different models we saw. In the process of undertaking further reading for this paper, we started reading in the area of cultural-historical activity theory (CHAT), which then provided another set of explanatory tools to discuss the different models of integrated literacy and numeracy in VET.

Reflections on the EfS case have therefore led me to theoretical tools which I have brought into use in my recent research project. The reflections on the research findings give me new insights into what enables and what hinders change in the VET sector. This will influence my teaching in my VET teacher education course and, no doubt, the VET student teachers' reactions to what I say will stimulate further reflections and scholarship.