

1 CHAPTER ONE

Introduction to the study

“I grow old ever learning many things.” Solon, c. 638 – 559 BC

The framework within which this research takes place is made up of the design and development of the curriculum, the teachers who must teach from that curriculum and the students who seek wisdom in that subject. The aim of this study is centred on curriculum and competency in vocational education and aims to inform teaching and learning practices in the TAFE unit Internal Control Principles. The analysis of the transcripts, both listening to the voices and examining in detail the written text, identified the emerging phenomena of the students’ experiences and perceptions of learning. Examining the language used by participants through the use of discursive psychology and analysing the responses to some of the questions asked in this enquiry provided another way of understanding how the participants created mental constructions of the world about them. The Internal Control Principles long form syllabus (refer to Appendix 4) with its list of learning outcomes is the object of student learning for this research and their voices described their approach to seeking wisdom, in order to achieve competence or to build, or arguably re-establish, a sense of themselves as learners. This study also found that TAFE teachers wanted feedback and felt that it would add value by helping them invest in good practices. Only 9% of teachers felt that they were valued, 37% felt valued by colleagues or students, 27% did not know whether or not they were valued and 18% stated that by being asked back to teach was evidence of some value.

The curiosities at the base of this study are curricula and competency in vocational education. In particular the focus is on curriculum to determine what part it plays in the approaches to learning by students and how it should be designed and developed. A small window was opened through which could be viewed a part of the teaching and learning journeys of a group of Technical and Further Education (TAFE) teachers and their students. By examining the phenomenographic pedagogy processes (Trigwell, Prosser and Ginns 2005) it may be easier to ‘develop an understanding, both of the world with which we have to deal and of our own dealings with that world ... reflectively and with self awareness’ Toulmin 1972, p10).

As people journey through the years, they are constantly exposed to new experiences from which they can build general knowledge, specialist information and various facts that deepen their understanding of concepts and theories. At times, on this

constantly moving pathway, one may become a student attached to a certain institution in order to acquire expert knowledge and skills. With this new awareness the graduate can then take his/her place in the real world and contribute to the community. Experience helps shape the way people expect to learn and discussion and debate expands our knowledge of the differing ways of understanding.

Over the last two decades the educational literature has demonstrated a quantum leap in the recognition of the importance of perceptions and experiences in teaching and learning outcomes. It clearly advocates that curriculum and teaching take central roles in the educational experiences of students. It appears that despite the volumes of research focusing on the students' needs and their perceptions of teaching and learning, many teachers remain inadequately informed of the students' experiences and how these may impact on the quality of their learning outcomes.

Why this study?

Having worked in TAFE in the area of accounting for many years, I found teaching enjoyable and the interactions with students a rewarding experience. I was interested in the topic of auditing and internal controls and wanted to understand just how curriculum and teaching helped student learning. Over the years I set in place my own evaluations to help my lifelong learning. At the start of each semester I would elicit from the students their expectations of the program of study upon which they were about to embark. I enjoyed reading these brief views and found it helped me align my teaching to my students' needs. This would include needs of which the students would be unaware at the beginning of the course. These insights often helped with lesson plans and assorted activities to reinforce difficult concepts. At the end of the semester I would ask the students to state whether their expectations had been met and if not, why not, and what could I have done to make their learning experience better? (Tatro 1995) The questions evolved as the years went by and not only did I find this feedback benefited my teaching, but it also helped cement a strong relationship with students at the start of new classes.

After many years of teaching in the accounting programs I was asked to assist with writing learning resources. These began with practical accounting sets, made up of two or three months of accounting transactions for a small firm, to assist students understand the whole business process. I also participated in writing and assessing examinations for various units such as taxation, auditing and accounting. It was this first assistance to the TAFE resource base that led TAFE to ask me in 1999 to re-write the curriculum for the unit Internal Control Principles. This was to be my first attempt at developing curriculum.

It was a task I enjoyed greatly and in which I was to include many of the useful exemplar, activities and tasks that had gradually become part of my own teaching resources for that unit.

Few writing experiences had excited me as much. I kept wondering what part curriculum plays in the approaches students develop for learning. Had it been designed and developed well enough for their deep understanding? Thoughts about how other teachers of the subject used the curriculum kept resurfacing as I immersed myself in work with new responsibilities in curriculum coordination.

However, with very little feedback on this task of curriculum writing it became important that I set about looking for answers. Could I talk to some of the teachers of Internal Control Principles and their students and find out for myself their experiences in teaching and learning? What did the relevant literature tell me about curricula, competency, teaching and learning in vocational education? I found it difficult to obtain any current local feedback on this particular unit in the TAFE accounting program and it was this fact that led me to believe I could design a study that would be useful for future development of teaching and learning in vocational education and training (VET).

The outcomes of this research may be of interest to curriculum writers, teachers and course managers in TAFE New South Wales. They could also be useful in the future design and development of educational research projects. When first approached, TAFE program managers in Business and Public Administration Educational Services were very enthusiastic and supportive of this study. It was something new that they felt had the potential to assist with future curriculum design and development. The research was approved by the Director General of Education and Training in New South Wales on condition that an interim report was submitted to the participating Institutes when all the data had been collected. This was done in July 2005. It was interesting however, that research in TAFE does not seem to be embraced by everyone, as there were College Principals who discouraged me or in some instances refused permission for me to talk to either their teachers or students. One teacher who participated in the research was actually approached by a supervisor and asked why she had agreed to be interviewed. Her reply was: *"Why not? This is the first person who has asked me about my experiences in teaching at TAFE"* (FT personal communication, October 2004).

The interviews followed a protocol whereby a set of core questions were followed by others that enabled closer examination of the participants' experiences. This led to the collection of rich data that uncovered the interaction of significant ideas in learning for

TAFE students. I was able to examine the perceptions of the students' experiences, all told from differing viewpoints. During this research I was continually encouraged to explore numerous possibilities and to form an approach that would lead to new questions about qualitative evaluation, multiple perspectives about the research, and a multi-layered approach to data analysis. This study heeds the words of a well known philosopher: 'if we are to set our arguments out with complete logical candour, and understand properly the nature of "the logical process", surely we shall need to employ a pattern of argument no less sophisticated than is required in the law' (Toulmin 1958, p96). As such the data collected for this research is the evidence that justify the claims made; the claims lead to conclusions, the merits of which I have sought to establish; and the warrants identified in the literature sanction the steps taken to commit to the arguments that are offered.

Background

Brief history of TAFE New South Wales

There are a large number of publicly funded colleges of vocational education and training that come under the control of the various state governments, which administer this special sector of higher education. The Department of Technical and Further Education has grown rapidly over recent years as students seek a combination of vocational education and also a stepping-stone into degree-level studies at university (TAFE 2005). For many years TAFE has provided a wide variety of tertiary education to the students who have passed through its system and it works very closely with employers to help prepare students for the workforce. TAFE colleges often use the name 'Institute' rather than 'College' to differentiate themselves from secondary-level colleges. Many of the faculty are practitioners in their specific discipline, bringing not only technical expertise to their teaching but also current knowledge of the operations of business and commerce in the economy. Thus TAFE colleges are often the first choice for students who want to obtain practical experience in the vocation of their choice before they either commence employment or pursue their studies further at university.

Organised technical education began in 1878, but it was not until 1889 that the government accepted responsibility for this education. In 1891 TAFE NSW found a permanent home in the building of Sydney Technical College (STC) at Ultimo. The well documented history of the STC, (Neill 1991) traces the one hundred years of its development from the opening in 1891 to the beginning of its second century in 1991. The University of New South Wales and the University of Technology, Sydney, both had their origin as units within STC. The many students who gained the honour of becoming an

Associate of Sydney Technical College (ASTC) hold this as one of their most prized awards. The last Associateship was conferred in 1976.

Until 1959, STC controlled all TAFE education in New South Wales. There are now 10 Institutes that manage the daily functions at campuses within the state, but curriculum development, management and some assessment are centralised in the Educational Services Division.

Some unique characteristics of TAFE programs

This section explains some of the unique practices that are indicative of this vocational education and training. The first is the way assessments are carried out. TAFE NSW is the only vocational provider in Australia still with some centralised examinations. The system nominates categories for units in various programs and during the interview with the Head of Programs (HOP) he stated:

I can generalise about exams and talk about assessments generally. In the accounting course each module has what we call a grade code and the grade code identifies the sort of assessment activities undertaken. At one end of the spectrum we have a grade code where assessment takes place entirely within the classroom.

Internal Control Principles, a unit in the Advanced Diploma in Accounting around which this research is focused, is a category D subject where the teacher is solely responsible for delivering and fully assessing the curriculum material. Then there are some category B units:

We have a system where we have subjects that are used both in classroom based assessment and also final exams and the weighting of the classroom assessment and the final exams is 50-50. In that case the final exam is a single exam paper that is set for the whole of the state. All the students who are doing the accounting course in New South Wales will then do – if they are doing that particular module – will do the end of semester exam in that module. (HOP)

An example of this category was the old unit Auditing and Internal Control. These category B type units have the exam marked at the local College, sometimes by the teacher, often by a panel of accounting teachers. The final category is A and these are similar to the B units, explained below in the words of the HOP:

We have two variations on that theme [50-50]. One variation is where the final exam is marked in the college but in accordance with an assessment guide that is sent out by the examiner, so the college is local marking, but a guide provided by the examiner [category B]. Then the other variation [category A] is where all the students' manuscripts from the whole of the state are brought to a central location and a panel of teachers drawn from around the whole state sit together and mark all the papers for the whole state as a panel and that is our most rigorous form of assessment.

The second practice is closely related to assessments, being centred on the units of competence.

The main component of the training package that we are concerned with, although there are others that are equally important, are what are called units of competence, and in very simple terms, a unit of competence defines what somebody is able to do in the workplace. So in effect, they're about the results of the learning process – they are what somebody can do after they have learned how to do a task. The units of competence are then taken by the TAFE course developers and translated into curriculum. So the training packages are a very rich resource for us because they identify what the end of the learning process is to be. (HOP)

These specific performance criteria relate to competencies that the student must be able to demonstrate to indicate knowledge in that subject area. While TAFE may not participate in any large way in traditional research, there have been extensive programs to examine the establishment of competencies. In 1996-1997 Professor Birkett, University of New South Wales, carried out a study of competency standards. The study looked at competency standards as a way of guiding the assessment of accounting students at TAFE. In his report Birkett (1997) stated that competencies are generic, in that they apply to work generally. They represent a capacity to apply knowledge and skills to work situations in an integrated way.

This leads to the third practice—the employment of accounting graduates. TAFE has been in the business of supplying accounting education for a long time. Indeed, up to the year 1968, qualifications gained by TAFE accounting graduates were accepted as meeting the educational requirements necessary for membership of the Australian Society of Accountants, later to be renamed CPA Australia. TAFE maintains a liaison with close contacts and partnerships with professional bodies, industry and commerce. The course content and rigour of assessment reflect the needs of employers and students, and statistics in 2000 showed that 72.8% of TAFE accounting graduates were in employment within six months of completing their course (Hays Personnel 2000). In addressing the issue of 'middle level' accountants, Birkett (1997) stated that this is a difficult market to both define and translate into marketable skills. The relationship between the labour market and the provision of education and training is not at all straightforward. It is in fact, non-linear, interactive and dynamic. This fact leads to difficulties when designing learning objectives and competencies for professional programs (Gonczi 1997).

TAFE accounting graduates take up many and varied positions in the fields of business and commerce. In a 1996 study by Boland of different levels of earnings of workers with various levels of educational attainment in Australia, comparisons were made

between university degrees and TAFE diploma qualifications. The study was carried out with full-time workers for a full year and the results showed that the TAFE graduates had an 11% increase in relative earnings over the period of one year. TAFE accounting graduates fill the general practitioner role, while university graduates are likely to explore more specialised fields. TAFE accounting education is complementary to university education—each needs the other to ensure the accounting profession is well served.

The students in the TAFE Advanced Diploma in Accounting

The Australian National Training Authority (ANTA) stated that VET will have a key role to play in integrating people from diverse backgrounds. The Australian Bureau of Statistics (ABS 2002b) tells us that the population is ageing with a median age of 35, expected to reach 38 in the next decade. There is also an ever increasing number of overseas students coming to study in Australia and of these about 30% study in the vocational education sector (ABS 2002a). Buchanan *et al.* (2005) state that: ‘The importance of lifelong learning will need to be reinforced as the nature of work and the patterns of work are altered’ (p 4). This consultation paper also puts forward the belief that more people will seek to retrain or further their education in the vocational sector. All of these issues are weighed against the claim by Thornthwaite (2002) that people are less inclined to let workplace requirements dominate their lives as they move towards a more balanced and satisfying lifestyle that is integrated with their journey of lifelong learning.

Graduates of both diploma and degree programs have a place in the sphere of accounting in commerce and business. In a survey of students undertaking an economics degree at university (Siegfried and Round 1994) it was found that a significant number gave ‘problem solving-practical application’ a very low rating. This may be a cause of concern, as ‘many of these university graduates will have responsibilities early in their careers in which they will be asked to apply statistics to solve real-world problems’ (p 198). The study found correlations suggesting that work and study are, to a small degree, substitutes for one another.

Those students who study accounting at TAFE will be exposed to a more practical approach to their learning. While they will not be required to research issues in as much depth as their peers at university, they will need to be skilled in producing accurate management accounting reports and fully understanding the critical importance of internal controls in the accounting system. The training students receive is designed to link in with the requirements of industry and businesses and the value of the contribution they make to the community will depend to a large extent on the teaching they receive, the depth of their

learning and the curriculum that underpins their programs. A number of studies have attempted to value public educational institutions (Michael 1996; IRIC 1999, 2000) and all have concluded that the enhanced value of human capital outcomes, the earnings from exported educational services and the earnings from research and knowledge creation (Sudmant 1994) suggest that the value added by TAFE training to the community is significant.

Internal Control Principles

TAFE pursues a policy of ensuring that accounting graduates have covered a broad and complete program of study. As part of the Advanced Diploma in Accounting, students study a unit titled Internal Control Principles, around which this whole research has taken place. The subjects in the accounting program are designed to equip students with the skills necessary to accurately record, classify and present timely reports on the flow of transactions through the accounting system. Accounting is both mechanical and analytical and has been referred to by Belkaoui (1980) as an art not a science and he postulated that the majority see accounting as ‘utilitarian in purpose and descriptive in nature’ (p 6). Graduates need to be accurate with their data entry, skilful in classifying business events and alert to the possibility of fraud or errors that can occur within the flow of transactions through the accounting system. In other words they must be well trained and quick enough to react to the considerable challenges and changes that the accounting profession constantly faces (Hopwood, Page and Turley 1990).

Curriculum development at TAFE

This discussion has provided a background on TAFE NSW as an organisation, and described the framework within which curriculum is designed and developed and the teaching and much of the learning take place. It has not attempted to examine in detail how the programs are delivered but rather takes a holistic view of TAFE’s place in the educational sector, its contribution to increasing industry knowledge through industry-based learning and practical programs.

1.3 Reflections on curriculum writing

About four years ago I was asked by TAFE NSW to re-develop the curriculum for the unit Internal Control Principles (9434P 1999). Before this was made a subject in its own right, it was part of a unit called Auditing and Internal Controls which I had taught for about 14 years in the Advanced Diploma in Accounting in New South Wales TAFE. For many years Auditing and Internal Controls had been classified as a category B subject. This meant that

it had an externally set exam at the end of the semester generally marked by the teacher or a panel of teachers at individual TAFE Colleges. With the new subject Internal Control Principles, formed from breaking apart that former subject into two units, a decision was taken by TAFE to classify the unit as a category D with the final exam set and marked by the teacher of the subject.

The fact that this very important part of the general audit process was now singled out as a separate unit, highlighted the importance that the National Finance Industry Training Advisory Board (NFITAB) placed on internal controls. The subsequent spectacular financial failure of some large corporations has also reinforced this fact. On the cover page of the curriculum document is a statement of the contribution this unit makes to the whole course: *This subject provides students with the practical skills required to design, implement and evaluate internal controls in any entity.* It is a core unit in most of the accounting programs delivered by the Business Services division of TAFE. Table 1 depicts the core units in the Advanced Diploma in Accounting showing the unit number, name and nominal hours attached to each unit. They are also in sequence of delivery.

The NFITAB had set out the learning outcomes for 9434P as follows:

- Define Internal Control, its principles and limitations.
- Identify the control principles as they relate to the transaction cycles.
- Explain the nature and the impact of the computer information system (CIS).
- Describe the role of the Internal Auditor.
- Explain why an External Audit is essential and what role the External Auditor plays.
- Explain the procedures involved in the external audit of a not-for-profit entity and why internal controls are so important.
- Explain the purpose and practice of performance auditing.
- Explain the importance of ethics in all aspects of auditing and control.

Not only were students expected to be competent in designing and monitoring internal controls but they also needed to fully understand the importance of ethics in all aspects of auditing and control.

The Internal Control Principles curriculum document lists the learning outcomes formed from the specific criteria identified in the training package. As with the previous curriculum material, the learning outcomes are designed to be the minimum standards that should be achieved by the students studying that subject. It is the task of the curriculum writer to examine the learning outcomes and take note of what the unit is meant to do:

This subject provides students with the practical skills required to design, implement and evaluate internal controls in any entity.

Table 1 Core units in the Advanced Diploma in Accounting

Units	Name	Hours
Core:	Subjects are in pathway sequence	
4968A	Dealing with customers and clients	20
7365G	Occupational health & safety	10
8395C	Business computing	54
8395F	Commercial law 1	54
8979T	Writing workplace documents	20
8979V	Work team communication	20
9434A	Accounting 1	54
9434B	Accounting 2	54
9434C	Computer accounting systems	72
9434D	Work within a financial services context	10
9434F	Financial accounting	54
9434G	Budgeting	27
9434H	Office tax procedures	27
9434J	Company accounts	27
9434K	Preparing a business plan	27
9434L	Management accounting principles	54
9434M	Financial reporting	54
9434N	Financial management principles	54
9434P	Internal control principles	54
9434Q	Income tax law principles	54
9434R	Commercial law II	27
9434S	Accounting systems design	27
9434SB	Accounting systems design & evaluation	54
9434T	Financial planning	27
9434U	Management accounting applications	54
9434V	Financial management applications	54
9434W	Corporations law	54
9434X	Business computing advanced	54
9434Z	Marketing for accountants	27

Source: Modified from the information available at <http://www.tafensw.edu.au/>

All these elements must be considered in order to develop the guidance notes, expanding and piecing together all the necessary technical facets of the subject required by the training package into a curriculum that is educationally sound, one that will allow an award to be determined on the capability of a student to achieve the stated outcomes.

My own teaching experiences had clearly shown me that for students to successfully achieve these outcomes they would need to have a thorough understanding of the implications that arise from a failure to monitor and evaluate the internal control processes. I knew from my own business experience and from seeing fraud occur in entities with few or no internal controls, that students would need to appreciate the theory underpinning the controls and be competent with the practical application of testing the controls in order to ensure they were working as intended. In particular I felt that the second outcome: *Identify the control principles as they relate to the transaction cycles*

would require the students to know how and why these cycles operate and what can be done to ensure that the methods and records established to assemble, record and classify all valid transactions and data are sound. It was for these very reasons that six useful tools for evaluating internal controls were included in the transaction cycles section of the curriculum. At the time of developing this curriculum, the inclusion of these six tools gave an opportunity to design interesting and innovative assessments around the transaction cycles. These would, I felt, provide teachers with the chance to enliven the topic in practical ways, and help them to equip the students with valuable aids that promoted deep understanding on how important it is to evaluate controls. It was not until some five years later that I was to be surprised about this very section of the curriculum, something about which I had been so passionate.

Choosing TAFE curriculum writers

When asked how writers of curriculum were chosen, the HOP, who had been in the position of overall Program Manager for the Business and Administrative Studies (accounting subjects) for some 12 years, stated: *‘We identify people who are specialists in their particular field and hopefully they will have experience, prior experience in writing of curriculum or learning resources’*. I had not had prior experience of writing curriculum but both the HOP and the NFITAB must have been happy with the revised curriculum, and with the inclusion of the new material on the six tools for evaluating and testing internal controls. When questioned further about the actual process of writing these curricula, he replied:

As we develop the curriculum we sit down with our various TAFE experts and develop a broad outline of what the course would be like, that goes back to the industry steering committees with them as a sort of industry experts. These are people who work in the accounting field, not academics, and advice is taken from them about the appropriateness of the learning pathway.

It became clear that although there is adequate industry and teacher input into the writing of these documents there is no student input to assist the developers. The HOP also stated that this process is: *‘a fundamentally important one. That’s what our business is, to lead students to learning, that’s why we are there’*. I can remember thinking at the time that this would be a big challenge as the realisation dawned that the curriculum developers need to have a deep understanding of students’ approaches to learning and the pedagogical design of the learning pathways. I would have to draw on all my own classroom experiences and evaluations that I had elicited from my students over the prior years of teaching and bind all of these things with the technical skills required for the development of the unit.

Quite clearly internal controls are an extremely important part of any organisation and the disastrous collapses of many high profile entities over the last decade might leave a former teacher wondering if indeed any TAFE accounting graduates working for these infamous organisations were competent in applying the skills they had learnt in this unit. Excitedly I set about writing the teacher guidance notes using the specific performance criteria set out in the Australian National Training Authority's (ANTA) guidelines and endorsed by the NFITAB. It was a big task and involved researching many texts on the subject of auditing and developing teaching resources that accompanied the very prescriptive curriculum outcomes. The training package document identified the core skills and outcomes associated with designing, implementing and maintaining internal controls in an organisation. It set out the elements that identify the pervasive nature of administrative controls within which all accounting controls must operate. Associated with these were specific performance criteria that provided the basis for students' learning objectives: how to design, evaluate and maintain internal controls. The curriculum had to focus on the core skills and outcomes associated with identifying and reporting the strengths and weaknesses of an organisation's work practices and processes. It also required detailed methods for evaluating the contribution of these controls to the integrity of the financial data produced in an organisation. This was the basis from which the new curriculum had to be written.

It was my task to develop comprehensive guidance notes, detailed topics and sub-topics and exemplars that would assist teachers in delivering the course material. These resources helped to ensure that students were able to achieve the stated outcomes. There were very few texts that were written specifically for internal controls, as most were auditing based with internal control principles woven through the audit process. This is not surprising considering the all-encompassing effect these controls have on an entity's administrative and financial information systems.

For many years in teaching I had used auditing texts such as:

- Arens, Best, Shailer and Loebbecke. *Auditing in Australia—An Integrated Approach* Sydney: Prentice Hall. [AGL]
- Gill, Cosserat, Leung and Coram. *Modern Auditing in Australia*. Brisbane: John Wiley and Sons. [GCL&C]
- Gull, Teoh and Andrew. *Theory and Practice of Auditing*. Sydney: Nelson. [GTA]
- Wallace. *Handbook of Internal Accounting Controls* New York: Prentice Hall. [W]
- ASCPA Members Handbook. *Volume I – Accounting standards and Volume II – Auditing standards*.

By the year 2000 two fairly new texts had become available:

Adams, Grose and Leeson. *Internal Controls and Auditing*. Sydney: Prentice Hall. [AGL]
Trenerry. *Principles of Internal Control*. Sydney: University of New South Wales Press. [T]

On reflection, the learning objectives are probably the most important parts of the pedagogy and as the HOP said: *'the critical thing that drives the development of curriculum is identifying what an appropriate learning pathway is that will meet the objectives of the training package'*. In response to a question about developing the technical details in the curriculum he stated:

The writer is given a broad outline of what we think the content should be. He then goes and expands on that broad outline and perhaps revises the outline, he might have different views on what should be there, those views are discussed – so he is only given a broad picture of what is required, so it is his expertise then that fills that picture out. Or her expertise!

All of the issues that I felt were significant and imperative for students to fully understand were discussed with the HOP before the detailed set of topics and sub-topics was finalised. This made up the complete short form subject content that was expanded into the curriculum document (see Appendix 4) and implemented in 2000 as the new updated Internal Control Principles curriculum along with extensive exemplars.

In the years since that time I have often wondered whether or not this task was carried out appropriately, or if perhaps I should have had more training to complete such an important project. I became intrigued about how teachers used the curriculum and how students approached their learning in this subject. I kept asking myself: Is there a variance between the design and development of curricula, the teaching methods used and the way students turn information into lasting knowledge? It is only now with this current research that I am gaining feedback on this particular curriculum design, its content and the resource materials that were developed. This is helping me answer some of the questions about the learning process and is supplying valuable data on the experiences, perceptions, apprehensions and understandings of teachers and students as they go about the learning processes. All of these factors assist in identifying the criteria that play such an important part in curriculum design and ultimately affect the teaching and learning outcomes.

What began in 1999 as an interesting exercise in curriculum writing and the preparation of detailed teaching and learning guides with extensive resource materials had now developed into an intricate reflection of the *presage* (Biggs 1996), the course and departmental context where the curriculum design, teaching methods and assessments

marked the first step in the student learning process. I now wanted to find out what had happened to that curriculum, how teachers taught it and how the students learnt from it.

1.4 Subjectivity and location of the researcher in the study

My previous experiences as a teacher working with students in the classroom meant that I brought to the research process a student-centred perspective and teacher-oriented approach to teaching and learning. These interactions within the group developed over time and have become part of 'who I am', 'how I think' and 'how I teach'. It is therefore important to acknowledge that it is through this 'lens' (Morse 1994) that I collected and analysed the data. There were times during the collection of data when it was not only appropriate but also necessary to answer questions and demonstrate a level of personal understanding of problems raised. I did not believe these interactions should or could only be objective encounters as they were not devoid of social or personal meaning.

This view is supported by Beaty and Cousin (2002) who write about the benefits of linking research and teaching, and who comment that the researcher is often an integral part of the object of study.

Practitioner research sometimes clashes with discipline-based cultures of inquiry which value researcher objectivity, which often means researcher distance from the object of study. In our experience, many academic colleagues express an initial anxiety that intimacy with the research site must bring problems of bias. However, this anxiety appears to be diminishing as colleagues begin to appreciate that using their own practice as a laboratory enables them to conduct what Schon in *The Reflective Practitioner* calls 'frame analysis'. This involves them becoming aware of the frame within which they practice in order to develop an awareness of other frames. What elevates this analysis to research is its subjection to rigorous, public enquiry. This can be done fruitfully in partnerships between subject specialists and educational specialists (p 24).

These authors state that very powerful dialogues are created between educationalists and subject specialists and that through these enquiries a richer learning takes place.

Researchers and their subjects can learn together and this allows for a multi-faceted approach that relates collaborative learning to collaborative practice and supports a team of professionals through the skilled use of group-based learning, interactive assessments and inter-organisational processes and practices.

The links between research and education are also highlighted in examples of the work of Dall'Alba (2005) in the classroom. She uses various strategies to assist integration of the participants in the course, encouraging them to reflect on their teaching practices and discuss with their colleagues how the educational literature can be translated into good

teaching and ‘action learning projects’ (p367). Her aim is to promote best teaching practices across all disciplines by using group-based activities that can be shared with colleagues. These benefits go well beyond the classroom and the networking enables teachers to share ideas and engage in dialogue as they assemble and deliver their curriculum.

1.5 Signposting the pathway

Chapter One contains the reflections and information that set the scene for the analysis of the data collected from all the participants in the study. As the researcher I conducted all the interviews with the HOP, the teachers and the students and transcribed all the audio tapes and documented all the field notes from classroom visits. For this thesis I have focused on the teachers’ and students’ interview data using other notes from the study to support, validate and add richness to the phenomenological theory interpretation of how students learn the material set out in their curriculum.

Chapter Two takes a glimpse at the large body of educational literature seeking out what it has told us about teaching and learning and classroom communities of shared practices. From these rich resources can be traced the evolving studies of the mysteries of how students learn. The fact that learning depends to a large extent on the individual situation, explained so succinctly by Prosser and Trigwell (1999), does not alter the fact that there are many approaches to teaching and learning that have been documented. Some of these include the cognitivist school, the individual constructivist approach, the social constructivist and the relationalist premise. This chapter also looks at curriculum and competencies and how these have developed over the years and the constructive alignment proposed by Biggs (1996) in aiding the teaching and learning process.

Chapter Three sets out the qualitative methodologies used in the thesis – phenomenography, autoethnography and discourse analysis. Together these different methods added depth to the validity and reliability of the research. The traditional phenomenographic method allowed me to find the theoretical constructs, core categories and qualitatively different ways that students experience things when striving to learn. The analysis of both the students’ and teachers’ data highlighted the relationship between conceptions and categories and helped organise parts of the puzzle that together formed the final description of learning to learn. The autoethnography was a way of presenting information from an insider’s point of view, and highlights problems and tensions seen through the researcher’s lens. The discourse analysis focused on the themes and patterns that were identified from the rich data and was used to tell the story of what has been

happening and what the most significant problems were to emerge from these data. All of these methods take the reader on a journey revealing how the teaching-learning situation pushes through the perceptions and emotions that soared and fell at different times. This often made it difficult for the signals to filter through to students in the learning outcome space.

The findings of the research are presented in Chapters Four to Seven. Chapter Four describes and explains the approaches to teaching and learning and the interactions of both teachers and students as they seek to develop and expand their perceptions and understanding of teaching and learning. In this chapter the phenomenographical categories that emerged from the data are directly related to the learning environment. The analysis revealed the extraordinary similarity of situation of both teachers and learners, but the differing focus or viewpoints that each adopted as these perceptions, apprehensions and concepts had to filter through to the learning outcome space. The students recognised that they had to adapt and fit in as they struggled at times to change their concepts. The teachers sought to direct negotiated strategies, explain and use experiences from real life in order to engage students and get the message across. From this data quite significant variations of the approaches to teaching were identified. The students' perceived level of success at achieving knowledge change and of attaining competence was dependent in many ways on the interactions they had with their teachers.

The outcomes of students' interactions with their teachers form the basis of analysis and discussion of Chapter Five. This explores the facilitative interactions and approaches to teaching adopted by teachers and examines the outcome called 'changing concepts'. The chapter also deals with the opposing situation, being the teaching approaches students perceived to be inhibitive for their learning. The chapter describes how teaching that seeks to regulate the students' behaviour and control the way they learn leaves them feeling frustrated and struggling to meet the learning outcomes.

Chapter Six moves to an outsider's view of the teaching and learning situation by presenting a discourse analysis of the teachers' in-depth interviews and the impacts that these may have on student learning. In this way it builds a valid argument for drawing inferences from the identified themes. It also presents an analysis of the student-teacher relationship and the interactions in the classroom encounters as they impact on the teaching and learning situation. The place of curriculum in the Internal Control Principles environment is examined and there is a discussion of the role of communication between teacher and student that enhances learning to learn.

Chapter Seven commences with two stories that recreate students' experiences as a whole. In essence these narratives present a storyline (Strauss and Corbin 1990) of the analysis of the preceding chapters. This is achieved by using the students' own words. The chapter also explores other relevant work and synthesises these findings with those of previous researchers in vocational education. Establishing and maintaining collaborative relationships with teachers thus becomes a key feature of the students' learning experience.

The final chapter contains the conclusions to the thesis where the implications of the findings are examined in total and linked to the theory. It is here that the implications for curriculum development are examined and the limitations analysed in light of the possibilities available for the future design and development of learning resources in TAFE. Educational theorists may take up some opportunities identified for future research in teaching and learning in vocational education and these are also set out in this final chapter.

The first task then is to situate the research and explore the literature that forms the framework of this study. Curriculum development and teaching and learning are examined and some of the educative experiences that have emerged from the many research studies carried out in the last century are documented. The overarching effect of quality assurance is also analysed, and the role of the course manager in modern educational institutions is placed under the microscope.

The next chapter provides a review of research from curriculum design and development through teaching and learning to competencies, setting the scene for the later discussion of some of the key questions set out in Chapter Three under the sub-heading of 'Searching for Meaning'.

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CHAPTER TWO

An overview of the literature

This review of the literature highlights the many recent contributions made to teaching and learning research and provides a space in the vocational educational area where student learning can be examined. This study is situated in the context of accounting students learning about internal controls in the accounting information system. The framework within which this research takes place is made up of the design and development of the curriculum, the teachers who must teach from that curriculum and the students who seek wisdom in that subject. Knowledge of the learning approaches by students, the benefits of communities of practice in the classroom and the quality of the competency based curriculum in tertiary education is the epistemological key to vocational learning. This is combined with an ontological focus to ensure that curriculum encourages teaching, knowing and learning and is ‘not simply something we possess but who we are’ (Dall’Alba 2005, p363).

The literature uncovers a wealth of information about the approaches to teaching and learning and in particular the 3P model of Biggs (2003) which is used as a guide to this research and which has formed the framework for many studies. One of the most significant threads in the learning research encompasses the relationalist perspective, where the student and the world are not considered as separate, but rather live and learn in one sphere. An examination of variation in the approaches to learning adds another dimension to the puzzle and it is here that we glean a greater understanding of the differences in the dimensions of awareness. Teaching and learning draws our attention to the classroom community, to the principles of constructive alignment and to the benefits that shared values can bring to the learning outcome space for both teachers and students. To evaluate learning, however, we need performance indicators and the final section of the review examines the role of competencies in vocational education for it is in this context that the study evolves. At the heart of teaching and learning is the curriculum with all its accompanying resources that are used in the learning situation. It is fitting then to begin this review with the curriculum to discover what the literature says about its design, development and implementation.

2.1 Curriculum design and development

Curriculum per se can be broadly defined as the specific knowledge and skills that students learn (ASCD 2005). This is what Dall'Alba (2005) characterises as the plan to address epistemology, described as the theory of knowing. Curriculum helps teachers develop strategies, activities and techniques that kindle 'a desire to learn, promotion of learning in face-to-face and/or technology-mediated formats, assessment of student achievement and evaluation for improvement of educational practice' (p363). In 1996 J J Chambliss compiled an encyclopaedia that covers philosophical points of view that have had the greatest influence on educational thinking, from ancient Greece to the present. Along with other contributors this author also provided much of the history of education that is documented in the Encyclopaedia Britannica (2006). This sets out the history of curriculum development and claims that it has undergone vast changes in the last century. They describe this as follows:

... curriculum has responded to social issues by including such subjects as consumer education (or other applications of the economics of a free-enterprise society), ethnic or multicultural education, environmental education, sex and family-life education, and substance-abuse education. Recent interest in vocational-technical education has been directed toward establishing specialized vocational schools, improving career information resources, integrating school and work experience, utilizing community resources, and meeting the needs of the labour market. ... Curriculum reforms have accentuated the academic basics, particularly mathematics, science, and language, as well as the "new basics," including computers. Computers have become increasingly important in education not only as a field of study but also as reference and teaching aids. (p 202)

According to this view of curriculum, it has changed as the world problems and other issues have changed. Reid and Loxton (2004) agree that internationalisation is a way of thinking about curriculum and quality. They suggest 'that the approach to internationalisation should expand to focus on teaching and research, including the provision of quality learning experiences for all students using the curriculum as the main vehicle' (p 90).

This seems to be consistent with the view of Hicks (2004) who believes that the place to begin is with global issues that are addressed in the curriculum so students can see the local issues in the wider global context. These could be selected from the array of topical issues expressed in the various media. 'These issues are present in our own countries and communities: they are both local and global in nature' (p 22). The four components of global education that Hicks states should be present in the curriculum are: *the issues dimension* – broad problems that need to be explored such as wealth, poverty,

human rights, peace and conflict, *the spatial dimension* – examining the interconnectedness between local and global issues, *the temporal dimension* – the connections between the past, present and future, and *the inner dimension* – relating to one's own personal growth and development (Pike and Selby 1996, 1999, cited in Hicks). To ensure curriculum has these characteristics it then would seem important that the curriculum is taken into the classroom and developed by the teacher in that context (Patrick 1998).

The curriculum process is putting together all those strategies and plans of the institution to achieve the stated learning outcomes (Neagley and Evans 1967 cited in Child 2004). This process is begun by deciding what is to be included in the curriculum, why it is needed and whether or not these processes will lead to the anticipated outcomes. Dall'Alba believes that such processes, while vitally important for the enacted curriculum, also need to be transformed with a concentration on ontology, or the theory of being. She suggests that: 'By focusing on epistemology, we fail to facilitate and support this transformation' (p 363). The curriculum design also needs to accommodate varied learning styles while stimulating the learner to evoke interest in the content (Nulty *et al.* 2002). The curriculum process would therefore need to contain elements such as design of content, methods of exposure, objectives and evaluation. To assist teachers in achieving the ontological focus, additional resources that encourage formal and informal learning may provide tools that aid guided discovery. 'The study of knowledge for its own sake and without regard for its practical application' (Child 2004, p431) is an example of an uneven focus on the epistemology of curriculum.

It seems very difficult to define curriculum quality as there are so many views on what curriculum is and what it should contain; whether it should have a narrow focus or be broad-based encompassing real-life attributes. Does quality stem from the way curriculum is designed or from the way it is taught or perhaps from a combination of both these elements? Ramsden (2003) believes that quality comes from the enacted curriculum and is manifested in three areas; transmitting information or knowledge, actively involving students in learning and creating an environment within which learning becomes possible. If these three areas are of high quality Ramsden claims the enacted curriculum will result in students achieving better learning outcomes while becoming more confident about their future career. This appears to support the view of Dall'Alba (2005) that not only does epistemology need to be addressed but there must also be a focus on ontology.

For curriculum to be effective, however, it may be beneficial if designed and developed in a way that encourages students and teachers to engage in discussions of important issues that lead to both the acquisition of deep intellectual knowledge and the practical skills to apply that knowledge to solving problems in the real world (Child 2004). For curriculum to have lasting effects then perhaps student learning could be aimed at developing the 'Professional Entity' (Reid and Petocz 2003). Building on the initial work of Reid (1997; 1999), and examining a number of different professions, Reid and Petocz built a framework for the professional entity that is based on the relationship between students' perceptions and their expectations of professional work.

The Professional Entity seems to be a unifying theory that can be used to develop appropriate curriculum for professional studies, make connections between work-integrated learning and work-based environments, and help students find an important focus for their learning in an institution. It can also be used as a basis for reflection on and critique of the professional values that are being passed on to the next generation. (p 3)

These authors found that there was definitely commonality in the perceptions of students about professional work across disciplines even though there was significant variation in these perceptions. Ramsden (2003) also supports the idea that students need to be more prepared for life in the real world. It is possible then that effectiveness of curriculum can only be measured when students become professional entities. Competent and confident graduates may be the result of epistemologically based curriculum integrated with an ontological focus.

The knowledge economy is increasing and coupled with the need for researchers to contribute to this expanding area is the impact this growth may have on curriculum development (Jenkins 2000). Significant trends in this area can already be seen in the global rise of tourism curriculum that has made considerable use of geography-based research.

We should design courses to ensure that students experience the practice and process of research and develop their abilities as researchers (and perhaps develop their abilities to 'transfer' these skills into future employment). In many cases this will require fundamental curriculum re-thinking, for the focus has to include an emphasis on active learning methods and a radical re-thinking of how students are assessed. (p 345)

There are various aspects of curriculum that have been described in the literature and each source contributes to the broad definitions given above. As Reid and Loxton (2004) argue, 'what students encounter and grapple with whilst at university plays an important role in their orientation to life and work at the conclusion of their formal study' (p 100). To delve even deeper into the meaning and use of curriculum it is helpful to examine all the areas

that make up the whole process of developing and implementing curriculum that enhances students' quest for lifelong learning.

Curriculum

Some theorists argue that curriculum is made up of a number of parts, and that these in general fall under the broad headings of content, learning experiences, objectives and assessment (Child 2004). The segment on content can be further divided into specific criteria and the perennial problem of the trade-off between breadth and depth. Where it does become difficult is in deciding just how much emphasis there should be on each of the parts and whether or not they exist in all curriculum. Then there is the difference created by the separate tertiary sectors; university curriculum, which is categorised as higher education and vocational training curriculum, representing the more applied education. Vocational curricula in TAFE are planned, managed and controlled so that individual units are not ignored or abandoned by teachers. Curricula in university are developed by the teacher, and Salemi and Siegfried (1999) found that there have been times when academic freedom is taken to its extreme and teachers immerse themselves in their own vested interests without taking into consideration the whole program of study. However, it is argued by Furedi (2004) that curriculum objectives should be flexible enough to allow 'individual scholars to pursue their passionate interests' (p 2). Some authors suggest it is essential to build generic capabilities into the basic guidelines for good curriculum design (Frazer and Deane 2002; Nulty, Vegh and Young 2002). The next sections discuss in detail the various elements that together make up the whole curriculum. The Association for Supervision and Curriculum Development (ASCD 2005) defines these elements.

a. The specific criteria curriculum

Academics are faced with the task of designing curricula that satisfy all the standards of the institution as well as the educational needs of the students. Very often the requirements of industry or the professions play a major part in the construction of these documents. In TAFE all individual units have their learning outcomes specified by industry advisory boards made up of specialists and practising professionals. Governments may even lay down specific criteria, intent on ensuring that performance criteria can be addressed and requirements for careers included in the learning outcomes. Porter (2005) refers to the specific criteria as the intended curriculum, which he believes sets out the content and standards that are essential for students to know. Another author classifies this as 'content-based curriculum' (Child 2004) being the knowledge that is essential for transmission to

the student. There are claims that curriculum is the sum total of what students learn, so if this is the case then pedagogy for deep learning needs to fit into the specific criteria curriculum (Hopkins 2003) as well as its other elements. Reid and Loxton (2004) support this view and state that there are competing pedagogical demands of various disciplines and ‘in areas where there are strong professional affiliations (accounting, actuarial studies, law and chiropractic, for instance) the curriculum is oriented towards students’ learning of associated professional competencies’ (p 101).

Effective curricula and teaching patterns induce students to construct knowledge and inquire into subject areas intensively. Researchers have noted that one of the purposes of curriculum is as a communication tool, identifying intent, directions and expectations of the creator (Birdsall 1989; Altman and Cashin 1992; Johnson 1995; Wankat 2002). Some put forward the argument that well written curriculum translated into teacher preparedness may reinforce positive attitudes among students (Grunnert 1997). If the aim of curriculum is to encourage scholarship and ensure that students surprise us with the depth of their lasting knowledge then, as Leinhardt, McCarthy Young and Merriman (1995) classified, the curriculum objectives must be constructed clearly and in a way that encourages students to acquire both professional knowledge (functional and applied) and declarative knowledge (abstract and conceptual). This would then seem to satisfy the idea that both epistemology and ontology must be addressed.

b. The taught curriculum

The taught curriculum, labelled by Porter (2005) as the enacted curriculum, is the content from which teachers teach and from which the students learn. Porter’s work focused ‘on measuring the academic content of the intended, enacted, and assessed curricula as well as the similarities and differences among them’ (p 3). The taught curriculum contains the day-to-day teaching plans for the subject and is perhaps the part that varies most widely in its formation and delivery. Child (2004) calls this the process-based curriculum that seems to align to Biggs (2003) idea of the 3P model: presage, process and product. The objectives are central to the curriculum document, which in turn is pivotal to the learning environment and the teacher plays a participative role in constructing the topic details and building performances for understanding (Biggs).

Research by Meyer and Land (2005) with students in information systems suggests that there maybe general threshold concepts in specific disciplines that all students find difficult and that many teachers equally recognise, both from their own experience as learners and from their teaching. This may provide some links between the known

knowledge space and the unknown. Davies and Brant (2006) suggest there are a number of possible threshold concepts for learning economics such as opportunity cost, elasticity and economic systems as 'non-zero-sum games'. These researchers believe that until threshold concepts are fully understood and irreversible, the learning process cannot proceed. This seems to imply that the important aspects of the taught curriculum are how competently the teacher delivers the basic concepts of the discipline. It would also appear to mean that it is vital that the teacher focuses on changing the conceptions of the students about the discipline's tenets. This would appear to place an emphasis on the importance of first year curriculum as stated by the Boyer Commission (1998), being the time when new university students through their learning experiences reinterpret themselves, understand their learning outcome space, their region and the community. These basic concepts are the foundation from which wider knowledge is built. If the teacher cannot encourage the student to change their early concepts of the object of learning, then the final outcomes may prove more difficult to achieve.

Brodeur (1986) and Lowther, Stark and Martens (1989) consider the teaching curriculum as an informal learning contract. At first glance this may seem at odds with the initial idea that the taught curriculum is the combination of processes used by the teacher in delivering the curriculum. However, the taught curriculum actually requires the student to participate in these processes if the strategies and activities planned by the teacher are to lead to deep understanding. To encourage this partnership the teacher might enter into a learning contract with the student, adopting shared values in an environment where learning can take place. Fisher, Alder and Avasalu in their 1998 survey of Australian students found that the delivery of curriculum information in an interesting way and the ability to explain issues and answer questions in class rated very highly in students' evaluation of teaching qualities. If students have joined in a learning contract with their teacher, then their evaluations can give valuable feedback to the teacher about how students perceive the strategies and activities of the taught curriculum. Teachers must teach to the students' strengths while understanding and coping with their weaknesses. Zhonqui (2000) used the attributes of shared values and learning contracts in a study to examine why students enjoy some teachers while they dislike others. These links suggest that the alignment of curriculum outcomes and teaching practices are very important factors in the design and development of curriculum (Biggs 1996).

c. The learned curriculum

A vital part of the curriculum is the learned curriculum (ASCD 2005; Porter 2004), as students are actively encouraged to define a role for themselves, leading to a move away from curriculum that is tightly contained within rigid frames. Child (2004) discusses the important work of Hirst (1968) who stated that active ingredients in achieving the objectives of learned curriculum were the *unintended* curriculum processes (cited in Child, p 418). These are all the extra things in the learned curriculum that teachers can do to make a difference and encourage an environment where students can enjoy seeking wisdom. Brennan (2002) explored the role of learned curriculum arguing that perhaps less is more and questioned how we define standards or specific criteria, stating that the challenge is to make a difference with curriculum, embedding into it knowledge production and sharing it in action as something worthwhile in its own right. This is similar to the ideas expressed by Schon (1987) who spoke of teaching artistry and reflection-in-action as a way of understanding how students learn. Other well known educationalists such as Bloom (1956) set out a hierarchy of objectives and emphasised the process or steps by which students proceed with their learning. Gagné (1985) puts forward the view that the learned curriculum is predicated around task analysis. This provides an alternative approach to the objective-based curriculum and is situated in the learned curriculum. Students who take charge of their own learning, who engage with their teachers in working through ideas and problems and improvising as they learn (Reid 1997), will leave the teacher free to act as a coach or mentor.

d. The assessed curriculum

The aim of the assessed curriculum is to hold the students accountable for their learning while providing support that will help them succeed. Assessment provides evidence that standards are reached and it also helps raise awareness of vital concepts and issues. Achievement is connected with self-determination and motivation (Ryan and Deci 2000) and Child (2004) describes this element as the product-based curriculum.

Here, the end product of education is first clearly defined and cast as objectives to be attained. The teacher then works back from these objectives to decide on content and methods that would achieve the objectives. ... The evaluation consists entirely of testing to see if the student has reached the objectives.
(p 421)

The descriptions of the phenomena from the TAFE transcripts set out in Chapter Four imply that the dominant curriculum orientation in that institution is an assessed curriculum. A warning is sounded by McAllister (1999) on competency-based assessments as she

believes that a checklist of skills approach fails to appreciate 'such attributes as knowledge, problem solving ability and positive affective attributes' (p 47). The assessed curriculum is an attempt by teachers to measure how deeply the students have understood the specific or intended curriculum (Porter 2004). However, too much assessment appears to discourage learning (Laurillard 1984) and while assessment is instrumental in developing effective learning the research suggests that it should be aligned to the learning outcomes set in the specific or intended curriculum (Shreeve, Baldwin and Farraday 2003; Biggs 2003). It seems that there has to be a variety of assessment approaches to ensure that students are motivated, challenged to explore concepts and encouraged to build their technical skills.

Cleary and Skaines (2005) stated:

Recent research has highlighted student engagement, active involvement, commitment and a sense of belonging as the most critical factors in student learning and personal development. Engagement within the classroom becomes a vehicle for stimulating involvement in out-of-class experiences that benefits the development of graduate attributes and learning outcomes. (p 50)

Altman (1989) and Dixon (1991) believe the curriculum is a binding document for assessment, evaluation and grading. While that may be the case, it does seem important that curriculum design is not just assessment related, but rather focused on pedagogy that encourages the translation of information into deep understanding and lasting knowledge (Biggs 2003). This would satisfy the transformation process that Dall'Alba (2005) believes is imperative.

Concern was expressed in the research by Entwistle and Entwistle (1997) about levels of understanding experienced by university students they interviewed. They attempted to untangle the experiences of learning and found there was a significant difference between the students' definitions of understanding and those levels achieved in the examinations at the end of the course. These researchers found that the curriculum assessments forced students to focus on examinations to the detriment of higher order understanding that comes from reflection and wide reading. They also put forward the proposition that building into curricula innovative ways for assessment and steering students towards mastery of the extended abstract so 'they know how well they understand' (p 40) is the challenge of all curriculum developers.

Using technology to aid the design of innovative assessments can improve both curriculum quality and the whole quality of the program. 'A high-quality university education is not mainly focused on the quality of the educational process in and by itself. It requires an explicit framework that links all the requisite stages in the system' (Chua 2004). Technology can also help in the setting and editing of exams. If students come

across ambiguous questions it is difficult for them to align their thought patterns and changed conceptions to answer the question adequately. Researchers have examined commonalities in student approaches to exam questions, (Read, George, Masters and King 2004) searching for evidence of any misconceptions. Such techniques help align both formative and summative assessments to the learning outcomes thus enhancing quality of student learning.

Both Biggs (1996) and Ramsden (1992) reinforce the proposition that it is essential for the objectives set out in the curriculum to have a level of importance attached to each, so assessments can be constructed effectively. This is supported by Nulty, Vegh and Young (2002) who place the use of assessment as a central force in helping to guide the learner towards the goals set by the educator. Students can then be assessed in ways that encourage quality feedback and provide the motivation for them to seek further information for those levels of objectives that require more research for deeper understanding. The assessment tasks that emanate from the learning material form the basis of how the learning will take place and they require a framework that takes the student on a journey where concepts can be changed and developed towards more extended abstract thinking (Biggs and Collis 1982).

Summary

Table 2 is a summary of these curriculum elements as seen through the lens of a number of different researchers.

The specific criteria are the content-based material intended by the developers to ensure that processes are pedagogically sound and that the curriculum communicates the intent of the subject to the students. It is also the important area where objectives are set out so evaluation can provide feedback to the teacher on the depth of understanding attained by students. The taught curriculum can be thought of as the enacted curriculum where the specific content processes are followed and threshold concepts skilfully covered. This part of the curriculum can also be thought of as the informal learning contract where teachers and students enter into shared responsibility for the learning process. Students of that delivery do this through student-centred delivery and an evaluation.

Table 2 Summary of the curriculum elements

Cirriculum element	Issues	Authors
a. Specific criteria curriculum	Intended curriculum	Porter (2005)
	Content-based curriculum	Child (2004)
	Pedagogy	Hopkins (2003)
	Communication tool	Birdsall (1989) Altman and Cashin (1992) Johnson (1995) Wankat (2002)
	Objectives	Merriman (1995)
b. Taught curriculum	Enacted	Porter (2005)
	Process-based	Child (2004)
	Threshold concepts	Meyer and Land (2005) Davies and Brant (2006)
	Informal learning contract	Brodeur (1986) Lowther, Stark and Martens (1989)
	Delivery	Fisher, Alder and Avasalu (1998)
	Evaluation of delivery	Zhonqui (2000)
c. Learned curriculum	Actively engaged	Porter (2005) Child (2004)
	Unintended curriculum	Hirst (1968)
	Role of the learned curriculum	Brennan (2002)
	Reflection in action	Schon (1987)
	Task analysis	Gagné (1985)
	Teacher as mentor and coach	Reid (1997)
d. Assessed curriculum	Assessment to evaluate objectives	Porter (2004) Child (2004) Biggs (2003) Ramsden (2003)
	Competency assessment	McAllister (1999)
	Too much assessment	Laurillard (1984)
	Aligned to specific intent	Shreeve, Baldwin and Farraday (2003) Biggs (2003)
	Binding document for assessment	Altman (1989) Dixon (1991)
	Differences in students' definitions of their understanding and exam results	Entwistle and Entwistle (1997)
	Using technology to help design questions	Read, George, Masters and King (2004)
	Motivating, stimulating, engaging	Cleary and Skaines (2005)
	Assessing objectives	Biggs (1996) Ramsden (1992)

The learned curriculum is where students are actively engaged in the learning process. This incorporates the unintended curriculum strategies as well as reflection, task analysis and the teacher acting as a coach or mentor. The assessed curriculum evaluates whether the students have achieved their objectives. It is aligned to the specific content and helps identify differences in students' perceptions of various criteria. Technology can play a role here is helping both setting and marking of assessments. However, it is important that there is not too much assessment and that the focus is not transferred from deep understanding of concepts to simply gaining maximum marks at all costs. The assessed curriculum, while it is a binding document for evaluation, should encourage or motivate students desire to learn and competently tackle real world application of theory.

The breadth and depth of curriculum content

The Boyer Commission Report (1998) found that far too many curricula for first year units were so full of content that the coverage was very shallow. This proposition is supported by Biggs (2003) and Gardner (1993a) who both state that the trade-off is always between breadth and depth with perhaps the teaching helping to improve or extend the deeper learning. Carter (2002) said that 'curriculum is like a cemetery; we keep putting things in but never take anything out' (p 4). Munro (2003) puts forward the argument that curriculum will be judged by what it teaches, how it teaches and what it is. The Australian Universities Quality Forum provides a platform each year to examine quality and Cleary and Skaines (2005) have supported the findings of the Boyer Commission and put forward the following observation:

Research in the 1990s (Astin, 1993; Pascarella & Terenzini, 1991) has conclusively shown that the most important factor in student learning and personal development at university is student engagement, the active involvement, commitment and sense of belonging that dictates the time and effort students devote to educationally purposeful activities. Tinto (1998) has also highlighted the importance of student engagement for persistence and retention, particularly in first year. (p 51)

Curriculum that is linked with knowledge can foster a pedagogy that encourages emotive motivation in students (Laurillard 1979; Elton 1988; Ryan and Deci 2000) and the building of long-term memory icons. 'Students should have opportunities to reflect and report on how they are experiencing ... research-informed and research-based curriculum' (Jenkins 2000, p 345). However, most of this research is situated in the higher education context and there may be differences between university curriculum and that generated for use in the vocational sector.

University curriculum versus TAFE curriculum

The design and development of various curricula has to take into account the entire major aims and objectives of the whole program of study. The curriculum emphasises various dimensions to learning: the direct substantive knowledge that a student will receive in a discipline or area, the ways of learning and knowing how to express and use this knowledge and the thematic connections of knowledge across disciplines (Gardner 2006). Orrell (2004) argues that curriculum at university might need to be work-ready.

The increasing cost of gaining a higher education has reinforced the importance of developing students' 'graduate employability'. Internationally, higher education is called to account for success in the employment of its graduates (Eraut 1993). These changing demands have created an expectation that the sector will respond in innovative ways to meet both the learning needs and the career goals of all its students (p 76).

At university the teaching, learning and assessing curriculum is generated by the lecturer and perhaps still further developed in the classroom. Most university units have to first pass through a curriculum committee of the university and are supported by a two-page unit outline. The lecturer then develops these outlines into a series of lectures and assessments for that subject. This process is similar to the ideas expressed by Patrick (1998) who studied the object of learning in the context of senior years at high school. To a large extent the university lecturer has the same control over content but the university student is able to select, to a certain degree, their preferred learning pathway of subjects, over and above the stipulated core units. In her research carried out on the teachers' understanding of their discipline in the context of teaching and in relation to how students understand the material being taught, Patrick stated: 'Teachers are positioned as cultural agents, making curriculum – not merely interpreting and more or less effectively putting into practice a curriculum that had been fixed outside the classroom' (p 282).

Teachers who see strengths in students teach positively and as cultural agents they can identify their students' strengths by watching and learning how the classroom culture evolves. Using these techniques teachers can unmask what is sometimes hidden by prescriptive approaches to curriculum and assessment. Patrick believes that the curriculum is much more than an exercise in translation and this is supportive of Dall'Alba's (2005) view that transformation is vital to positive learning outcomes. University curriculum has an extended process, going into the classroom with the teacher. It is then researched in that context, and assists in formulating and reconstituting the knowledge gained by the student.

The findings of the Boyer Commission (1998) were that the first year of university study tended to be the least satisfactory one, in relation to content, pedagogy and curriculum. While the report did not address curricula change, it did comment on how the subject matter is presented and how intellectual growth is stimulated. The report stated that university curriculum needs to be designed to entice students to inquire, to seek, to challenge, to inspire and to enjoy their first experiences of this higher education learning as they begin their journey towards becoming articulate and well educated graduates. These affective dimensions of curriculum may seem a little at odds with the previous descriptions, however, researchers such as Laurillard (1979), Elton (1988) and Reid and Petocz (2003) have put forward the argument that students often expect their teachers to motivate them and provide the enthusiasm for their studies. This very phenomenon of motivating and learning emerged as a significant issue in this study and is addressed in Chapter Four.

As well as the propositions made by Chua (2004) that university curriculum requires an explicit framework; other recent research suggests a move away from traditional university curriculum should be made. It is argued by Boud (2003) that the term *curriculum* is not widely used by universities. Boud believes that the term *course development* provides a much stronger emphasis for the content of the curriculum and all the various aspects that create the educational environment. He presents the case for creating work as the curriculum:

[T]here needs to be a focus on an educational approach to the curriculum, not a narrow operational competency-based approach suitable for pre-defined learning outcomes. Competency-based frameworks that delineate the universe of outcomes – such as those used in vocational education and training derived from industry-based occupational standards – are unlikely to be appropriate except for relatively low-level work-based programmes. (p 46)

Boud is clearly making a distinction between university and vocational curriculum. This leads us to examine the curriculum in the context of the Vocational Education and Training (VET) system. Here the teacher is an interpreter and facilitator in the learning process, supporting the proposition made by Patrick (1998) that teachers are cultural agents. These teachers are given much more than a two-page unit outline of their subject. They have to follow a more specific document. VET curriculum is prescriptive and imposed, fixed outside the classroom and this is the significant difference with university curriculum (Bowers and Reid 2005). The assessment is also different and is competency-based. Toohey (1999) suggests that the outcomes of a competency-structured curriculum help focus on performance of professional skills and transformation of established knowledge.

This idea encompasses the two characteristics espoused by Dall’Alba (2005); linking epistemology and ontology. Toohey states that the outcomes of the curriculum basically aim to:

- clarify the educational purpose and help in the design and all other aspects of the program. In a constructively aligned course, learning outcomes provide a guide to appropriate learning and assessment activities.
- express educational purpose to students, so that students know what the course offers them and what is expected of them. In other words, learning outcomes help students to focus on what is important in the course – research shows that students tend to learn what the outcomes point them towards.
- help the teacher to reconceptualise the educational purpose from the students' point of view – that is, in terms of what the student can be expected to be, know, or do as a result of completing your course.

The specific criteria of TAFE curriculum are set externally as articulated by Boud (2003), the learning outcomes precise, assessments often mandatory and content closely controlled. An interesting comment was made by Millmow (1997) referring to the differences between university and vocational teaching and learning, when he stated that ‘it is not necessarily a vocationally oriented course of study that bestows the student with a puzzle-solving bag of tricks’ (p 90). This comment was made in light of the perception in the community that TAFE curriculum uses a very *hands-on approach* to teaching and learning. Although there is some teacher input into the development of the relevant VET subjects, they nevertheless have clearly defined sets of learning outcomes that have been pre-ordained (by the Australian National Training Authority (ANTA) when it was in operation). The Industry Advisory Boards within ANTA had set the learning objectives for each unit in the program around which the curriculum document was developed. Competencies and skills that must be achieved in the vocational units in the program were dictated by these industry boards with the disciplinary expert or teacher attesting to the students’ abilities and skills for a particular task or tasks.

During the last century many interesting developments took place in curriculum design and implementation. One story that emerged is typical of the problems many countries have with differences between vocational-based and university-based curriculum. It is documented in the Encyclopaedia Britannica (education 2006).

In 1932 Bennington College for women, in Vermont, strode boldly toward progressive ends. Putting a high value on student freedom, self-expression, and

creative work, it staffed its faculty largely with successful artists, writers, musicians, and other creative persons, rather than Ph.D.'s. It also granted students a large say in making the rules under which they lived.

Such developments in America's higher learning incited gusty blasts from Robert M. Hutchins, president and then chancellor of the University of Chicago from 1929 to 1951. He recommended a mandatory study of grammar, rhetoric, logic, mathematics, and Aristotelian metaphysics. One consummation of the Hutchins prescription is the study of some 100 "great books," wherein reside the unalterable first principles that Hutchins insisted are the same for all men always and everywhere.

The vocationalism that Hutchins deplored was taken to task by several others, but with quite different results—notably by Harvard in its report on *General Education in a Free Society* (1945). Declaring against the high school's heavy vocational leaning, it urged the adoption of a general curriculum in English, science, mathematics, and social science. (p 204)

Here in Australia, ANTA (2003) stated that the workplace was becoming an increasingly important part of vocational education and training and students would gain valuable and lasting knowledge through collaboration with fellow workers and the networks they foster. Ashton and Sung (2001) support this view and stated that the opportunities for learning on the job were enhanced in many organisations where employees worked in teams, fostered networks and participated in shared projects. Many programs however, are aimed at the popularity market, with little thought about the indicative content of the value added in terms of critical and analytical skills that are needed to stand a student in good stead in the real world (Mangan 1998). Curriculum, in the context of decision-making in vocational education has been documented by Lovat and Smith (1995) and they state it:

... can best be conceived as decision-making action that integrates both intention and the manner in which the intention becomes operationalised into classroom reality. This reality, however, must be negotiated and modified because of a range of contextual circumstances. (p 23)

These authors maintain that the key questions that influence the curriculum developer is exactly what knowledge will be most valuable to the learners, how the assessment tasks should be structured, what sequence the topics should follow and what resources are appropriate for the subject.

The research highlights the significant areas of university curriculum; however, almost all the major contributions examined draw attention to differences between university and vocational curriculum by stating what university curriculum is not!

Who has input into curriculum?

In *The Art of Education* published in 1861, Herbert Spencer (Batho 2004) urged curriculum designers to limit the content so students could be led to investigate, explore and draw inferences from their own research. Nearly 150 years later we are still arguing over the content in curriculum and struggling with the depth versus the breadth. Spencer felt that students should be induced to discover as much as possible. His work influenced the educationalist Dewey, whose ideas after his death in 1952 had a considerable impact on curriculum development in the United Kingdom. Dewey was a great advocate of limited content in curriculum and of providing students with the tools that allowed them to master self-directed learning. Schon (1987) then continued with many of these same ideas and contributed much to the debate on curriculum in education throughout his life's work.

If curriculum is at the base of the whole educational system then one wonders if students should have a say in what they want to learn. Abelson (1996) put forward the argument that it might be wise to make more concessions to student preferences when designing curricula. Boud (2003), while advocating a greater involvement by students in their curriculum, suggests that difficulties arise when content is not structured and students sometimes feel 'that the props of learning have been removed' (p 49). A report on the Harvard College Curricular Review, Summary of Principal Recommendations, states: 'We aim to construct a curriculum that expands the choices open to our undergraduates as it prepares them to be independent, knowledgeable, and creative individuals' (p 2). In this report the committee suggests that faculty must take the responsibility for developing curriculum that defines what students need to know and how they may best learn. Harvard seems intent on maintaining what they believe is intellectual rigour by ensuring students do not dictate the material that is in their curriculum. They believe that students can choose the specific subjects that interest them over and above the core units in a program of study.

Students often query why they are learning a particular topic or set of topics. Jacobsen (2001) cites the revolt in France's teaching universities in 2000 when some 800 university economics students, aided and encouraged by 150 professors, demanded reform and put their signatures to a petition proposing that the curriculum incorporate a plurality of approaches adapted to the complexity of the object studied. The argument was that mathematics taught at university, had become an end in itself and failed to display even a nodding acquaintance with reality. Some other mathematics professors began a fierce counter attack stating that the students' revolt was an irrational opposition to statistical techniques. Investigating this further, Smith (2002) reports on the Moyal Medal award

received in 2002 by Professor McIntosh of the Australian National University, partly for his contribution to solving the Kato square root problem in pure mathematics. The research carried out in the wavelet theory has had far reaching consequences that McIntosh admits as a student of mathematics, he could never possibly have imagined. So perhaps students do not always know what it is they should be learning and may at times feel that certain topics seem irrelevant when indeed they are of unimaginable importance.

The University of Minnesota in their nursing department state that their instructors provide opportunities for student input to shape the course as appropriate (e.g. initiate dialogue, provide feedback via formative evaluation, determine discussion topics, input in shaping assignments). It may well be that in vocational-based curriculum there is more opportunity to involve students in its development. A visit to the Website of the Society of Teachers of Family Medicine (STFM 2006) explains how their project on curriculum development has progressed:

Throughout the entire contract process, continuous feedback and commentary were solicited from various stakeholder groups through more than 40 peer-reviewed presentations/exhibits at national and regional meetings of the AAMC and family medicine, internal medicine, and paediatrics organizations, as well as eight meetings of the Advisory Committee. A designated evaluation expert and team of external consultants with curricular expertise conducted a final evaluation of the project process. (para 6)

The development of curriculum in all fields of education, whether vocational or higher education, needs careful planning and Gray and Radloff (2005) have clearly stated that ‘in many cases, the state of academic development work at the start of the 21st Century remains loosely understood and organised among practitioners and stakeholders’ (p 62).

Quality assurance

All stakeholders in an educational institution will want to be reasonably assured that their curriculum is of high quality and the management of all the related systems is sound. Dator (2004) in his opening address at the Australian Universities Quality Forum stated:

What is deemed poor quality at one place and time might be impossibly high quality at another. Quality has the characteristic that Marshall McLuhan alleged was a saying of the Balinese: “We have no art. We do everything as well as we can” (McLuhan, 1967). Quality is thus a very relative thing, changing according to who “we” are, what “everything” actually is, and what technologies and techniques are available for us to do it at all, and hence to do it as well as we can.

Similarly with education—or rather, with learning, since I would rather focus on how and what people learn which, is a much broader topic than is formal education and the professional teacher. People learn constantly. They are only

consciously taught (educated) by teachers (educators) some tiny fraction of the time. (p 1)

Underpinning the programs in all universities and tertiary colleges is some system by which the educators manage and control their educational systems. These can be referred to as *course management systems* (Stanford University 2006) and range from the design and development of the curriculum to the management of all teaching, learning and related educational resources, whether on-line or in hard copy. In 2003 Stanford University announced the open source release of its course management system *CourseWork*. Since that release, Stanford University has joined forces with three other institutions, the University of Michigan, Indiana University and Massachusetts Institute of Technology, to develop a new Collaboration and Learning Environment (Stanford 2006). Institutions that want to set about streamlining the processes that form their course management system will need to develop an overview of the whole raft of programs they offer from which the standard documents can be linked to the specific program objectives. Curriculum design and development is at the base of the course management system. Boyle and Lee (2002) advocate 'that it is important for academic units (of any size) to ground their approaches to quality assurance in a set of agreed principles and values, linked to the overall quality assurance purpose and spirit they have established' (p 8). It has been the case that some higher education departments, facing pressure to meet market expectations, have altered curriculum from a rigorous theoretical framework to specified applications (Millmow 1997) simply to chase student numbers in response to prevailing economic choices.

Quality has always been uppermost in people's minds when examining curriculum and the sentiments expressed in this passage from the history of American education (education 2006) are repeated in many countries today:

The college curriculum, like that of the high school, was altered in response to vocal demands made by groups and had expanded in areas representing realities of contemporary social life. Internal reviews, undergraduate curriculum reforms, and the high standards set by some universities demonstrated to some observers that quality education was being maintained in the university. Other critics, however, felt that grade inflation, the multiplication of graduate programs, and increasing economic strains had led to a decline in quality. Financial problems and conservative reactions to the more extreme reforms led some universities to place a strong emphasis on management. (p 205)

Course management systems, if well designed and implemented, will enhance collaborative and reflective practices (Schon 1983) in all the areas of teaching and learning. If a search is made on the Internet for course management systems (CMS) it

immediately brings up many sites offering the reader the benefits of various on-line programs. These may be very useful but it is the real tangible core framework established by the institution that really sets the foundations for the programs it delivers, whether on-line or face-to-face. Macintyre (2004) in his keynote address to the AUQA forum in 2004 stated that:

Quality assurance is an aspect of the mass system of higher education, a device for improving the efficiency and effectiveness of large, complex institutions that are vital to the nation's needs and in which government, business, professional associations and hundreds of thousands of domestic and international students have a keen interest. The Australian university a hundred years ago catered to a tiny segment of the population. It offered a liberal education to a fortunate few gave a foothold for research in some limited fields, trained members of the learned professions and cultivated a special status. To impose the language and expectations of quality assurance on the beleaguered civic universities of late colonial Australia is to misunderstand their nature and purpose. (p 21)

It is the aim of most educational systems to encourage students to foster deeper analytical thinking and critical appraisal techniques (Bloom 1956). Ideas that are researched and progressed into a study of the key issues in organisational policies and procedures within global educational institutions will aid the educational outcomes for students. Teachers react in various ways to a formal course management system and the structure must be balanced without smothering initiative and creativity in curriculum pedagogy. To achieve this, it appears that the system requires a framework that takes the student from 'developmental competence' to expertise involving extended abstract thinking, in a similar way to the 'SOLO Taxonomy' model put forward by Biggs and Collis (1982). It is however, nationally required that these systems, policies and procedures are constantly monitored and evaluated for quality (AUQA 2004).

To be a creditable part of the tertiary education sector many issues need to be addressed, including standards, curriculum, graduate attributes and the teaching/research nexus, all of which make managing courses so vitally important to partnerships with providers nationally and internationally. Trofino (1993) has carried out research on transformational leadership styles that can add significant quality to course management systems in nursing education. Goodman, Sproull and Fenner (1990) in their study of management systems, suggest that technology plays a vital role in sustainable management of education. In the management of hospital educational systems, Milan and Munt (1992) place their emphasis on the integration of all aspects of teaching and learning in the course management system. Jenkins (2000) states that ensuring there is a link between teaching and research is just one way quality in course management systems can be maintained.

Zubrick, Reid and Rossiter (2001) in their work with the Department of Training and Youth Affairs, stress the importance of an institution's mission statement, values and goals as a way of strengthening the nexus between research and teaching and ultimately the whole system of managing courses. Beaty and Cousin (2002) put forward the argument that research strategies are related to curriculum quality. They believe that teaching enhances research skills and also communication with students, ultimately adding to the quality of the programs offered.

Program managers learn lessons from audits, from other educational institutions, accrediting agencies and also from both AUQA auditors and the Australian Quality Training Framework (AQTF) that governs vocational education. This information assists educationalists in developing strategies that combine vision with pragmatism, and help in designing curricula and assessments within a quality framework. If this can be done it may lead to an institutional atmosphere that captures an innovative and holistic vision of education, adding significantly to the learning objectives of each unit in the program. The AUQA auditors, in the course of undertaking academic audits at universities, acquire knowledge of a range of good practices that are transferable throughout the sector. One of AUQA's purposes is to help with quality improvement of the sector as a whole. To this end they publish many resources that help course managers, curriculum developers and teachers. Similarly, the AQTF that is a part of the federal government's Department of Education, Science and Training, provides the basis for Australia's nationally consistent, high quality vocational education and training system. Many helpful resources are made available to vocational program designers and developers. All registered training organisations in all states in Australia are required to adhere to the AQTF standards.

Many of the vocationally based curricula require some work components. Whether these practicums are clinical placements, engineering jobs mid-stream, teaching assignments or any other industry training components, evaluative techniques assist in ensuring that quality benchmarks are maintained. Details of the processes of audit such as program self-evaluation, carefully documented quality action plans and professional development for faculty (Bowers and Reid 2005) are all part of program management that helps support a qualitative environment. The course management system highlights the need to have scholarly activity that is mixed with proficiency and training. Jenkins (2000) stated: 'The key to where we should stand and deliver is in how we design and deliver courses, how we manage student expectations and how we conceive of teaching and research' (p 344).

Technology can assist in maintaining sound quality systems for all courses and programs. Modern databases can be developed that allow control over documents to be preserved by program managers but at the same time encouraging maximum teacher input. An electronic database can reduce the effect of duplication by ensuring that more long-term segments of documents such as the unit outlines available to the general public are current and accurately maintained by the program manager. Madson, Melchert and Whipp (2004) examined the redesigned teacher training program at their university to try to find out what impact increased computer technology had on the students' learning. These researchers developed a syllabus analysis instrument to identify the computing skills these students exhibited, and indeed are meant to display, during the completion of course assignments. They wanted to measure the extent of the changes to the learning process. The conclusions that these authors drew focused on the increasing accountability in the delivery of higher education and the fact that there is a lot more to evaluating education than just evaluating curriculum.

Teaching curriculum or unit schemes of work that are the documents given to students can list the key areas such as the aims, learning outcomes and assessment strategies directly from the database. This prevents overall program objectives from being misaligned and ensures reasonable assurance is maintained over these documents in line with the requirements of AUQA. The scheme of work (Bowers 2002), generally considered a learning contract (Brodeur 1986, and Lowther, Stark and Martens 1989), clearly stipulates the assessment, evaluation and grading. These detailed schemes inform the student of how the teacher proposes to work through the teaching curriculum. They contain all the information that the students need to know regarding topics, rationale and marking criteria for assessments, extra current reading lists and assessment types, deadlines and general information. They can be used as the learning contract to encourage the student to actively take part in the learning process. Teachers can have editing access to the topics, assessment tasks, instructions, assessment criteria and assessment objectives of their unit documents. Current reading lists can be developed for the period of the course and post-audit reflections on the delivery of lessons can be documented by the teachers, helping to plan their future procedures. Technology will advance our understanding of the world and our competency in it (Piaget 1972, cited in Child 2004).

Concluding comments

Curriculum can be designed to facilitate an environment where students discover the power of their own minds to work. The curriculum is part of the presage and process that encompasses all the items that make up the context into which students will enter for their situated learning. Some researchers feel that the first year curriculum is vital in fostering student engagement and the literature points to university curriculum being very much more flexible than VET curriculum. University lecturers can develop the content in the classroom, and determine the way it is delivered and assessed. This would appear to give university lecturers much greater freedom over what they teach. However, many institutions, Harvard among them, like to keep tight control on what and when students will learn. Others institutions such as those in the health sciences area seem more inclined to take input from a very much wider group of stakeholders. Designers are still struggling with the content of curriculum, trying to determine what to put in and what to take out!

The research is heavily weighted in favour of higher education and examination of vocational curriculum appears to be somewhat neglected. From my own knowledge and years of experience in TAFE teaching I can attest to the TAFE curriculum being generally very detailed with topics clearly stipulated that must be covered. It is prescriptive curriculum and often the assessments are mandated. The learning outcomes are structured and developed by industry advisory bodies with no input per se, from academics. The total document is formed outside the classroom with the weekly schedule already set for the lecturer to follow. One might expect that this type of curriculum would restrict the freedom of teachers. This formed the basis of one of the questions that was put to the TAFE teachers: Do you feel you have freedom and control over what you teach? The responses from the teachers are discussed in Chapter Six.

While it is desirable that all stakeholders are involved in the formation of curriculum, it is nevertheless a very specialised area of education as shown in Table 2 that documents the specific areas of curriculum content covered by researchers. It also provides an overview of all the specific elements that make up the whole curriculum. Institutional policies and procedures ensure that the requirements of educational audits are met and good strategies for curriculum development and the whole course management system encourage deeper understanding that leads to quality student outcomes. However, it appears important that curricula retain links with the real world while at the same time retaining flexibility that allows ideas to be expanded and explored in a scholarly way. The design and development of vocational curriculum could be enhanced with the consultation

of both academic and industry experts as it is a vital aspect of the presage; that range of procedures and plans that form the context into which the students situate their learning.

The literature seems divided on whether or not university curriculum should be work-ready. Some strong arguments are presented in favour of higher education curriculum that is aimed at professional readiness. Those in favour focus on the professional entity and others refer to it as vocationalism. This counter argument is that this type of curriculum should properly be reserved for TAFE curriculum. This view clearly stated that there was a real divide between higher and vocational education. Other research is suggesting that first year curriculum is vital to establish an environment wherein students feel engaged and that curriculum may be a learning contract and/or the driver of assessment and evaluation. As such, the assessment acts as a driving force in capturing the objectives of the educator. These sentiments may apply to all tertiary curricula.

There is a noticeable gap in the literature on research into the design and development of vocational curriculum. This current study is searching for answers to the question: Who designs and develops TAFE curriculum and how do students approach their learning of it? To enhance this understanding one might also examine the literature on teaching and learning as a backdrop for describing the approaches adopted by the TAFE teachers in enacting this curriculum. The next section provides an insight into the teaching and learning literature.

2.2 Teaching and learning

Every man who rises above the common level has received two educations: the first from his teachers; the second, more personal and important, from himself. (Edward Gibbon, 1734-94: Memoirs.)

To determine how teachers and students understand curriculum it is important to search for aspects to assist teachers to unlock the mysteries of how students learn or what prevents them from doing so. This complex relationship has been the focus of increasing research over many years in an attempt to identify key issues that promote or inhibit deep learning and the impact on the delivery of material by teachers in the classroom. With this intangible service the consumer is required to participate in both its creation and its consumption and the issue of how this can be made more meaningful is a compelling and interesting one. The learners are guided towards their goals, and good pedagogy assists them to take control of their own learning strategies. How deep this learning goes will depend to a large degree on the learning situation of an individual (Prosser and Trigwell 1999) and the way both teachers and students understand their own learning patterns of experiencing or perceiving concepts.

Pedagogical literature focusing on learning in tertiary contexts in the last part of the twentieth century has documented several approaches to teaching and learning. Both teaching and learning practices are affected by many things, two characteristics being behaviour and language that are the innate programs or filter that are used unconsciously to decide what to listen to and what to ignore (James and Woodsmall 1988). These are some of the ‘basic building blocks that make up our personality’ (p 92) and play a vital part in the teaching and learning context. Indeed, the behavioural and cognitive studies added much to the early modern educational literature and studies such as these have built on the work of noted educationalists in past eras from Confucius to Dewey (Palmer 2004), leading to a variety of writings upon which researchers can draw rich material.

A glimpse of the literature on teaching and learning in higher and vocational education

The teaching and learning literature shows that many educators struggle with student learning differences and this classic quote from the research by Runesson and Marton (2002) is typical of the intricacies involved in finding out how students learn:

It is in no way self-evident what it takes ‘to focus on the enacted object of learning’... there are always an infinite number of ways of describing anything... we have to describe the object of learning in a way which is relevant for accounting for differences in pupil achievement... the teacher has something in mind, something she desires that the pupil will learn. This is the intended object of learning... Our intention

is to capture what the students can possibly learn from the point of view of the intended object of learning. (pps 19-20)

The learning situation or context within which this investigation has taken place uses the 3P model of presage, process and product first put forward by Biggs (1993, cited in Biggs 2003) and the subsequent variations to that model that were demonstrated by Prosser, Trigwell, Hazel and Gallagher (1994). Kember (1997) also set the scene with the findings of studies exploring what university academics think about teaching and he constructed a conceptual continuum, which he labelled teacher-centred versus student-centred. The teacher-centred side of the continuum conceptualises teachers as actively selecting and directly delivering course content to their passive students. This is similar to claims by Marton and Trigwell (2000) who refer to: ‘the paradox of the Chinese learner’ exemplifying this divide (p 2). Kember then proposed that the opposite end of the continuum is the student-centred pole, where students are actively engaged in their discovery of course content and construction of knowledge. This is also where teachers act as facilitators or change agents. Then in the middle of these two extremes is the concept that ‘teaching’ can take on either of the two extremes. For example, the teacher acts as both presenter and tutor and the student assumes an active role in the educational experience.

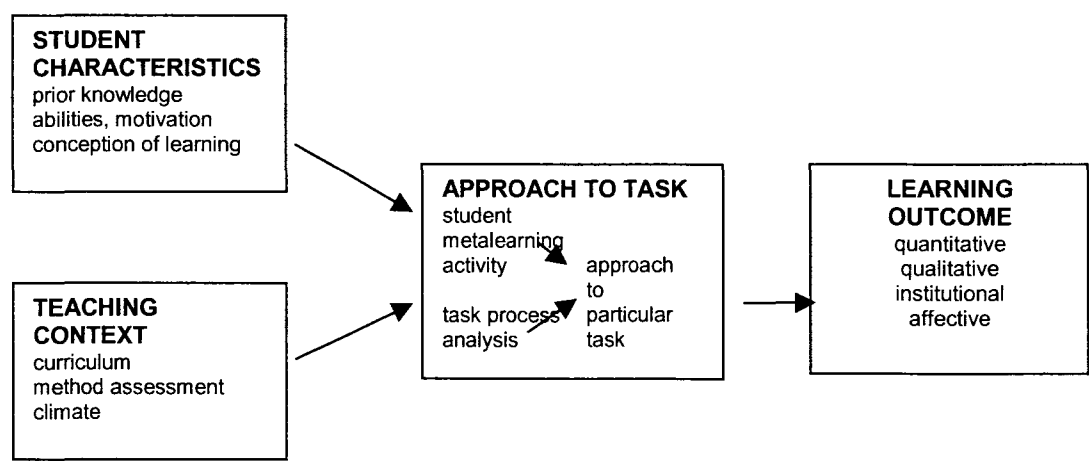


Figure 1 The 3P model showing the general flow of effects (Adapted from Biggs 2003, p 19)

Within this framework is the 3P model’s general flow of effects as it might apply to vocational education in Australia, Great Britain or the EU. Figure 1 shows the direction of learning; presage, process and product. Biggs also postulates that while the main direction for learning is indicated travelling towards the product, many other minor interactions take place in the whole system of teaching and learning,

The main body of literature on teaching and learning that is addressed in this research is centred on the 3P model and in particular on the constitutionalist or relationalist perspective. The 3P model was first outlined by Duncan and Biddle in 1974 and redeveloped by Biggs in 1993. From there Prosser and Trigwell (1999) further researched this theory adding significantly to the substantive literature on teaching and learning. These various theories can most simply be described as cognitivist, individual constructivist, social constructivist and relationalist or constitutionalist (Prosser and Trigwell 1999, p 13). These models offer us an opportunity to try and make sense of the educational world we are in. Each is briefly explained under the following sub-headings.

a. Cognitivist

The cognitivist school of thought has evolved from the premise that the data comes to the student from outside using a chain process. This model went further than the behaviouralist view and tried to look inside the head of the learner. Students input the information, pass this through into the processing stage and then use underlying cognitive skills to sift and store the relevant knowledge. Then the output is generated by the student from this store of data they have retained. With this view the belief is that the various parts of the model are independent because if the students are to learn then the information must be processed correctly. This cognitive view puts forward the proposition that training of cognitive skills will increase the learning capacity (Gardner 1987; Huit 2006). The research by Bloom (1956) and some of his colleagues was also situated in this cognitive domain. There is also the complication identified later by Gardner (1993a) that teachers must plan for a range of intelligences among their students. Gardner's view was supported by Kornhaber (2001) who stated that this type of teaching involves educators and designers of curriculum opting 'for depth over breadth' (p 276) a discussion documented earlier in this chapter.

b. Individual constructivist

The individual constructivist perspective of teaching and learning puts forward the view that the student takes information into a continuously interacting system. The constructivists claim that there are three independent parts of the 3P model: presage, process and product, and these will keep responding to various stimuli while knowledge is constructed for the learner from constant interactions. It is generally, however, thought of as a one-way process and Biggs (2003) is an advocate of this view of learning and teaching. His 3P model works on the principle of alignment, where each element of the teaching and learning environment must be aligned to achieve the optimum outcomes. Biggs draws on the work of Cohen (1987, cited in Biggs) whose research on the alignment

of objectives and assessment was referred to as ‘the magic bullet’ (p 27) because it seemed so effective in achieving the desired learning outcomes. The constructivist alignment theorists Steffe and Gale (1995) put forward eight principles of teaching that are not exclusively constructivist, but rather general values of teaching and learning to which most educationalists would aspire. These eight factors tend to be quite relevant in the context of vocational education and are as follows:

1. Learning should take place in real world environments.
2. Learning should involve social negotiation and mediation.
3. Curriculum content and skills should be made relevant to the learner.
4. Content and skills should be understood within the framework of the learner’s prior knowledge.
5. Students should be assessed formatively, serving to inform future learning experiences.
6. Students should be encouraged to become self-regulatory, self-mediated, and self-aware.
7. Teachers serve primarily as guides and facilitators of learning, not instructors.
8. Teachers should provide for and encourage multiple perspectives and representations of content.

The difference with this view by Steffe and Gale is that these principles must be aligned in a particular way for the deep learning to take place. In their research of pedagogy in vocational education Doolittle and Camp (1999) stated: ‘It may be that cognitive constructivism will be found to be a better solution than behaviourism to serve as the learning theory foundation for career and technical education curriculum and pedagogy’ (p 4).

c. Social constructivist

Social constructivism is based on specific assumptions about reality, knowledge, and learning. The social constructivist viewpoint was developed from the work of early researchers such as Vygotsky (1978) who argued that through language, learners will take in data and process that information from the prime perspective of the culture or the society in which they live and work. Students’ knowledge is then comprehended in that social cooperative perspective or context. Some of Vygotsky’s most interesting experiments were with the peasants of Russia, and what he termed the tools of intellectual adaptation. Their concepts were solely from the point of view of cooperative learning. Translating this into an educational perspective, the social constructivist believes that the students and the world are separate and that their learning takes place in the social context. Vygotsky proposed that there was a synergy between the real world concepts and scientific analysis. His work led to the conclusion that the whole learning process was from birth to death and that it was too intricate a process to try to define in stages.

There were other ideas that added to this social constructivist viewpoint, one developed by Jean Piaget (1896-1980) who contributed quite significant work on models of child development and cognitive learning. McMahon (1997) also believed that knowledge came directly from interactions between people and that these were closely related to national culture. Gredler (1997) and Prawat and Floden (1994) extended this proposition and stated that historical factors also worked with culture to form the understanding students gained. However, their beliefs were all centred on reality and socialising as a way of learning.

d. Relationalist or constitutionalist

The relationalist or constitutionalist view of teaching and learning derives its meaning from the belief that understanding comes from all the various ways that students relate to or integrate concepts and experiences in their learning environment. In the words of Bowden and Green (2005): 'The relationality between the categories is explored' (p5). This type of research is also described by Prosser and Trigwell (1999) who stated:

The individual and the world are not constituted independently of one another. Individuals and the world are related through the individuals' awareness of the world. The world is an experienced world. There is not an internal structure of the mind which is composed of, or can be modelled in term of, independently constituted parts. (p 13)

The context consists of all the resources, curriculum, tools and other teaching items to which students relate, and as soon as the student enters this context the learning situation is constituted. It is in this context that the object of student learning is gradually constituted, or absorbed, into the students' world of knowledge. Prosser and Trigwell describe their constitutionalist model of student learning as follows:

Each student will have a unique perception of his or her situation. Such a perception cannot be described 'objectively' – i.e. independently of the individual student and the context. ... From the constitutionalist perspective, we consider students' prior experiences, perceptions, approaches and outcomes to be simultaneously present in their awareness. (p 17)

This research project is mainly positioned within the framework of the relationalist view and since the 1970s this field of investigation has made available new and important knowledge on the nature of teaching and learning in higher education (Trigwell and Prosser 1996; Trigwell 1997; Reid 1997; Marton and Booth 1997 Bowden and Marton 1998; Trigwell, Prosser and Lyons 1999; Ramsden 2003; Reid and Petocz 2003). The result of all the relationalist studies has been to create a large impact on educational research into teaching and learning, not only in Australia but around the globe, led by

countries such as Sweden, Canada, United Kingdom and more recently China. However, as explained more fully in Chapter 3, there is a combination of research methodologies in this study. Three of the teaching and learning categories described above: cognitivist – represented by the autoethnography; constructivist – examining the commonalities through discourse analysis; and relationalist/constitutionalist – applying phenomenography that focuses on students’ experiences, perceptions, interactions and activities in their search for wisdom.

Learning from a relational perspective

The constitutionalist or relationalist premise in the approaches to teaching and learning is that students and the world are not separate but living and learning are in one sphere. Many relationships exist that encompass the learner and the world, a place where students are aware of, and experience, phenomena in a variety of ways.

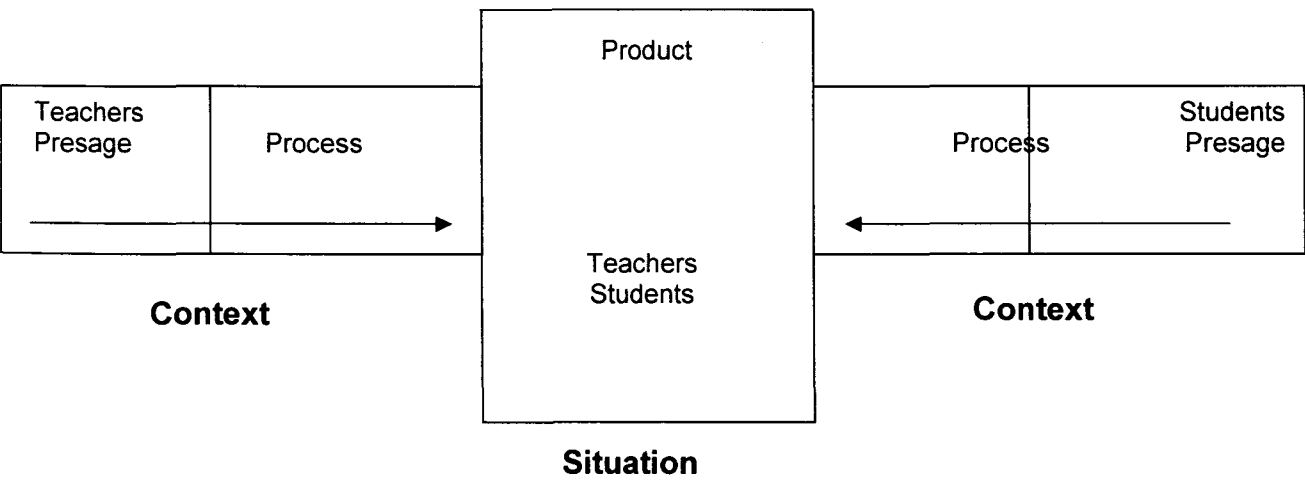


Figure 2 The connection between the 3P model and learning from a relational perspective

Students will still go through the system of presage, process and product but they will be influenced by prior learning experiences and their perceptions of the teaching/learning context as well as what is happening in the world around them (Trigwell, Hazel and Prosser 1996). Figure 2 represents the relationalist view of the 3P model, where the teachers’ context consists of the background, teaching activities, curriculum, etc. The students’ context contains all the learning activities, perceptions, prior learning experiences, etc. These all come together or are constituted in the product – the learning situation. Students will be aware of other concepts that may or may not be relevant to what they are learning and all these have an impact on the depth of their learning and the quality of the outcomes of that learning (Marton 1981, 1988, 1992; Bowden and Walsh 1994;

Prosser, Trigwell and Taylor 1994; Marton and Booth 1997; Säljö 1997; Reid 1997). It was Prosser and Trigwell (1999) that contended 'from this perspective, the presage-process-product model does not describe a chain of causal processes over time, but an analysis of individuals' awareness of the learning and teaching acts in which they are engaged' (p 14). The research has been quite vigorous across various disciplines and studies in mathematics, science, economics and information technology are adding to the wealth of knowledge upon which teachers in higher education can draw. However, very little research of this type is positioned in the vocational sector.

The relationalist view of learning is defined by Trigwell and Ashwin (2003) as the attempt by students to relate ideas together and in so doing, construct meaning that draws on their own experiences.

From this result, we concluded, that when seen from a relational student learning research perspective, it is conceptions that are evoked by the students' experience of their unique learning situation more than conceptions of learning per se, that are strongly related to students' approaches to learning, perceptions of their learning environment and learning outcome. This is because an evoked conception of learning is one that students adopt in response to their perceived learning context, and perceived learning contexts are closely related to learning approaches. The evoked conception may not be the same conception as expressed by students in interviews or inventories on their conceptions of learning. For example, if students perceive a situation requires it, a less sophisticated conception may be evoked. In this paper, we report on a large-scale study of the same phenomena, designed as a replication of the earlier study, but also to explore several new areas - relations between student self regulation and approach to learning, and the impact of the tutorial system and the collegial context on student learning. (p 1)

In their research Trigwell and Ashwin found that there may be ways to alter the students' perception of their learning environment while still maintaining the basic tenets of the 3P model (Biggs 1993, 1999, 2003).

Recent research has supported this relational framework in studies such as information technology (Cope 2006) and information literacy (Bruce 1997). Relational student learning is also dependent for its quality on the awareness of variation in learning. Phenomenographical research uses an analytical framework for a structure of awareness (Cope 2004) and this is considered a critical component of student learning (Martin 1994). Just what promotes or inhibits the depth of student understanding of concepts in the unit Internal Control Principles may become clearer as the perceptions and experiences of the students are analysed in this study. Bruce *et al.* (2004) posed important questions in their study that searched for the ways that students experience their learning of computer programming. These could be applied to any other discipline such as accounting, where

students must come to grips with the design and implementation of internal control principles in the accounting system. Bruce *et al.* were able to use the outcomes of their research to ask five questions. Generically they could be expressed as follows:

What are the critical ways we want students to experience learning?
What are the implications for students of experiencing learning?
How can curriculum support ways of going about learning?
How can we help students to move to more sophisticated ways of learning?
How can we further use the outcomes to further help our students? (p154)

The object of student learning in any lesson is the potential for them to grasp the key concepts framed by the teacher. It is through the discourse of the lesson that the object of learning is enacted and this becomes the lived object brought about through the students' depth of understanding of those concepts (Lo *et al.* 2004). Not only must the curriculum support this objective but the teacher must also help students construct more sophisticated ways of learning by understanding the critical perceptions that students have of learning to learn. Cherry (2005) suggests that 'professions are about the application of knowledge to a range of varying situations and problems, but the range of that variation is now susceptible to speed of change (and sometimes scale of complexity) that defies prediction' (309).

The body of relational student learning literature that now exists also supports the proposition that variation in student learning can be seen in both the outcome and the act of learning. Runesson (2006) explains that: 'experiencing variation in critical aspects is a necessary condition for learning. Variation theory is proposed to be a powerful means for describing and revealing conditions critical for learning in a pedagogical setting' (p405). Pang and Marton (2005) focused on classroom discourse and also on the teaching-research nexus. Their findings suggest that the theory of variation is valid. They also assert that teacher development focused on the variation in student learning is helpful in assisting a more student-centred approach to teaching. Variation in the way students learn is a recent addition to phenomenography and Marton and Trigwell (2000) suggest that variation is a key factor in all the learning systems and communities of practice.

Knowledge and competence are distributed across such systems; they are distributed over people, artefacts and various contextual resources. Learning takes place through changes in the system—how people do things together, how they handle their tools, how they more and more become parts of the particular context and how this particular context becomes more and more their own. (p 384)

It is claimed by Marton and Booth (1997) that students cannot discern an aspect of a phenomenon without experiencing variation in a qualitative dimension which corresponds to that aspect. Marton and Booth also focused on identifying the structural aspect of the

dimensions of the phenomenon. They believed that the way students structured their learning was a key factor in the retention of knowledge. However, every student related to these dimensions in a different way and structured their learning differently. The belief of Marton and Booth was centred on the notion that structure and meaning mutually contributed to each other in the act of experiencing the object of learning. Although many of the studies in variation have been situated in the context of higher education, enough is now known to hypothesise that this variation might also apply to vocational education. To extend this relational perspective further it is important to address the significant contribution to teaching and learning that has been made with the variations in approaches to learning. It was due to the extensive research into variation that ontological significance has been given to ways students experience their learning.

Variations in approaches to learning

The literature has come alive over the last two decades with many studies that have examined variation in the experiences of student learning (Säljö 1979; Marton 1981 and 1993; Marton and Booth 1997; Prosser and Trigwell 1999; Reid 1997; Runesson 1999a). The research has shown that students will experience phenomena in a variety of ways and these studies showed the qualitatively different ways that the group experienced the phenomenon. Säljö suggested that the world of ordinary knowledge was separate from academic knowledge and students had to construct or alter their concepts to fit the technical data. What these studies were searching for were answers to questions of what it means when people learn differently and why some are better at learning than others. The research is convincing in that it demonstrates that some of the aspects of these experiences are indelible while others are only transitory. As Marton and Booth (1997) state, the ‘similarly, qualitatively different ways of experiencing something can thus be described in terms of differences in the structure and organisation of awareness at a particular moment or moments’ (p 100). These researchers found that there were qualitative differences in the outcome of learning and these were closely linked to the variation in approaches to learning. Petocz and Reid (2002b) examined specific aspects of knowledge formation to discern differences in the way students learn.

Recognition and understanding of the diverse ways that students learn within any domain is an important step in setting up an effective environment for student learning. Rather than examining student assessment outcomes or classroom interactions, an alternative and more direct method of finding out the range of variation in a class is to actually ask students to tell you about their own learning. (p 2)

The varied experiences of learning and the formation of knowledge in a certain domain, either professional or disciplinary as Bowden and Marton (1998) suggest, show that learning should be something that is researched within that domain by people who fully understand all aspects of that area of study. They believe that variation is fundamental to the whole idea of teaching and learning and is also wound through our very being in our everyday lives.

Developing new ways of seeing (situations, phenomena) is, of course, not the only form of learning, but it is the most fundamental and neglected form of learning. The reason is that once we have developed certain ways of seeing, they become taken for granted: we believe that what we see is the world as it is, and not the world as it is seen by us. (p 278)

By carrying on this type of research these authors state that such enquiry will become ‘a lever for raising the quality of learning on the individual and collective level’ (p 18). This may increase the likelihood of curriculum placing a greater emphasis on ontology and thus helping students understand and transform the way they approach their object of learning (Dall’Alba 2005).

Lucas and Meyer (2005) have reported on the development of models of student learning that are sensitive to disciplinary response-contexts as well as gender, cultural, and other individual differences. They used ‘Reflections on Learning’ inventory and ‘Expectations of Learning Accounting’ inventory (p 178). These authors felt that it was difficult to get to know their students individually. They were interested to find out more about the dimensionality of variation within cohorts of students and were searching for variation in learning and trying to identify the impact that this variation might have upon their students’ learning. They used the term accumulative learning to represent surface learning and transformative learning to indicate deep learning. This is similar to the claim of Dall’Alba (2005) who contends that transformation leads to ontology. Lucas and Meyer identified variation within the subject discipline of accounting. They stated that linking a generic model of student reflective learning with the subject specific expectations of accounting was a powerful way of identifying those discipline-specific conceptions and motivations that may be related to accumulative or transformative learning processes. Their findings show that there are ‘variations in conception and approach to learning between students who specialise in accounting and those who do not, and between male and female accounting students’ (p 196). They also claim that the ‘linked inventory is effective in identifying *educationally and statistically significant variation* in a student cohort’ (p 178).

The literature documents many results of studies about these variations in the learning experiences of students, all of which has helped guide new studies that focus more on their particular sphere of influence. As Petocz and Reid (2002b) found:

One practical effect of this line of enquiry has been the discovery of the dichotomy between teacher focused, content orientations to learning – associated with a surface approach to learning – and student focused, learning orientations – associated with a deep approach to learning (p 2).

Åkerlind (2005a) examined variation and commonality in phenomenographic research methods and explained the role variation played in her methodology.

The point of selecting for as much demographic variation as possible is to increase the chances of there being as much variation in experience of the phenomena being investigated within the sample as possible. This is a standard goal of phenomenographic research, given that the aim of the research is to investigate *variation* in the meaning of a phenomenon. (p103)

Other research has also shown that there may be benefits from understanding and being aware of variation in student learning. Marton and Trigwell (2000) suggest that it is awareness of variation that enables students to learn tolerance – again a win for ontology.

When it comes to preparing students for an unknown future, the nature of variation is of decisive importance...If you want to contribute to enabling students to participate in the yet unknown learning communities of the future, you have to let them participate in the learning communities of today, which keep changing and which differ quite significantly from each other. (p 394)

Some variation factors by necessity will remain constant while others will differ, and Runesson (1999a) researched classroom discourse and its impact on the way students experienced their object of learning. The critical part of learning is the space or dimension of that variation where special learning takes place. What Runesson did find was that while teachers may have developed critical factors about the object of learning, it is what the student focuses on that is decisive in their learning. Students actually learn the ‘lived object of learning’ and they will focus on what they think is important. ‘Those aspects [of the object of learning] that are discerned represent different dimensions of variation’ (p 3). Black and Wiliam (1998) also claim that learning is driven through what teachers do in classrooms to facilitate student learning. It is because of this variation of the experience and the ability of the individual to discern different aspects of the experience (Gurwitsch 1964) that deeper learning can take place, and if teachers can fully understand these different patterns of learning, their delivery of content can be more powerful. Kember (2001) explored action learning in the context of educational technology and identified its impact on academic development. He studied a mixture of experienced and novice students in Hong Kong and found:

... that the attitudes to and ability to cope with study were influenced by a coherent set of beliefs about knowledge and the process of teaching and learning. This belief set was characterised in two broad orientations as didactic/reproductive or facilitative/ transformative. Novice students holding didactic/reproductive beliefs found it difficult to adjust to higher education if the teaching was not expository, as often happened with distance education tutorials. (p 255)

Reid (1997) has suggested that students tend to view effective teaching as a set of related activities, and they determine which of those activities suits their own learning style. Students may attach greater importance to a particular aspect of the teaching, believing it is totally effective for their learning. However, there is variation in the way students experience their learning and Reid identified that sophisticated students will see all teaching-related activities woven together into just one part of their whole learning experience.

From the relationalist or constitutionalist perspective students' prior learning experiences, their perceptions, approaches to their learning and the outcomes they produce are all bound up in the awareness they have of things that are happening around them. Many researchers have recognised the variations in learning experiences of students and this challenges teachers to adjust their delivery to cope with these variations and improve the deepening of student knowledge (Martin 1994; Marton and Booth 1997; Trigwell and Prosser 1999). Much of the research carried out by Reid (1995, 1997, 2000), Petocz and Reid (2001, 2002a, 2002b) and Reid and Petocz (2003) have focused on the variation in students' understanding of their learning and how this relates to their work as a professional. Reid (1997) found that there was a strong relationship between the students' understanding of their learning and their perception of work in that discipline. But do all students exhibit this strength of relationship and if not, why not? Interestingly enough Reid (2001) then subsequently found that if students could broaden their perceptions of work, this would lead to a positive correlation with their broadening approaches to learning. Kreber (2003) found that while teachers were quick to state *what* they wanted their students to learn, many of the participants in her study had not attempted to find out *how* their students learn.

While concentrating on the variations in student learning it may also be wise to be cognisant of the differences in teaching, and the orientation of teaching. According to Evans (2001) if teachers have only limited professional industry experience then they will generally prepare their students in an academic institutional environment that may not be related to real world experiences. Petocz and Reid (2004) concluded, teachers can do much

to assist deep learning by ‘providing a space where *students* can explore their own perception of professional work and the way in which other subjects can be appreciated’ (p 40) as threads that join their learning into an integrated meaningful discipline.

In assisting students to discern the variation in the ways they learn a teacher takes the role of the ‘master craftsman’ guiding their ‘apprentices’ towards mastery of the scholarly craft (Biggs 2003 p101). As the master of their art, teachers can use these qualitatively different ways of learning to enrich the students’ experiences (Trigwell 2000) and to encourage them to investigate and explore the conceptions of the object of their learning. Trigwell goes on to state that rather than simply providing *more* knowledge for students, these perspectives on the learning outcomes will intensify students’ knowledge making it more lasting and deeper.

Recent research reports commissioned by governments (Lugg and Saltmarsh 2003; Buchanan 2005; TAFE 2005) highlight the changing face of vocational education. Some researchers have identified a clear divide between vocational and general education in the community. In their research Lugg and Saltmarsh (2003) stated: ‘Tensions between vocational and general education are not only played out in the classroom. Divisions between VET supporters and non-supporters are evident at school, district and system levels despite the best efforts of policy makers and [some] educational leaders (p 6). TAFE NSW now offers over 1200 different courses ranging from distance learning to campus classroom learning and boasts of a wide variety of learning styles and flexible deliveries. Students are learning in a variety of ways, adding depth to their knowledge and, as Kirsner (2002) found, increasing the flexibility in their thinking, their emotional intelligence and their communication skills. An important question therefore is not academic versus vocational, but rather how people can be equipped with learning strategies – learning how to learn. These learning strategies should not rule out the benefits of experiential learning within companies. The Institute for Research into International Competitiveness (The IRIC 1999; 2000) states that informal and work-based learning may be just as valid a learning method, even though it does not necessarily lead to accredited training and qualifications. People are being encouraged to be lifelong learners, and to continually value their learning needs, choosing between the vast arrays of opportunities that are available (ANTA 2002).

Challenges in teaching and learning

'Education ... is a process for living and not a preparation for future living' (Plato 427-347 BC). This comment from so long ago focuses our attention towards the importance of an unconditional acceptance of students for what they are, not for what they do (Kohn 2004). There is an increasing awareness in the general community of the importance of a good education and this very statement presupposes that there is both a 'good' and a 'bad' education. The definitions of 'education' are many and varied. Furedi (2004) affirms that education is 'an intellectual journey [that] involves unexpected tests and challenges' (p 124). Encyclopædia Britannica (2005) gives a definition of education as concerned 'mainly with methods of teaching and learning in schools or school-like environments' (para 1). Confucius believed that education had as its primary purpose social growth rather than simply focusing on the development of an individual (Dawson 1993). A combination of these ideas may identify a definition of education as: *a challenging journey where both teaching and learning influence the final educational outcomes and enhance the development of society.*

A sound education devolves from the firm foundations laid early in the learning pathway. It was Piaget (1972, cited in Child 2004) who stated that 'education ... should be creating men and women who are capable of doing things, not simply repeating what other generations have done' (p 67). As Williamson and Marsh (1999) ask in their discussion paper: 'educational pathways or tracks that lead nowhere?' Education is a search for the important factors in concept development and for understanding the attributes that play a significant role in teaching and learning. Whether in vocational or higher education, the teaching task remains a challenge to motivate and excite the students (Dator 2004), to provide a setting where valuable learning can take place in the data rich environment around us. Prensky (2002) quotes Marshall McLuhan as saying, 'anyone who makes a distinction between education and entertainment doesn't know the first thing about either' (p 8, citing Eric McLuhan). Whatever the variance may be in the way students learn, Prensky put forward his belief that:

The most important thing that educators can learn from game designers is how they keep the player engaged.... One basic rule of good gameplay, for example, is to always provide the player with clear, short-term goals. Another is to make the game easy to learn, but hard to master (p 9).

If teachers can take advantage of the research findings and skilfully use the variations in approaches to learning value will be added to the community, journeying with the students as they learn consciously and unconsciously (Dator 2004) reflecting on their past learning

as they seek future knowledge. Those institutions that provide the space for students to constructively learn and that support teachers in aligning their assessment tasks to the required educational outcomes (Biggs 2003) will develop effective systems that may exhibit quality education: that is, neither absolute nor eternal (Dator 2002).

The educational development, principles and practices play an important role in the world of student learning. Teachers need to be skilled in evaluating the variation in the way students learn and in encouraging them to discern what is known from what is new (Booth and Anderberg 2005). It is through the medium of curriculum that this deep learning can take place.

Concluding Comments

The pedagogical literature that focuses on teaching and learning in higher education has documented a variety of approaches. However, not nearly as much literature exists acknowledging what takes place in the vocational education context. The various theories of how students learn can most simply be described as cognitivist, individual constructivist, social constructivist and relationalist. Each of these explains their propositions of how and why students learn and each has a different slant on the effect that the approaches to teaching and learning has on deep learning. One of the main paradigms used is the presage, process and product developed by an individual constructivist and used as a framework by other contemporary researchers. It appears that a significant characteristic used by many researchers for deeper exploration, is the continuum with a strong teacher-focus at one end and student-focus at the other. Another aspect studied has been surface versus deep learning and the research has been strengthened with many more studies being carried out in eastern cultures that add a new dimension to the existing western focus. Within all these research areas there is some overlap between the various schools of thought, however, once again the vocational education area has received only scant attention.

This current research is situated in the relationalist or constitutionalist context. This model is based on the beliefs that many relationships exist that encompass the learner and the world around them. While learning will still follow the presage, process and product pathway, the relationalist perspective contends that many other factors will influence students' experiences and perceptions of the teaching/learning context as well as what is happening in their world. This is not a chain of causal processes over time but rather an individual awareness by the student of all that is happening around them. Other research that has supported this relational framework is variation theory, considered by some

researchers as a powerful way of describing the conditions present for student learning. These researchers believe that variation theory could be a lever for raising the quality of learning for both the individual student and for learning communities. Related to variation is the awareness that students have of things around them, all coloured by their prior learning experiences and perceptions.

The challenge for educationalists is to provide a setting where valuable learning can take place and where teachers are aware of the variation in student learning and how students understand the critical concepts underpinning their object of learning. This requires teachers to be skilled in identifying and evaluating the variation in learning and to encourage their students to discern what is known from what is new. In this study the quest was to find out how students approached their learning of the unit Internal Control Principles in TAFE. The literature has shown that by far the main body of teaching and learning studies has been centred on higher or university education. Do the findings espoused in the literature apply equally to vocational education and if they do, can students in TAFE enjoy deep learning? In the next section the concepts of constructive alignment and communities of practice are examined, and an analysis made of the impact these have on the teaching and learning situation.

2.3 Constructive alignment and communities of practice

A community of learners – or a community of practice - is where, as Wenger (1998) argues, the ‘educational processes based on actual participation are effective in fostering learning, not just because they are better pedagogical ideas but more fundamentally because they are *epistemologically correct*, so to speak’ (p 101). Along this pathway the constructive alignment of teaching and learning and all other relevant variables may ensure there is something of value added at all stages of this journey (Biggs 2003).

Many will see education as a journey of discovery and expression, of a way to debate and argue issues in order to enrich knowledge. Others focus not so much on the philosophy but rather on the actual economic product of education. One such researcher is Marginson (1997) who described educational programs as a means to change behaviour and described the purpose of education as being the product of ‘economic citizens’ (p 147). Whether for philosophical reasons or social and economic welfare, educational institutions aim to provide a wide variety of pathways that students can take. All those facets that interact in this educational environment cannot operate in isolation. It was Biggs (2003, p 26), who stated that all these variables must be constructively aligned. These are shown in Table 3 and Biggs stated that if this is done then students will build new ideas and experience new perceptions, with outcomes that, in part, are a product of their prior learning experiences.

Table 3 The critical components of alignment

The curriculum we teach.
The teaching methods that we use.
The assessment procedures that we use, and the methods of reporting results.
The climate that we create in our interactions with the students.
The institutional climate, the rules and procedures that we have to follow.

Posner, Strike, Hewson and Gertzog (1982) and Strike and Posner (1992) used the notion of radical conceptual change and argued that this change is often related to revision or restructuring of the learners’ beliefs about the concept, the conceptual change possibly being gradual or quite fast. Philosophers have grappled with the term ‘concept’ for a long time. Toulmin (1972) argued as follows:

Many of them would even describe the central task of philosophy itself as being that of conceptual analysis. Yet, despite all their scrupulous care in the actual practice of conceptual analysis , the precise meaning of the terms ‘concept’ and ‘conceptual’ is rarely made explicit and frequently left quite obscure. (p 8)

However, Toulmin went on to state that the crucial problem that is central to epistemic philosophy is to determine ‘from what sources our concepts ultimately derive their intellectual authority’ (p 10). And so it is that we try to understand what happens during the learning process. Biggs (2003) stressed the importance of aligning all parts of the educational environment to ensure processes that facilitated deep understanding of theory and concepts emphasised meaning that is created by the learner.

The important point about course alignment within the classroom community is that the quality of teaching, research and curriculum must be maintained. The classroom community has to support the students’ own learning (Petocz and Reid 2004) and strategies that focus on changing students’ concepts will ultimately lead to them being better able to identify their own strengths and weaknesses. This also supports the *active* view rather than the *passive* view taken by Piaget (1958, cited in Child 2004) when describing the stages of cognitive development.

The teacher is pivotal in setting a framework for the classroom environment and helping to form the shared practices (G Hofstede, personal communication 11 May 2005) of teaching and learning. Hofstede also stated that the classroom is just as much a group for the purposes of collective programming of the mind as any other regional or national group and that overlaying the values, rituals, heroes and symbols form the shared practices or the approaches to teaching and learning within that classroom. This seemed to be reinforced by Wenger (1998) who stated that working with others in groups that have common goals forms the ‘communities of practice’ (p 45), being the classroom where the students focus on their learning in order to graduate and seek new opportunities in line with their lifelong ambitions.

Assalini and Hopkins (2002) put forward the proposition that students are ‘uninformed consumers’ (p 11) even though they may actually make their own educational decisions. It is in some part, from the students’ evaluations that designers and developers are able to mould the outline of teaching curriculum, but it is the teacher who aligns this and controls the resource material at the point of delivery. In this context the classroom becomes the current in-group for both the teacher and students and when the members move from one group to another they have to relearn the values of that new group. The secret of holding this in-group together is through the shared practices (G Hofstede, personal communication 11 May 2005) of the classroom. It is the interaction with each other within these groups or enterprises that results in the building of collective practices in the pursuit of shared goals (Wenger 1998). So the classroom takes on a new dimension and

the dynamics are affected by the diversity of its members, while at the same time its outcomes are enriched by its homogeneity and mutual relationships. The classroom thus plays a vital role in the constructive alignment and communities of practice. The learning that takes place in the classroom is a product of the constructive alignment of all the variables that actively operate in that context.

The students in these communities of practice will have set their own private goals. However, as a part of the classroom community they work with others and share another set of learning goals. Most will be longing for the day when they can apply their knowledge in the workplace. Dwyer, Smith, Tyler and Wyn (2003) reported in their longitudinal study that the transition between study and work was a lot more complex than previously thought. If this is the case then the environment within which classroom learning takes place will be a significant factor in student learning. The varied approaches to learning and the relational perspective taken by students to the experiences of these classroom communities of practice provide a rich source of data for analysis.

Students are the consumers of education but they must also take an active part in its delivery if they are to reinforce its outcomes. This is not new, as Dawson (1993) wrote in *The Analects* documenting Confucius as saying students must be motivated and take an active part in their learning. It is important that the focus is on students' learning, rather than on the lecturers' ideas of important content. This would appear to be an essential step towards encouraging students to develop mature approaches to learning (Petocz and Reid 2004). There are difficulties that may arise in classroom encounters, one being that when lecturing at university, often to very large numbers of students, it is possible that this may limit the 'improvised conversation' that Biggs (2003 p 83) describes as crucial for good interactive teaching. This may make it just that much harder to have a student-focused classroom environment at university. In TAFE vocational classes, however, the number of students per class is much lower so shared values in these communities may be adopted more readily by students and teacher. Regardless of class size Wenger (1998) still proposes that the depth of understanding can be enhanced if all members of the group embrace the values of that group and the shared practices of the learning community. In the classroom the teacher is able to guide students' learning towards the latest research concepts. One of the key arguments put forward by Jenkins (2000) in the debate about the teacher-research relationship and its impact on student learning in the classroom was that:

In formulating an evidence-based practice and delivery of teaching and research, we have to confront the realities of mass higher education systems, and the likely challenges of globalisation, information technology and the view

of governments that research is central to national and international economic and social 'performance' (p 344).

Concluding comments

The fundamental knowledge that comes from systems that are constructively aligned and curriculum that includes generic skills mixed with the application of specialist studies will prepare graduates for careers in the real world. The methods of learning encourage creativity and innovation and if the critical elements of the teaching and learning system are in alignment then this should lead to students successfully attaining the levels of understanding and competency they need as they progress through their learning pathway. Conceptual changes will help students restructure their beliefs about their object of learning and while this may be fast or slow, active learning will assist deep understanding. It is through constructive alignment that the mission of the institution combined with all the teaching and learning practices and processes will have a real impact on the educational outcomes gained by the students. This will have positive effects on the transition from learning to work that is often a complex process.

The classroom can be thought of as a community of practice. Here students share values with their teacher in their search for wisdom. Skills that students gain in communities of practice, where the curriculum is tempered with a sound knowledge of cross-cultural sensitivity will prepare them for lifelong learning. The research has reinforced the position of the teacher at the centre of this community and in a sense holding a controlling interest. For this very reason it would seem important that the teacher sets the tone of the classroom community and fosters an environment where there is both engagement and yet distance in the learning space. This enables those within that learning community to know one another and participate in learning that is both personal and communal. As one researcher stated, this will be an ontological community, where students gain deep understanding and integrate knowing, acting and being.

Constructive alignment and communities of practice are part of the pathway to learning and it is a challenging journey. Both teaching and learning influence the final educational outcomes and enhance the development of society. The overriding rationale is to provide commerce and industry with graduates who are professionally competent, well educated and capable of taking their place in a competitive global environment. The curriculum promotes an organised progression so that the demands on the learner in intellectual challenge, skills, knowledge and learning autonomy increase during their study. Such programs provide students with the knowledge, competencies and values

necessary for a fulfilling and effective career in their chosen field. In the next section these competencies and their ontological nature are examined.

2.4 Competencies in vocational education

The future of competency based training may well contain surprises and the results of strategic planning can only be faintly seen through future misty proposals. Recent reports (Dryden 2002) have detailed the drivers for change in the vocational education and training sector, and in turn, the challenges facing VET leaders, managers, teachers, support and other staff (and the extent of the debate about competencies in vocational education). Competencies have as their epistemological basis, the varied ways that knowledge can be applied to real world problems. The research in this study is based on analysing the experiences of 11 teachers and 22 of their students in the subject Internal Control Principles in the TAFE Advanced Accounting Diploma. Vocational Education and Training (VET) courses combine the key competencies for particular units with the outcomes-based approach of the training units. Teachers identify links between these and the industry requirements. The focus in VET education is on preparing students for work placements and to ensure they have the ability to competently carry out the specific skills required by the professions or industries.

Competency standards are set out for all disciplines taught in the vocational tertiary sector. It is reasonably easy to identify the competencies required for applied subjects in programs such as hospitality and nursing, and even for basic accounting procedures, but much more difficult to determine how competencies can be assessed in a subject such as Internal Control Principles. The question must then be asked: what actions can best be observed that demonstrate students' understanding of controls, ones that integrate both intention and the manner in which the intention becomes operationalised into reality? These competencies are incredibly difficult to write into curriculum and require a skilful teacher to be able to assess them effectively.

Competency standards describe what people do in the workplace at various levels and the standard to which they do it. There are various levels of competencies, generally described as: a. competent; b. advanced; and c. outstanding. Competency standards are statements that set out the knowledge, skills and their application required for effective performance in employment. These standards generally provide clear benchmarks for the assessors and the institutions in developing and delivering programs relevant to workplace requirements. The literature seems to agree (Argüelles and Gonczi 2000) that accredited training raises the staff retention levels in organisations and reduces the costs of rehiring. The standards are national and their application is designed to facilitate a nationwide consistency of approach to training and skills recognition (Williamson and White 1996).

All teachers delivering vocational programs should have relevant qualifications and industry experience and they are required to demonstrate related vocational competencies to at least the level of those being delivered. Competency-based training is an approach to vocational education and training that places an emphasis on what a person can do in the workplace as a result of completing a program of training.

Recent research overseas has examined Curriculum Based Measurement (CBM) that started in America in the early 1970s by Stanley Deno and his students. This is a similar method of assessing competence and is described by Fuchs and Fuchs (2004) as:

... a set of methods for indexing academic competence and progress. In developing CBM, the goal was to establish a measurement system that teachers could use efficiently to (a) obtain accurate, meaningful information with which to index standing and growth; (b) answer questions about the effectiveness of programs in producing academic learning; and (c) plan better instructional programs. ... CBM integrates key concepts from traditional measurement theory and from the conventions of classroom-based observational methodology to forge an innovative approach to assessment (p 112).

Competency standards could be referred to as specifications of performance and they set out the skills, knowledge and attitudes required to operate effectively in a specific industry or profession. For example, in the unit Internal Control Principles, the key objective set out by the industry is that this unit should provide the participant with the knowledge and skills to devise and evaluate accounting systems and related internal controls, and to understand the role of the external auditor (9434P). To achieve this outcome the student is therefore required to be competent in designing, implementing and evaluating internal control procedures. Care must be taken however because: 'While students may exhibit a certain understanding, skill or competency in one situation, this does not mean they can exhibit it in another somewhat different situation' (Prosser and Trigwell 1999, p 58).

Competency standards are made up of units of competency, which are themselves made up of elements of competency, together with performance criteria, a range of variables, and an evidence guide. For a person to be assessed competent they need to demonstrate the ability to perform tasks and duties to the standard expected in employment. Competency-based training focuses on the development of specific skills, knowledge and attitudes required to achieve those competency standards. When assessing students' competencies, this is carried out against specific performance criteria rather than against the achievement of other learners. Traditionally the VET education sector has been the area where skills formation for industry has been dominant. There was the general belief that a definite nexus existed between skills and the labour market (BVET 2000) but the debate that followed that assertion suggested a more far-sighted strategy was required:

We are already living in a ‘knowledge society’ in which the collective learning achievement of adults far outpace the requirements of the economy as paid work is currently organised. The knowledge society dwarfs the knowledge economy... It is [the] relative withering of good jobs with decent pay that is the central problem creating the education-jobs gap (Livingstone 1994 cited in BVET, p 5).

The development of competence is however, a complex process and a holistic approach is required to ensure that an individual not only has the skills to carry out certain tasks but also possess the underlying knowledge and concepts to make the necessary links between theory and practice (Argüelles and Gonczi 2000). Other researchers also hold this view. Gott (1995) claims that the typical didactic teaching approach at TAFE institutions is ineffective and ‘cognitive performance models provide both the input to instruction and the desired criterion performance to be attained’ (p 30). Cornford (1999) goes further to criticise the fragmented modules set out by the Australian Qualifications Framework on the basis that curriculum really needs to be well connected and even perhaps more inter-professional. Argüelles and Gonczi argue that if this was the case then various theoretical concepts may be uncovered in an inter-disciplinary way. Research has also identified the need for a multifaceted approach to assessment (Taylor 1994).

In May 2005 the government presented to Parliament the proposed *Skilling Australia's Workforce (Repeal and Transitional Provisions) Bill 2005*. The purpose of this Bill is to:

... repeal the *Australian National Training Authority Act 1992* and the *Vocational Education and Training Funding Act 1992* effecting the abolition of the Australian National Training Authority (ANTA) and the current funding arrangements for Commonwealth grants to the states and territories for vocational education and training (VET). It provides for transitional arrangements for the transfer of functions from ANTA to the Department of Education, Science and Training, including the transfer of assets, liabilities and records. The Bill is linked to the *Skilling Australia's Workforce Bill 2005* which provides for the new national training arrangements (Parliamentary Library 2005, p 1).

The Industry Advisory Boards are to remain in place to ensure that competencies for all units taught in VET will reflect the needs of employers in the workplace. It remains to be seen what effect these changes will have on the future design and delivery of curriculum in TAFE. However, an examination of the latest curriculum document for Internal Control Principles (9434P) updated in 2003 shows that all the topics contained in the 1999 document that I was responsible for writing, are still in place with slightly more emphasis on audit committees and corporate governance. This is not surprising considering the

number of spectacular firm crashes that have so publicly taken place in recent years, and the poor levels of accountability and transparency shown by some directors and managers.

The Department of Vocational Education and Training argued that TAFE institutions have set high standards for work skills and benchmarks for the provision of skills formation through the design and development of competency standards that are embedded in good quality curriculum (BVET 2000). There has been a very vigorous debate around the definition of competencies. In the 1990s the rather narrow behaviourist definitions were discarded in favour of a definition of competencies that ‘recognised that work performance is underpinned not only by skill, but also by knowledge and understanding’ (p 7).

The debate about competencies in the VET sector has become quite heated in the last few years. Research by Dryden (2002) states: ‘There is as yet no coherent picture of what teaching and learning in VET might be’ (p 1). Learning in the VET sector has been referred to as *the journey to vocational competence* (Chappell *et al.* 2003). It seems that the nature of competencies and the way that students master these skills and are assessed, distinguish VET from higher education. There have been a number of reports commissioned by the Board of Vocational Education and Training, however the literature about the development of an appropriate pedagogy for the VET sector still seems somewhat limited. Competency based assessment regarding a particular task (or tasks) is about an assessor making a subjective judgment on the observed performance of the student (Gonczi 1994). The assessments, and to some degree the learning outcomes, are therefore the distinguishing factor between university and vocational education.

Kramer (2003) joined the debate and posed the question: ‘What are key competencies and how should they be tested?’ Kramer suggested that having key competencies in curriculum tends to shift the learning more towards rote learning, where students simply keep at a task until it is mastered. One might question whether this is deep or surface learning. In this context of internal controls and in the performance of some very basic mechanical tasks, such as basic debits and credits in accounting, it could well lead to deep learning. Kramer was very vocal on the position of ensuring that students are ‘learning to pay attention to detail, to concentrate, have accuracy in all work, persistence, patience and an enjoyment in solving problems’ (par 7). This sounds exactly like the type of accounting student many teachers of accounting would love to have in their classroom. ‘Higher education critics of competency standards, in rejecting the narrow approach to competence, usually prefer instead to focus attention on generic attributes as the best

indicators of future successful performance' (Hager 1993). In most of the specific performance criteria issued by TAFE, these generic skills are implied. Tasks may be assessed as to the knowledge displayed by the student, their ability and skills in the performance of particular tasks, many of which may be judged in the context of general attributes (Gonczi 1997). Current research is signalling the importance of these generic capabilities being built into curriculum and reinforced across all educational sectors.

In 1999 the evidence guide for Internal Control Principles detailed how competencies in this subject would be measured. It suggested that assessment of performance may take place in an industry context. It also stated that aspects of the competencies that included gaining relevant knowledge and skills in internal control could take place in a simulated professional workplace. The critical aspects of evidence of competency were set to include evaluation of routines against compliance procedures, researching and interpreting the application of corporate governance requirements, coordination of activities to ensure consistent guidelines and troubleshooting problems and errors. The subject had as a prerequisite financial accounting, as students need to have a sound knowledge of the framework underpinning all transactions in the accounting system.

One of the key elements was recording processes, required to be established according to accepted practice and in accordance with Australian Accounting Standards, company policy and Australian Corporations law, company directors, corporate governance policies and/or codes of practice. One of the elements of the monitoring segment was that modifications to procedures should be developed and implemented to facilitate compliance with internal control processes. This indicated that the subject Internal Control Procedures needed to ensure students were competent in not only developing controls but also in implementing and evaluating these controls and in determining the risk associated with deviation from controls. Specific mention in the criteria was made of the requirement that students fully understand the role of the external and internal auditors and how the status of these positions impacted on monitoring internal controls in an organisation.

These were the seeds that generated a desire to explore how the Internal Control Principles curriculum had been accepted by teachers and whether or not its delivery had led to relationships for deep learning. The competencies for Internal Control Principles were intended to ensure that transactions are analysed and accounted for completely and are correctly related to the accounting period. The processes for recording and classifying transactions had to be communicated and promoted to support internal verification of

records. Students needed to check sources of input data and documentation, making sure it is standardised in structured formats to minimise errors. Good control processes also make sure that back ups are maintained in accessible locations to safeguard data in accordance with organisational and audit requirements. With all these criteria set out by the National Finance Industry Training Advisory Board (NFITAB), the curriculum for Internal Control Principles that was written in 1999 needed to accommodate topics that would adequately cover the underpinning knowledge students' required to be competent in designing, implementing and evaluating an organisation's internal controls.

Concluding comments

The competencies or core skills that are currently required by new forms of employment in industry demand attention be paid to the design and development of new subjects and to innovative and different pedagogies. Competency based training needs to be adaptable and provide problem-solving skills that can be applied to the real world. Vocational Education and training courses combine key competencies with an outcomes based approach. These competency standards are set for all disciplines taught in the vocational sector and part of the difficulty with curriculum, is designing appropriate and skilful competency assessments. The competency standards generally provide clear benchmarks for assessors based on what a person can do in the workplace as a result of the program of training.

In America, curriculum based measurement was introduced in an effort to integrate key concepts from vocational competencies with a more innovative approach to assessments. In Australia the competency standards are made up of units of competency and the learner needs to demonstrate their ability to perform the duties and tasks to a standard expected in employment. However, developing competence is a complex process and it is important that the learner is able to link theory with practice. The fact that vocational curriculum has outcomes dictated by industry may mean that more attention needs to be paid to the academic pedagogy. This has already sparked quite a series of debates about the value of competency based training and it remains the biggest difference between vocational and higher education. Some evaluation of competencies can take place in the workplace and others from more theoretical subjects such as Internal Control Principles need to have very skilled assessments.

From literature to learning

The intricacies in finding out how students learn have been identified in the literature that focused on curriculum design and development, teaching and learning, constructive alignment and competencies in vocational education. This painted an epistemic picture of student learning and led to the examination the various aspects of curriculum. The process of deciding what should be in curriculum and why it is needed, while important, should be combined with an ontological framework that encourages the student to not only gain knowledge but also know who and what they are. The curriculum has to accommodate various learning styles, allow formal and informal learning and encompass real-life attributes. It cannot be too broad or too narrow and ideally it should be a tool for preparing students for their professional work. The various elements that make up curriculum are summarised in Table 2 and suggest that the design and development of curriculum is broad in scope and needs thoughtful planning.

There are differences too between university and vocational curriculum, and some researchers are now suggesting that university curriculum needs to contain many more generic skills than before, perhaps closing the gap identified between the two. Whatever the outcome, quality curriculum design needs to facilitate an environment where students can discover the power of their own minds to work. The reason this is important is that educational institutions are becoming increasingly accountable to all stakeholders for the quality of the courses they provide. The change in focus at educational institutions has meant that technology now plays a much greater part in education.

Teaching and learning has come under greater scrutiny during the last two decades. There is now a much broader range of research studies available from which the process of teaching and learning can be better understood. Presage, process and product are the basic tenets of the 3P model and these have been examined by researchers from a number of viewpoints. It is using this model and applying the relationalist perspective that forms the main part of this study. Figure 2 shows the association between the 3P model and learning from a relationalist perspective. The object of learning in any lesson is the potential for students to grasp the key concepts framed by the teacher. This requires the teacher to help students construct more sophisticated ways of learning. Complicating matters is the fact that students vary in their approaches to learning. They will each have their own ways of experiencing things and that is why some learn better than others. So it is that the characteristic of variation enters the equation of learning. From the relationalist perspective

students' prior learning experiences, their perceptions and the outcomes they produce are all bound up in the level of awareness they have for what is happening around them.

This brings challenges for education. It needs to be a challenging journey where both teaching and learning influence the final educational outcomes and enhance the development of society. Whether in vocational or higher education, the task remains to motivate and excite the students. From this literature review the main question addressed in this study was derived: Curricula and competency: Who designs what and how students learn. The problem was to find out just how vocational curriculum should be designed and developed and how students approached their learning of that enacted curriculum. The gaps in the literature suggest that research was required to determine the effectiveness of vocational curriculum design, to examine the position of curriculum within the context of TAFE culture, the positioning of student engagement within the TAFE curriculum and whether there was an epistemological and ontological notion of teaching and learning in TAFE. The research also set out to find out what relational perspectives were brought to the surface by examining the TAFE unit Internal Control Principles.

It is with the best understanding of the history and development of teaching and learning and curriculum writing that the steps forward in this research were taken and the methodology for that journey is set out in the next chapter.

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CHAPTER THREE

A review of the literature in the previous chapter details the world of student learning filled with characteristics that enable quality outcomes. This is represented in Figure 3 which shows that at the heart are the relationships for deep learning.

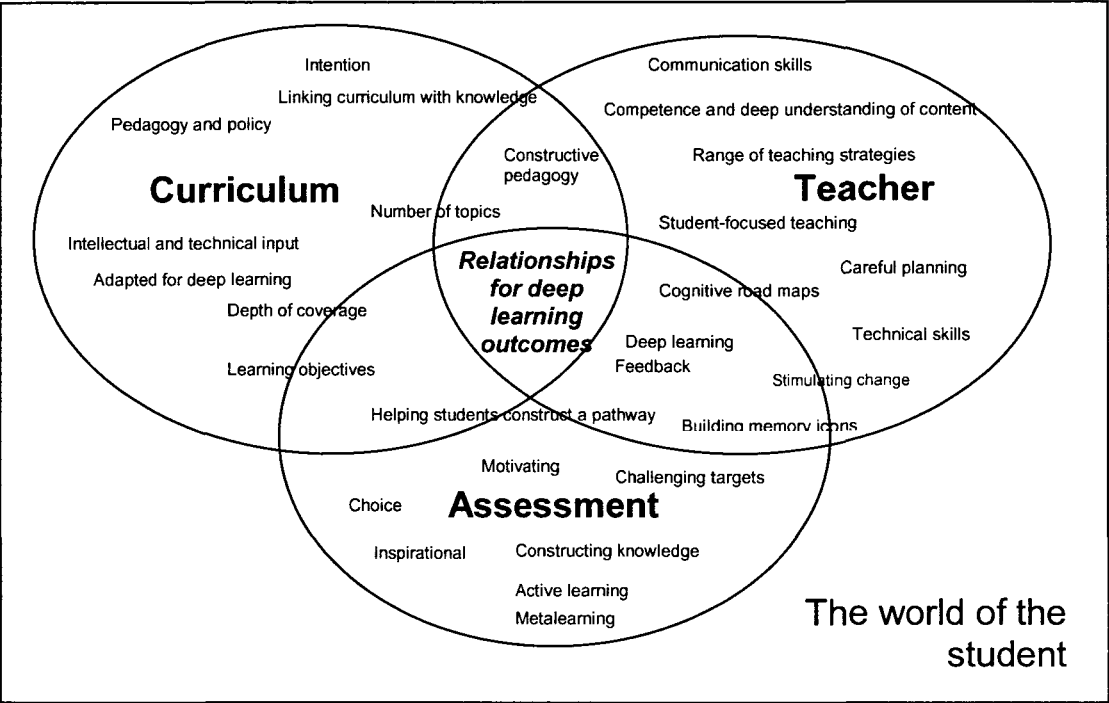


Figure 3 Relationships for deep learning

Within Figure 3 are represented all the attributes that may impact most particularly on students’ approaches to learning. The curriculum – designed and developed, with certain intentions, pedagogy, policy, intellectual and technical input; the teacher – as a good communicator, competent, instructive, possessing a range of teaching strategies, lesson plans and giving feedback to the student; and quality assessments – setting challenging targets, giving choice, motivating, inspiring, giving feedback to the teacher on the depth of understanding of the learning objects, helping construct lasting knowledge and actively assisting the learning process - together all these will have an impact of the relationships for deep learning.

3.1 Aim of the study

The aim of this study is centred on curriculum and competency in vocational education. It began as a search to find out if the vocational curriculum for the unit Internal Control Principles, implemented in 2000 in the New South Wales TAFE Advanced Diploma of Accounting, was used by the teachers as the writer intended. It also aimed to examine how

the students developed an understanding of those internal control concepts. Thus it was vital to increase the knowledge and understanding of how teachers perceived and delivered this particular unit of TAFE curriculum and how students experienced the learning of that curriculum. The problems being researched by this project were epistemology of the curriculum development process, understanding the teachers' perceptions of the curriculum and their consequent teaching approaches, and examining the variation in students' experiences and perceptions of the curriculum as they go about their learning.

To help achieve these objectives the study was designed to use the researcher as the instrument to gather data on the experiences of teachers and students in the learning process and to determine how these relationships helped deepen the learning outcomes.

Searching for meaning

Where all three attributes in the students' learning environment overlap, shown in Figure 3, we have relationships for deep learning outcomes. In search of information that might help shed more light on these relationships the following broad questions were addressed, that are similar to those identified in the literature review by Bruce *et al.* (2004):

- Who designs and develops the curriculum?
- How do the teachers interpret and deliver this curriculum?
- What is the content and depth of coverage of this curriculum?
- How do teachers and students understand the curriculum?
- What things assist teachers in or prevent teachers from unlocking the mysteries of how students experience their learning?
- What promotes or inhibits the students' depth of understanding of this curriculum?
- What is the impact of teachers' methods of delivery and verbal interactions on student learning in the classroom?

Framework for inspection

Unlike conventional or positivist research, there is no single accepted outline for a qualitative research dissertation (Morse 1991). Researchers must decide how to organise their proposals to effectively communicate ideas to the intended audiences and satisfy the demands of the context (Heath 1997). This qualitative research aims to inform teaching and learning practices in the TAFE unit Internal Control Principles. Authors such as Spiegelberg (1965), Säljö (1979), Marton (1988), Martin (1994), Prosser (1993), Biggs (1996), Marton and Booth (1997), Trigwell (1997) and Reid (1997) have defined this type of qualitative paradigm in the teaching and learning context and because this phenomenographic analysis searches for variation in the experiences and perceptions of

student learning it is suggested that its application from a relational perspective is appropriate in this study.

There are general assumptions about the nature of knowledge and reality that underlie deep learning outcomes for students in both vocational and higher education. For university teaching the three most important attributes for student learning under the direct control of the teacher are: the aims and objectives, assessments and teaching methods (Ramsden 1992). It is argued that these are not linear but rather are intertwined and together they provide the framework upon which student learning is based. In the vocational education sector, however, the teacher does not control the objectives, and in some cases cannot control the assessments. That leaves only the control over teaching methods for a VET sector teacher to use in enhancing student learning. The learning objectives are set by the NFITAB and the curriculum developer and the teachers will use a range of teaching strategies to gain feedback on how well the student understands the material. These concepts are supported by the proposition made by Tyler (1949, cited in Biggs 2003) that students will learn from their own activities, not from those of the teacher. The research investigated the relationships for deep student learning.

Setting the context

In the individual constructivist context the curriculum becomes an element of the constructive alignment paradigm (Biggs 1996). Each of the elements in Biggs' model: curriculum, teaching methods, assessment procedures, classroom and campus environment (p 26), must be in tune with each other if the outcomes of the program are to be achieved. This constructivist approach to teaching requires the curriculum objectives to be clearly stated and a level of understanding attached to each. In the Biggs model presented above the curriculum developer sets the objectives, and leaves the teacher the task of aligning their teaching to achieving the best learning outcomes using constructive pedagogy.

From the relationalist perspective the different ways that participants experience the various phenomena and the methods of connecting theory, practice and experience all impact on the depth of the learning outcomes. To unpick the links shown in Figure 3 that were derived from the literature, we must return to examine Figure 2 which shows how the relationalist may use phenomenographic analysis (Marton 1992; Prosser 1993; Bowden and Walsh 1994; Trigwell 1997 and Runesson 1999b). This qualitative technique of analysing the data allows the participants' experiences to guide the research. Similarities and differences emerging from data using phenomenographic analysis highlighted the variation in students' perceptions. Commonalities and themes identified through discourse analysis validated what was found in the phenomenographic analysis. The coding

strategies also helped in identifying regularities and in developing theory. Linked to these theories was what the literature described as surface, deep and achieving approaches to learning (Säljö 1979; Martin 1994). In another study Martin (1994) drew the spotlight away from conceptions of teaching and learning and put the focus on awareness. Studies by Biggs (1979, 1987) Entwistle and Ramsden (1983) and Watkins (1983) used factor analysis to explore the attributes of these approaches and reinforce the proposition that while surface and deep remain at opposite ends of the continuum, the achieving approach could be overlaid on the whole model. The commonalities of learning experiences (Marton and Booth 1997) were also important aspects highlighted in learning literature and these also have an impact on the way students approach their study. When all of these issues and characteristics are put together the context encompasses the presage and process. This in turn affects the interrelationships between teacher and student that play a significant role in the determination of learning patterns that can be identified in the situation or product (Trigwell, Prosser and Lyons 1999; Entwistle and Tait 1990).

Towards deeper understanding

Many of the researchers identified in the literature, have stated that effective teaching practices are required if the needs of the learner are to be satisfied. Knowles (1990) has documented well-known theories about adult learners and firmly believes that responsibility for learning falls mainly on the adult student. The following paragraph is based on his assumptions regarding tertiary learners.

that adult learners need to know why they need to learn something before undertaking to learn it; adults need to be responsible for their own decisions and to be treated as capable of self-direction; adult learners have a variety of experiences of life which represent the richest resource for learning and these experiences are permeated with bias and presupposition; adults are ready to learn those things they need to know in order to cope effectively with life situations; and adults are motivated to learn to the extent that they perceive that it will help them perform tasks they confront in their life situations. (p 57)

Kolb (1984) is known for his continuous spiral of experiential learning and his claim that students have a direct encounter with the phenomena they are studying. Brown (2004) reports on the meta programs' qualitative study of teaching preferences that uses a Neuro Linguistic Program (NLP) model to evaluate how students perceive their teachers. De Luynes (1995) describes NLP as 'tools to identify the structure of successful communication in education' (p 34). The Brown study basically found that for student learning to be profound, the personality preferences of students and teachers need to be aligned. It appears that a deeper approach to learning by students may come from good

management of these intangible qualities by the teacher and by them being aware of the meta program patterns in students that facilitate more effective approaches to learning.

Teachers' professionalism is enhanced with their ability to examine things from various viewpoints and, in particular, from their students' perspective (Eraut 1993; Elton 1996; Biggs 2003). The relationship that the researcher had with the informants was as an unobtrusive observer and empathetic listener. It was vital that I listened carefully to the teachers as leaders, for it is they who need to fully understand the change process, foster stability, improve relationships in the classroom, share knowledge, give and receive feedback and help make the curriculum coherent (Carter 2002). Teaching is a vital element in the delivery of the curriculum and leadership is perhaps one of the most vital characteristics in the teaching and learning context. To have an impact on the students' world of learning and the approaches to learning that are used, the collection of this research data aimed to encompass all of the attributes in Figure 3. Only then could these be fully examined to see if the relationships for deep learning outcomes are achievable.

3.2 Methodology

Using an interpretive approach this research follows the pathway first set out by Dunkin and Biddle (1974, cited in Biggs 1978) and examines the *presage*, *process* and *product*. Deriving a data collection approach from Marton (1981, 1988, 1992), Merriam (1998), Reid (1997) and Prosser and Trigwell (1999) the author conducted interviews that tapped into the lived experiences of teachers and students, matching the student characteristics and teaching context referred to as *presage* by Biggs. The *process* is the education, the transformation of information into lasting knowledge so that the *product*, represented by the learning outcomes, is deep and enduring. The primary research aimed to examine how teachers interpret and teach the prescriptive curriculum and how students learn, all within the context of a unit titled Internal Control Principles in the Advanced Diploma of Accounting in New South Wales TAFE. This methodology aimed to search for meaning and justify the answers through a combination of research methods. This qualitative research dissertation was unlike conventional, positivist research, as it contained no single accepted outline (Morse 1991); rather it examined the multiple meanings within the teaching and learning space of the unit of study.

Autoethnography – through the researcher's eyes

Autoethnography is an analytical and objective personal account of the position of self as writer within a group or similar community. It very often is a description of problems and tensions within that group, being an attempt to explain these differences from an inside

position while also attempting to explain one's self to others (Ellis and Bochner 2000; Buzard 2003). This section of the thesis evolved from my own effort to write curriculum for the subject Internal Control Principles. It attempts to give an emic (or insider's) view of the curriculum writers and teachers. It was a way of considering the questions that were important to this group of people, of whom I am one. In autoethnographic studies, the research and fieldwork notes of the author attempt to position the researcher within the role of 'key-informant' (Gubrium and Holstein 1997). This is defined as involving an analysis of cultural phenomena from the perspective of one who participates in the culture being studied (Boyle 1994; Smith 1997, cited in Johnson and Christensen 2004). It is an objective description for the reader of the complex process of inductive and deductive thinking about the task of the curriculum writer and the search for feedback. Qualitative researchers are storytellers (Wolcott 1994) and the study should be no less rigorous if the storytelling is a distinguishing attribute. Indeed, Stanley (1993) maintains that autoethnography can never be limited to self, as experiences are not gained in a social vacuum but rather in the extended world around us. This view is also supported by proponents of phenomenography and discursive psychology, details of which are set out below.

At the same time, the study also provides an etic (or outsider's) view of students' learning as this may strengthen the understanding of why and how students perceived the experiences they described. This outside view considered the research questions from the point of view of the findings in much of the literature.

Phenomenography – the experiences of teachers and students

The phenomenographic approach was taken using the collection of data, gleaned from listening to the voices of the participants as they described their experiences, perceptions, apprehensions and conceptions of teaching and learning. The method has been referred to as a 'research specialisation' (Marton 1996) and the object of the research can be seen from the many and varied ways that both teachers and students experience their teaching and learning. It has been described as a second order relational approach that seeks to describe the key aspects of variation in the way people experience a phenomenon (Trigwell 2000). To take part in phenomenographical research is to step aboard a moving carriage, jointly contributing to a deeper understanding of the object of study by those who participate (Marton). This type of research attempts to identify categories and concepts and seeks to find relationships (Entwistle 1997) between them, thus helping both researcher and participants to elucidate the different aspects that are part of the world around us. The

phenomenographical research approach highlights the structural differentiation of the identified limited categories which fall into logically related hierarchies in the outcome space.

Many educational researchers have published their views of how students might approach their learning and teachers their teaching (Säljö 1979; Entwistle 1981; Entwistle and Tait 1990; Ramsden 1992; Tang 1996; Kember 1997). Teachers in tertiary education are made aware of these established views and the theory underpinning them. Phenomenography continually tries to match these multiple conceptions emerging from the research with the traditional perceptions. If a category discovered during the research does not fit into an already identified cluster, it may need to be allocated into some new area (Marton 1988). It is entirely possible that another researcher listening to the same transcript of data may choose a qualitatively different classification. However, every attempt has been made to fully explain and support the coding carried out in this study and any newly developed codes are described in a way that makes them available for future examination. Limitations on the sample size were required as Åkerlind (2005a) also found, 'to make the research manageable within the scope of a doctoral thesis' (p104).

During this research it was also important to keep in mind the criticism sometimes levelled at phenomenographic methodology – that the stated experiences at times may be different from the actual experiences (Säljö 1997) of the participants. This was one of the reasons that the classroom visits were undertaken, to ensure that variances in scripts versus observed practices could be discussed with the participants, ensuring the research analysis was using valid data. Discourse analysis was used to validate the hierarchical categories that were identified from the data. In the critique by Webb (1997) it is suggested that the phenomenographer should remain neutral during the collection of data and the observations, and that he or she should have their background fully explained. The primary aim was to encourage students to describe the ways they understood the internal control concepts and this could be considered the epistemological focus. A secondary aim was to encourage students to reveal how they understood being an internal auditor, the ontological focus.

Discourse analysis – focusing on identifying commonalities

Supporting the phenomenographical evidence was an analysis of the transcriptions, referred to by Phillips and Jorgensen (2002, p 96) as 'discursive psychology'. While phenomenography highlights the variation in teaching and learning perceptions and experiences, discourse analysis seeks to analyse the commonalities through the particular ways teachers and students spoke of their situation and their understanding of that context.

Discourse analysis is particularly relevant in this research because it is: ‘based upon a view of semiosis as an irreducible element of all material social processes. ... Discourse as part of social activity constitutes genres. Genres are diverse ways of acting, of producing social life, in the semiotic mode’ (Fairclough 2000, p 164). The definition of *semiotic* from the Encyclopaedia Britannica (2006) is: ‘a general philosophical theory of signs and symbols that deals especially with their function in both artificially constructed and natural languages and comprises syntactics, semantics, and pragmatics’ (para 1). Fairclough states that discourse is embedded in social practices, and he gives classroom teaching as a relatively stable example of this. Analysing the discourse of both teachers and students would then seem to provide another window through which we might view the social practice of student learning.

While the data were transcribed verbatim, it was then edited for flow and process, identifying commonalities, themes and concepts situated in the context of the classroom. The discursive psychology sought to find patterns of language about common incidents or events in that situation that either supported or contradicted the developing theory (Benner 1985; Taylor and Bogdan 1984). Further examination of the interview data clustered new information under the corresponding attributes and from these groups themes were derived such as ‘conversation topics, vocabulary, recurring activities, meanings [and] feelings’ (Taylor and Bogdan 1989, p 131). All of these were then pieced together to form the narrative that created a rounded and comprehensive picture of the context in which students learn. The analysis of the transcripts in this research enabled me to study the language used by participants, both listening to the voices and examining in detail the written text. It enabled me to question some of the ontological and epistemological assumptions behind the research study. It was Foucault (1973) who stated:

If there is one approach that I do reject [it is the one] which gives absolute priority to the observing subject, which attributes a constituent role to an act, which places its own point of view at the origin of all historicity – which, in short, leads to a transcendental consciousness. It seems to me that the historical analysis of scientific discourse, in the last resort, be subject, not to a theory of the knowing subject, but rather to a theory of discursive practice (p 172).

Examining the responses to the questions asked in this study through the use of discursive psychology provided another way of understanding how the participants created mental constructions of the world about them. It was multiperspective (Phillips and Jorgensen 2002) in that it weighed one approach up with the other, identifying the contribution each method made to the substantive theory developed. It also led to glimpses of how these

groups understood the relationships between the teacher and student and how this may ultimately shape the ways students learn.

3.3 Data collection

The Macquarie University Ethics Committee approved the research and endorsement was also obtained from the Deputy Director-General of Education and Training in New South Wales and the Academic Head of Programs at the International College of Management, Sydney. Audio tapes were used in all seven of the pilot program interviews and in all but two of the 32 main interviews. Each participant was coded to allow complete confidentiality, and no part of the taped conversations or group dynamics could lead to an identification of the original participants. Each participating teacher was given a random alpha code with the second identifying letter 'T' that signified a teacher interview. The students were given a random numerical code after the letter 'S' for student, ending with the code of the teacher into whose class they were enrolled. For example, one teacher was JT and a student from that class was S7-JT. Comprehensive notes were taken in all cases and together all the information was personally transcribed. Participants were offered the opportunity to receive a copy of the transcribed data as a record and invited to comment upon its contents.

The pilot program

The first in-depth interview carried out in mid-2003 was with the Head of Business Administration Programs at New South Wales TAFE (HOP). The interview tapped into the way program managers go about revising and rewriting the units in particular courses on offer. *'The accounting [program] specifically was developed by the National Finance Industry Training Advisory Board. They go through a most extensive consultation process, with industry and with educational providers' (HOP).* I wanted to explore his experiences of guiding the development of new and revised curriculum, to hear what had to be done when subjects were reviewed and find out how all the pieces of the pedagogy puzzle go together to make up the TAFE business programs. Subsequently, after analysis of this initial interview data, the identification of key concepts helped form the first teacher and student questions (see Appendix 1 for pilot questions for both students and teacher). Then the first stage of this study began with the preparation, collection and analysis of data from a pilot program in 2003 using one teacher of accounting and six of his students at the International College of Management, Sydney. The analysis of the pilot data led to the redesigning and redevelopment of meaningful questions and increased my skills and

techniques of interviewing that were then used for the teacher and student interviews in the main study.

The main study

The main research involved in-depth interviews with 11 teachers and 20 students from eight different colleges within five Institutes. The participants independently volunteered for the study in response to an invitation given to all teachers and students enrolled in Internal Control Principles classes, at metropolitan TAFE colleges, at the start of this study. Each interview was recorded and transcribed by the researcher and all participants who took part in the research did so voluntarily. An attempt was made to match two students for each teacher and, while in most cases that was done, there were some teachers where only one student was available for interview. Interviews with teachers and students of the subject Internal Control Principles began in March 2004. The solidity and multiple perspectives of the data collected assisted in illuminating the issues or phenomena under study (refer to Appendix 2 for a list of the teacher and student questions).

From the curriculum writer to the teacher and on to the learner, the questions attempted to elicit experiences and perceptions ‘describing conceptions of the world around us’ (Marton 1981). The study endeavoured to highlight or bring to the surface new connections (Glaser 1992) in curricula design and teaching methodologies that may help identify variations in teaching and student learning (Marton, Hounsell and Entwistle 1997) in the subject Internal Control Principles. The in-depth questions sought from the teachers ideas on how they interpret the curriculum and what they perceive as the most important aspects of achieving their teaching objectives. Answers were sought to questions such as how prescriptive curriculum is interpreted, what assessments and challenging targets are used and how change is stimulated. The discourse was also helpful in encouraging teachers to tell of their experiences in teaching and assessing competencies in the unit and how they perceived their place as part of the TAFE system.

Students were also asked reasonably structured key questions to tap into their use of prior knowledge and their expectations, perceptions, attitudes, problems and experiences they had in learning. The age range of students interviewed was from early 20s to late 50s and there was almost an even number of full time and part time students and male and female students. The teachers’ construction of their role and responsibilities, and their perceptions of incidents and events involving individual students, informs and strengthens the theorising developed from the students’ data. An analysis of the observed interactions

between teachers and students in the classroom adds rigour and validity to the explanation produced here of how students establish their learning patterns.

It is documented in the literature that phenomenographic interviews can be uncomfortable for students (Trigwell 1994; 2000; Marton and Booth 1997; Åkerlind 2005a) and it was for this reason that I tried to adopt the stance of an empathetic listener and ensure that the environment allowed opportunities for the participants to reveal their experiences of the phenomenon as openly and freely as possible. During the interviews the questions were not always asked in the same order. Sometimes the conversation took twists and turns and opened up new avenues to explore. The transcripts were between 20 and 30 pages in length, which resulted in over 500 pages from students and nearly 320 pages from the teachers. Added to these was the 27-page transcript from the Head of Programs at TAFE. This made a total of just over 850 pages of transcript for the main study.

Classroom observations

During the collection of field research data I was able to sit in classes of six of the teachers. This helped provide an indication of how they approached their teaching and what strategies they used to do so. During my association with TAFE I did not work with any of the teachers interviewed in this study. Of the 11 teachers who took part in the research eight were met for the first time at the interview and I had only a passing acquaintance with the remaining three. The six teachers whose classroom teaching I observed were from the eight that I had not met until their interview. The classroom visits were a way of identifying the interactions between teacher and students and then triangulating the data with the teacher and student interviews. Although these observations are transcribed from my own field notes they are representative of how the lesson proceeded and are from an etic perspective as I moved ‘beyond the perspectives of the people being studied’ (Johnson and Christensen 2004, p 374) and searched for answers to the key questions of this research.

Those teachers whose classes were visited completed an ‘Approaches to Teaching Inventory’ designed by Prosser and Trigwell (1999, p 176). The responses were valuable aids in comparing their actions with their perceptions of themselves as teachers as well as the students’ perceptions of their teachers. They were also helpful in the classroom context by supporting the field notes and a subsequent analysis was made of these results (refer to Appendix 3 for detailed results). I set out to take the stance of a neutral observer in all cases in the classroom. However, my analysis and interpretation of the data reflect to some extent the hermeneutical notion that research is part of, and participates in generating the

experience where there is no unique coding and decoding in place and the notion of signals implies uncertainty, variation, difference etc (Malpas 1992). It was these signals that ultimately indicated a significant impact on how students received and decoded the messages in the classroom (Dwyer 2003).

In this research I am the inquirer, a curriculum writer, a teacher and a student and I cannot detach myself from these perceptions and experiences. My interests, involvements, emotions, habits and practices have all played a part in creating the objects and events around me. I believe there can be no objective, detached observer and that understanding comes from being directly and immediately affected by the experience.

3.4 Data analysis

In nearly all areas of our lives we experience and perceive things or objects differently. Research over these last 20 years has shown that phenomena or aspects of reality can be experienced in qualitatively varied ways (Marton 1981, 1988, 1992; Merriam 1998; Reid 1997, 2001; Prosser and Trigwell 1999). What one perceives to be the concept varies from another so it is important to seek answers for the variation or difference between teachers and students in how they go about their teaching and learning in the classroom (Strauss and Corbin 1990). These authors also urged researchers to examine what constrains or facilitates the process. Hazel, Prosser and Trigwell (1996) suggested that when analysing the data a researcher must seek answers to: What is going on? What do these data describe? What is the most significant problem to emerge? What helps them [teachers/students] cope with the [teaching/learning] process? This type of constant questioning helped interrogate the data methodically.

Qualitative data analysis aims to discover the dominant themes, linkages and relationships between and around various phenomena. In this way the core categories can be identified in an iterative manner and the major variations examined from a relational perspective, forming the phenomenographical framework that underpins the theory supported by the discursive psychology. The investigator moves around the circle, sometimes over the same ground again and again, constantly comparing categories and concepts while concurrently collecting data, and continuing to theorise and test the linkages and relationships that emerge. Teachers have generally experienced the phenomena that students who study the same subject can have 'quite different learning outcomes' (Prosser and Trigwell 1999, p 23). The well known Bell Curve (Herrnstein and Murray 1994) or normal distribution first used by Gauss in 1809 shows this to be expected. Phenomenography is the search for reasons that students experience their object of learning in such a variety of ways. The writing of this thesis has been part of the analysis process as it has forced me to focus on the categories and concepts, commonalities and themes, to clarify hierarchies, relationships and linkages and to explain these findings. Writing was thus a process of crystallisation that in itself ensured the theory being developed was true to the teachers' and students' experiences.

Using the computer to assist discovery

The data were analysed using NVivo software by QSR International. The technique enabled me to explore the data and the analytical results, to link the teachers' and students' data and give me choices of management of the data that would have been almost impossible with a paper-based analysis. The coding of the data from the voices of the participants meant that I could constantly track my progress and examine sections or clusters of data. I was able to gain a deep understanding of the situation, experiences and processes of teaching and learning that were held within the documents.

This computer assisted tool allowed more freedom in exploring and sensitively interpreting the data and identifying the commonalities and patterns. As the study progressed so too did the complexity of managing the data, but the excellent ways for connecting and linking all field notes and documents using the computer package greatly enhanced the skills in searching, recording and writing up the research.

The best way to describe the process is to imagine the empirical data is contained within the 'box' as shown in Figure 4. The analysis is the constant circling round and around, sometimes going over previously coded data to explore new avenues of opportunity. The task is to close the gaps in knowledge and complete the circle, thus producing significant layers of categories from which the substantive theory emerges.

Autoethnography

While the main aim of the research remained an examination and critical analysis of the data collected from the participating teachers and students, the autoethnographic reflection was an attempt to objectively explain the position of the author as a teacher and as part of the group of resource writers and curriculum developers within the New South Wales TAFE system. Doing this allowed me to work outwards and use my own understanding to produce work that speaks clearly and powerfully about these communities (N. Denzin, personal communication 2 May 2003). It was an opportunity to describe the processes and procedures practised during many years of teaching in accounting and business programs in that sector. As Tedlock (2000) stated, autoethnography allowed 'a shift from participant observation to the observation of the participant' (cited in Muncey 2005, p 2).

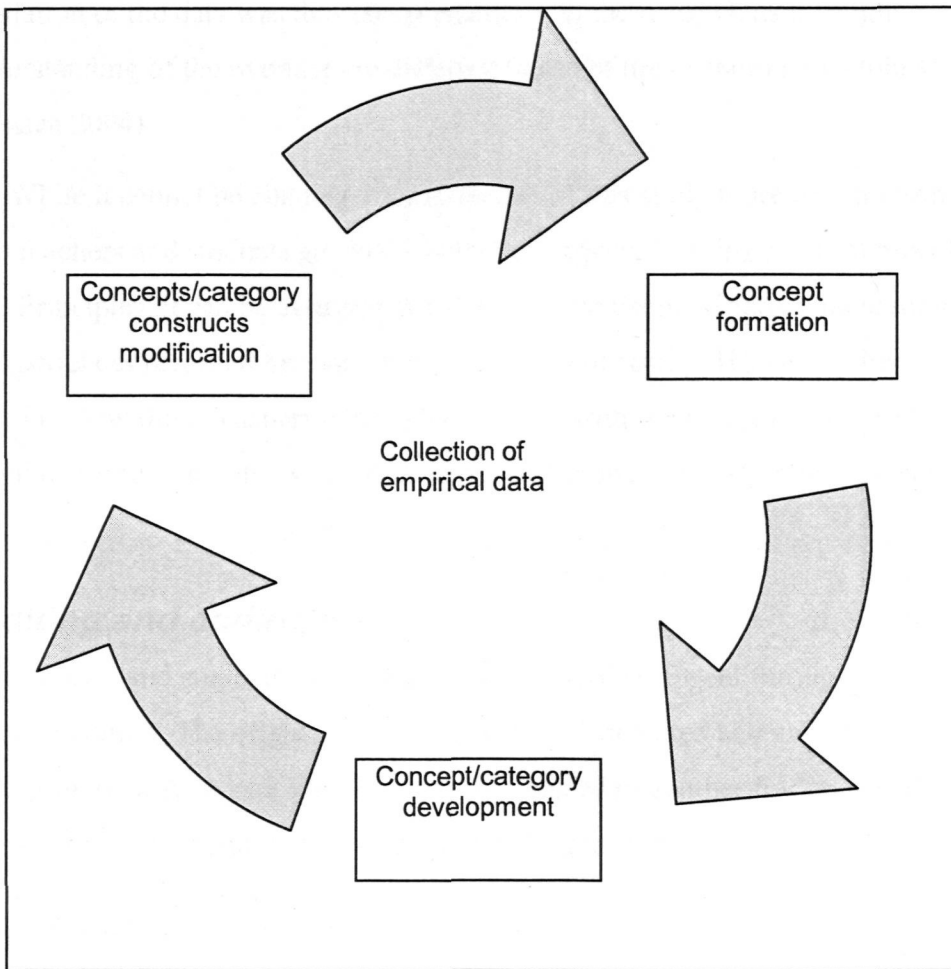


Figure 4 Sorting, examining and analysing to find concepts and categories

The Internal Control Principles long form syllabus (refer to Appendix 4) with its list of learning outcomes is the object of student learning for this research. It has inherent meaning constituted in part by the writer’s intent that must then be communicated through the teacher to the student (Reid 1997). The reflection on curriculum writing contained in Chapter One may help the reader to more clearly understand the events at the beginning of this journey that led to the phenomenographical approach and discourse analysis of the data collected.

3.5 Triangulating the data sets

The teachers’ and students’ interview data and the interactions taken from the classroom field notes were used to support and validate the emerging theory of how students learn. It was this variety of data sources (Morse 1994), and the observations of behaviour of teachers and students, that gave valuable insight into how and why students perceived their experiences as they described. Finding the comprehensive pattern that forms the theory and juxtaposing the different data sources against each other were powerful ways to more fully

illuminate the teachers’ and students’ experiences, adding to the credibility of the findings. Triangulation of the data was thus complementary to the research as it sought to enhance the understanding of the overlapping different facets of the phenomenon (Johnson and Christensen 2004).

While it cannot be claimed that the results of this study represent the ‘truth’ about the way teachers and students go about their teaching and learning in the subject Internal Control Principles, it can be assumed that they may be useful. There is no assumption that these experiences recorded here represent the nature of reality. However, the results indicate just how these teachers and students coped with the teaching and learning of a prescriptive curriculum, one which this author had so meticulously rewritten some years before.

3.6 Editing and coding the data

As the teachers’ and students’ interviews were transcribed I went through a process of reading and editing. The original transcripts were left unedited and an extract of one is shown in Figure 5. A second file was made and placed in another folder, saved as a rich text file ready for inclusion in the NVivo computing analysis.

Interview with TAFE student of Internal Control Principles
[Female] named ‘S3-FT’
HB: Thank you very much for giving me the opportunity to talk to you today. This is a boundary mike and there is no way that you will be identified in any of the...
S3-FT: I’m not fussed anyway so that’s OK.
HB: I have already interviewed one of the teachers out here.
S3-FT: Yes.
HB: She was marvellous and she gave me heaps of information and what we are really trying to do is look at the interactions between the teachers and the students.
S3-FT: OK.
HB: About how students learn.
S3-FT: Oh, that’s OK.
HB: Because that is the only way we can actually write material that is going to be better for them.
S3-FT: Helpful, yeah.
HB: I am particularly looking at your umm feelings about Internal Control.
S3-FT: Yes, OK.
HB: So the first thing I want to ask you was, what did you really expect internal control was going to be like?
S3-FT: Oh, well, umm when I came first to [teacher’s name] to see her I thought it was going to be a computer course for some other reason because no one had given me a description of the course before and then, umm when I came on the registration day, [the teacher] told me basically what it was going to be about and I was thinking OK, sure, I didn’t know how I was going to tackle the subjectyeah.

Figure 5 An extract from a student’s original transcript

The question numbers were placed in the text as headings so that NVivo could carry out section coding for the responses to each question. In this file I was able to edit out all irrelevant dialogue such as ‘umms’, ‘yeahs’ and ‘ahs’ and any personal experiences I may have shared with the participant that were unrelated to the analysis. By doing this, the flow of the story became smoother and, as the example in Figure 6 displays, this enabled concentration on the themes and concepts that began to emerge from the data. I was often able to discuss these with my supervisor and comments and questions that were generated provided further avenues for me to reflect upon and explore when visiting the classroom or carrying out further interviews. At the same time I started to picture how these issues could be viewed, making tentative linkages between different concepts.

Edited interview with TAFE student of Internal Control Principles
[Female] named ‘S3-FT’
Question 1
HB: Thank you very much for giving me the opportunity to talk to you today. What we are really trying to do is look at the interactions between the teachers and the students. About how students learn. So the first thing I want to ask you, what did you really expect internal control was going to be like?
S3-FT: Well, when I came first to [teacher’s name] to see her I thought it was going to be a computer course for some other reason because no one had given me a description of the course before and then, when I came on the registration day, [the teacher] told me basically what it was going to be about and I was thinking OK, sure, I didn’t know how I was going to tackle the subject.

Figure 6 The edited extract from the transcript in Figure 5.

Once a text file was ready for analysis I was able to read it through and start the process of coding line by line, all the time attempting to identify what I was reading. At times I would have to delete a code and go back through the text and re-code. It was like being on a continually moving roundabout, searching for concepts and categories that might close the gaps and help form the unbroken circle of theory.

As suggested in the literature (Glaser 1978; Marton 1981) I also occasionally used the participants’ own words to describe some events. Gradually I became adept at identifying just one word to describe a sentence or small passage. As shown in Figure 7, names were then given to these codes.

Data from one student transcript	Concepts
I try to <u>ask questions</u> , but sometimes it can be difficult because I am	Asking questions
in a class with <u>older more boisterous</u> people and I am	Peer pressure
<u>less inclined to ask questions</u> because they do take the stage a bit	Feelings of inadequacy
and they have got lots of <u>past experiences</u> , so obviously the	Past experiences
conversation they are having with <u>the teacher is on a different level</u>	Getting on the same level
and I sometimes <u>don’t understand</u> what they are on about.	Struggling to learn

Figure 7 Example of line-by-line coding

Even though the computer analysis saved much paper shuffling it nevertheless demanded a concentrated approach. Once a cluster of concepts was established it was given a name. Figures 8 and 9 explain the transition from concept to category. Once the coding was carried out and the transcripts read and re-read, the data could be examined in new ways and, with constant questions I could then begin to develop the relationships between the different concepts.

Data from several students' transcripts	Concepts	Category-Dimension
If you ask me sometimes they talk about stuff that is totally irrelevant. But they are always talking on this different level.	Technical jargon (not understood) Another level	'Tuning to the same wavelength'
Being able to relate to the teacher helps a lot. Just make sure I was following along.	Getting the message Understanding/getting the message	All the students wanted to get the message across and wanted to be on the same level as the teacher and their fellow students.
Getting on with the teacher is the most important. The teacher puts life on these bones. He talks to us on our level.	Getting the message/being in tune with the teacher Interesting On the same level	

Figure 8 Clustering the concepts and coding into categories (students' data)

The thinking process consumed every waking minute at times, but especially helpful were quiet periods of reflection while gardening, providing time to re-think what had been said, to hear in my mind the voices of the teachers and students and ponder what meanings emanated from them.

Data from several teachers' transcripts	Concepts	Category-Dimension
Be able to relate to the students quickly. Someone who is able to relate to the class. And making them want to understand. You have got the students' interest and attention.	Being on the same level Relating to students Getting the message across On the same wavelength	'Tuning to the same wavelength'
Someone who is probably tuned into the way in which people learn. Understand who needs more support. To keep them on track.	Tuned in to the students Empathy/understanding On the same wavelength	The teachers wanted to get the message across, be on the same level, tuned in to the students.

Figure 9 Clustering the concepts and coding into categories (teachers' data).

Searching for outcomes from signals and approaches

Once the task of matching concepts and categories was undertaken it was necessary to then search for the cause and the outcome. The focus was on a search for holistic meaning, as well as for commonalities and differences in meaning. It was a process of revisiting the ‘box’ of empirical data, looking at it in new ways and, as Corbin (personal communication, 3 May 2003) had emphasised so clearly, ensuring that analysis was carried out in between observations so that benefit was derived from the fieldwork. Once again I went through the data and used discretion record keeping. As well, I carefully examined the concepts and categories. This led to the causes and outcomes being highlighted. In this way relationships were established between the different concepts and gradually the clusters were squeezed tighter towards a complete circle. Thinking through the process and forcing myself to diagrammatically present the struggle to analyse, as shown earlier in Figure 4, actually led to a greater understanding of how the pieces of the puzzle fitted together. The more the transcripts were read the more interesting the concepts and categories that emerged. Figure 10 explains how this process evolved further.

Concepts of learning activities	Approach	Outcome
I didn't know what we were going to learn.	Yes, these stories help to make it more believable.	When something crops up [in real life] about internal control I think I know about this.
Not knowing I thought internal control was some sort of procedure.	Hearing stories I need real life examples.	<i>Understanding</i> It relates it to what we are learning. <i>Adding deep meaning to theory</i>
Not understanding I try to ask questions, but sometimes it can be difficult.	Listening to experiences He doesn't really ask anybody else any questions.	Well it sort of is a feeling of satisfaction. You feel a sense of enjoyment that you understand.
Wanting to know But sometimes if there are priorities then I have to set my priorities because I want to do well in those [other rating] subjects.	Feedback is important Unlike the category A [subjects] we just do not have the pressure [on the internal control subject].	<i>Satisfied, enjoying learning</i> Yes, that [category A] is what mattered at the end, whereas internal control it didn't matter how you did because it didn't go towards your end grade.
Wanting to prove competence	Less emphasis on studying	<i>Less motivation, less understanding of internal control</i>
I thought oh my god, how does it work? I am a very good student I should know this thing, but I forgot everything.	[Now] we know why these things happen in the workplace.	What internal control did was to pick up all the subjects I have done and place them in a basket.
Struggling to learn	Knowledge change	<i>Knowledge review, deeper understanding</i>

Figure 10 Axial coding (derived from Strauss and Corbin 1990)

The axial coding is a process of slowly building substantive theory about phenomena by relating codes and categories derived from the empirical data. It is formed through a combination of inductive and deductive thinking and is widely used in grounded theory. In phenomenography, unlike grounded theory, the outcomes are of particular importance in identifying the relationships. The notes that are written as the coding is carried out become important ‘flags’ for the researcher in piecing together the theory (Marton 1996). At no time were the voices of the participants taken as representing the truth, rather they indicated the structural differentiation and direction that the theory was taking.

At all times throughout the research I was aware of the need for reflexivity (Phillips and Jorgensen 2002; Johnson and Christensen 2004) to ensure that the research results were as free from bias as possible. Some of the key strategies used have already been discussed, and this involved consciously employing self-awareness and critical self-reflection on any potential personal biases that I may have had that could affect the research or the results. Embracing reflexivity meant that I was constantly ensuring that descriptive validity was used to report accurately what was heard and seen and interpretive validity meant the meanings from the participants were portrayed as sincerely as they had been expressed. Feedback given by many of the participants helped this whole process.

Conclusions

This chapter has described the personal journey and circular nature of the three methods of analysis undertaken to theorise the writing of curriculum, the teachers’ task of teaching and the students’ experiences of learning for the unit Internal Control Principles.

Phenomenography is an empirical research method that is designed to highlight variations in the ‘conceptions’ of students and teachers and these may answer questions about thinking and learning. It is especially useful in describing the varied experiences of the participants in the context of tertiary education. The discursive psychology identified commonalities while validating the categories and themes found from the phenomenographic analysis. The autoethnography enabled me to look at my own intentions in rewriting the curriculum and helped me challenge and overcome any biases.

The theory constructs a picture of the individual’s own reality and the distinctive feature is the relationship between these experiences or perceptions of the individual and the development of theory.

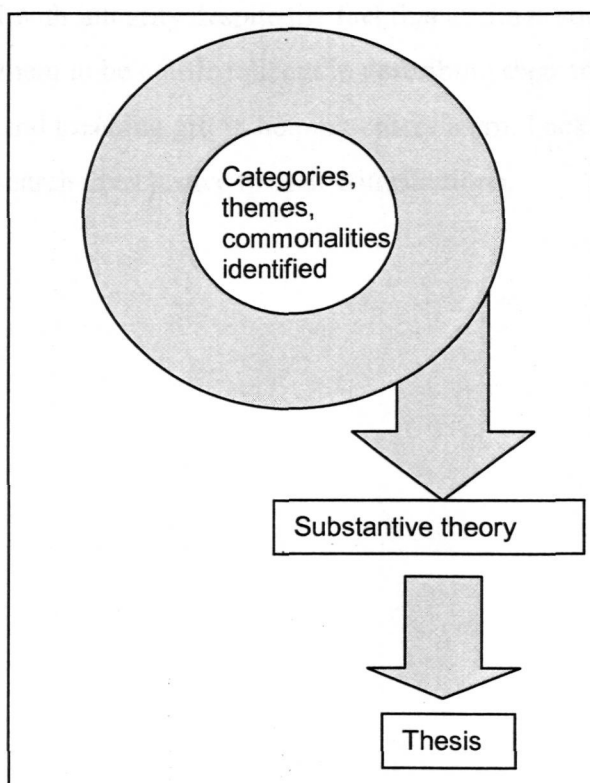


Figure 11 Closing the circle for emerging substantive theory

The explanations generated were derived using a combination of induction and deduction and, in an iterative manner, going over the same data and examining all the ways the object of learning was experienced by students. It was a process of constantly comparing emerging categories and concepts, and hypothesising about hierarchies and interlinking relationships.

The aim was to reach a level of abstraction whereby a central theme or supporting process could be identified that explained and could clarify the complex approaches and interactions teachers and students engaged in as they went about their teaching and learning. It was this closing of the circle portrayed in Figure 11 that led to the emergence of substantive theory. Carrying out these three research methods was extremely challenging and required a great deal of time and effort. However, it was most gratifying and stimulating and the final outcome was the development of substantive theory validated and supported in the teaching and learning experiences of 32 people. The theory describes the powerful, cognitive and mental constructive learning the students must undertake both inside and outside their classroom, with and without their teacher, as they learn how to learn.

Thus the pathway begins here. The teachers and students in this study shared their stories generously and with integrity despite the fact that at times some parts of the conversations caused them to be a little reticent in describing their true feelings. Their voices are a powerful and touching gift in helping others learn. I acknowledge and thank them and hope this research does justice to their contributions.