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Student Experiences of Learning in a Systems Thinking Course

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PLAGIARISM DECLARATION

I know the meaning of plagiarism and declare that all the work in the document, save for that which is properly acknowledged, is my own.

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ABSTRACT

The area of student learning remains a fertile area for ongoing exploration and student experiences of learning continue to hold interest for those involved in pedagogical practice, particularly in the field of systems thinking.

Systems thinking, over the past few decades, has emerged as a trans-disciplinary practice. Management, in particular, cognisant of a rapidly changing and increasingly complex world, has recognised the need for transformation of existing management practice through systems thinking. This study investigated students' experiences as conceptions of learning systems thinking in a postgraduate management course and considered implications for teaching and learning.

Cognitive and epistemological developmental models of Perry (1970), King and Kitchener (1981), Baxter-Magolda (1992), Kitchener (1983) and Salner (1986) formed the theoretical framework for the study. The research inquiry framework was set within a qualitative, constructivist paradigm. Principles of grounded theory and phenomenography were drawn on in the analysis of the data. Data were collected from interviews and questionnaires of five students who had completed the course.

The study yielded the following student conceptions of learning systems thinking, where they saw learning as:

- A product – where knowledge is content that is acquired;
- A process – where "activities" like reading, questioning, practical application become the vehicle towards the product;
- A social activity – where meaning is made through engagement with others, which can contribute to a richer understanding;
- Meta-cognition – where self-monitoring of cognitive processes occurs.

Qualitative differences were found in cognitive and epistemological levels of students. This ranged from first-stage dualism to third-stage contextual relativism.

It was also found that students had conceptions of the learning context, which included:

- Seeing the lecturer as an authority figure who holds the key to knowledge
- Seeing the lecturer as a facilitator who assists them in their journey towards greater conceptual understanding.

These conceptions influenced student responses in their attitudes and behaviours.

This study showed that explicit development of cognition and epistemological assumptions of students is necessary in learning systems thinking. It also showed the vital role that teachers play in the learning context.

CHAPTER 1
INTRODUCTION

1.1 Focus of the Study

The rapidly changing nature and increasing complexity of the world force human social systems to consider different ways of engaging with it. This holds true for all disciplines, but I would argue that it is especially so for educational practice. The changing nature of educational systems, students and the praxis of teaching and learning provide many challenges for higher education in South Africa particularly, as it seeks to prepare students to take a place in this dynamic world.

It is the teaching and learning situation that concerns me. As a graduate student teacher in the mid-eighties, I recall that the focus of my university experience was on how to teach and how to become an effective teacher. At no stage did I engage in any thinking about how my students learnt or how I was learning myself. It was only as a postgraduate adult student many years later that my perspective of the teaching and learning situation did an about-turn when I enrolled in a management course on systems engineering practice. Learning became the focus rather than teaching.

I have observed changes within the South African education system, which have resulted in a more learner-centred curriculum, theoretically underpinned by constructivism. Constructivism says that knowledge and understanding of the world are constructed by people through their interaction with the world. "All knowledge," says Crotty (1998, p.42) "and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and the world, and developed and transmitted within an essentially social context." The constructivist view of learning, therefore, is that students are active participants in the learning process.

As a teacher, my constant challenge is to provide a learning environment that allows for my students to be active participants. This role, coupled with my experience as a student on the course, led to greater introspection about my own learning and prompted greater interest in my students' learning. This, in turn, led to this research study, which aims to explore students' learning experiences. The research question underlying this dissertation is, "How do students experience learning *systems thinking* in a postgraduate management programme?"

Identification of the ways in which students experience the learning in systems thinking is intended not only to gain understanding of these ways, but also to consider the implications for teaching and learning in general and provide possible recommendations for teachers and designers of systems thinking courses.

1.2 Structure of the thesis

This chapter has provided a context for the study.

Chapter two provides a review of the literature relevant to the topic. I focus on the relationship between cognition and learning systems thinking. Various epistemological and cognitive developmental models are considered in relation to learning, in particular the work of Perry (1970), King and Kitchener (1981), Baxter-Magolda (1992), Kitchener (1983) and Salner (1986).

Chapter three provides an inquiry framework for the research study. I consider epistemogical and theoretical perspective assumptions that inform the study and clarify methodology and methods, bearing in mind that there is an internal logic amongst these components of the framework and that each is linked to the other via the overarching epistemology held by the researcher.

Chapter four presents the findings in relation to the research question: "How do students experience learning *systems thinking* in a postgraduate management programme?" The various ways in which students conceive

of learning are presented. A discussion of the findings then follows and examines epistemic dilemmas for students and the resultant cognitive shifts or non-shifts.

Chapter five concludes with implications for teaching and learning.

CHAPTER 2
A CONTEXT FOR THE THESIS: LITERATURE REVIEW

2.1 Introduction

Cognitive and epistemological development remains an area of research for teachers who continually strive for improvement in their teaching and learning situations. Drawing on Salner (1986), I would argue that this is particularly so within the systems education movement where the learning of systems thinking has been directly linked to cognitive and epistemological development.

This chapter considers the relevant aspects in the body of literature that deals with developmental cognition and epistemology in relation to student learning. The first section deals with epistemological developmental models that relate to the aim of this study. I have chosen the works of Perry (1970), King and Kitchener (1981) and Baxter-Magolda (1992) because they provide insight for teachers to understand how students travel through different ways of seeing knowledge - from certainty through uncertainty to relativistic or contextual thinking. Kitchener's model of cognitive processing (1983) shows how individuals process information. This understanding can help teachers not only make sense of how their students move through their stages of cognitive development, but also help them to design learning activities in ways that facilitate the learning journey.

Learning in general is a topic that has been researched by psychologists, educationists and many others. There are many views of what learning is, but for the purpose of this study I am particularly interested in the view of learning held by Marton et al. (1985), who see learning as conceptual change. Students view the world through a particular epistemological lens and it is this lens that can change as conceptions change.

The second section of this chapter looks at what systems thinking is and what competencies are necessary for students to acquire in order to engage in systems thinking practice. The work of Salner (1986) is considered as a basis for

this study and is examined accordingly. The reason for this choice is that she argues that general systems theory cannot be fully understood and applied by students unless they have reached a particular cognitive developmental level and have integrated particular epistemological assumptions into their worldview. In evaluating student learning among her students at the Saybrook Institute (San Francisco), she found that some students, despite being mature, capable and intellectually able, were unable to apply systems concepts. She reached the conclusion that the more competent student systems practitioners were those who demonstrated thinking as in Perry's (1970) third-stage students. Perry's model is presented below.

2.2 Models of Epistemological Development

2.2.1 Forms of Intellectual and Ethical Development

Perry's (1970) longitudinal study of male college students' epistemological development made a major impact on research at the time and remains a yardstick for subsequent researchers. His scheme of intellectual and ethical development describes nine positions of knowing that can be further understood as three main developmental stages, each progressing to a more sophisticated epistemological level. These are Dualism, Multiplicity and Contextual Relativism.

Dualism is a stage where authority is seen as external and separate from the individual. There are only absolutes and no uncertainty. There are right responses and there are wrong responses and it is the student's job to find the right response.

The stage of multiplicity accepts that there can be more than one right response. Uncertainty exists and there are no longer absolutes. "Everyone is entitled to his own opinion" (Perry, 1970, p30). The students' own thoughts and ideas take on greater importance. They accept that they know some responses and not others.

In the third stage, contextual relativism, students are able to make even greater connections between themselves and the world. They are able to make decisions and reach conclusions based on evidence and context. In this stage of contextual

relativism, possible answers exist based on reasoning. The student evaluates the truth value of responses within a context.

Perry's study shows that that very few college students reached this stage of their cognitive development. Having started at college at mainly the first level of development, they progressed to the middle stages, with many not being able to shift to the final stage.

2.2.2 Reflective Judgement Model

It is necessary to define – and distinguish between – "well-structured" problems and "ill-structured" problems (Churchman, 1971 cited in Kitchener, 1983) as both the Reflective Judgement Model (King and Kitchener, 1981) and King's Epistemological learning model (1983), which is described later, take into consideration how students deal with these. Well-structured problems are also referred to as puzzles (Churchman, 1971 cited in Kitchener, 1983). These are problems for which there are algorithms that can lead to known answers. They are generally characterised by having only a single, final solution. They are not as challenging as ill-structured problems, for which alternatives may be sought and data evaluated, synthesised and integrated, which can lead to a variety of different answers. King's and Kitchener's (1981) analysis of people's responses to ill-structured problems led to the development of the Reflective Judgement model (King and Kitchener, 1981).

The Reflective Judgement model depicts the different developmental stages of reasoning in adolescents and adults. Like Perry's model, it shows a progression from a limited stance of evaluating knowledge claims - by showing the shifts that happen in assumptions about knowledge – to a higher level where one is able to justify beliefs or decisions.

There are seven stages in this model. The first stage is where knowledge is absolute and predetermined. Stage two acknowledges that different views of an issue exist, but maintains that alternative views are wrong. Students at these first two stages show limited ability in dealing with ill-structured problems. These stages show similarities to Perry's first stage, where the world is viewed

dualistically (as in Perry's interpretation of dualism) and answers and truth lie with the relevant authorities.

At the third stage, all problems are ultimately reducible to well-structured ones. At stage four, knowledge is understood as an abstraction. These next two stages show that students recognise that all knowledge is incomplete and they are able to consider more abstract ways to solve problems. These stages reflect Perry's second stage, where multiple opinions are seen to be equally valid.

Knowledge is contextualised at stage five and stage six demonstrates the ability to compare and contrast relationships across contexts. As in Perry's third stage, the importance of context is recognised in reaching decisions and solving problems.

At stage seven, knowledge can be constructed through critical inquiry or through synthesis of existing views and evidence. According to King and Kitchener (1981), knowledge is not given, but must be constructed. As in Perry's model, this final stage is similar to the position of commitment, where students take responsibility for synthesising perspectives and constructing their own decisions (West, 2004).

2.2.3 Epistemological Reflection Model

Building on the work of Perry and others, Baxter-Magolda's (1992) longitudinal study of cognitive development in students focused on gender-related patterns. In contrast to Perry, who had males only in his study, Baxter-Magolda included women. Her resultant Epistemological Reflection Model describes four stages of reasoning by students, with gender-related differences apparent in the first three stages. For the purposes of this study, only developmental stages are described below.

The four stages are the following: Absolute Knowing, Transitional Knowing, Independent Knowing and Contextual Knowing, with each having a transitional phase from one stage to the next.

The first stage - absolute knowing – shows a distinct similarity to Perry's first stage as well as King and Kitchener's first two stages. Authority lies with the teacher. Knowledge is certain and one receives it and masters it. The second stage – transitional knowing – is characterised by students accepting that some knowledge can be uncertain. There is a tendency towards understanding knowledge rather than just acquiring information.

At the third stage of the model – independent knowing – students exhibit a greater acceptance of uncertain knowing. They recognise that they can hold knowledge independently of other sources and that others too, have their own opinions.

Students at the final stage – contextual knowing – demonstrate the ability to evaluate knowledge within a context. Similar to Perry's contextual relativism stage, this stage sees students integrating and applying knowledge in decision-making, where the contextual framework is important.

From the above descriptions of their models, parallels may be seen amongst Perry's (1970), King and Kitchener's (1981), and Baxter-Magolda's (1992) models of epistemological development after conducting long-term studies with college students. In all three, students undertake a *journey* in their thinking from a state of simple absolute certainty to a sophisticated, complex state of evaluative judgements.

2.2.4 Cognitive Processing Model

Salner (1986) attributes her interest in Kitchener's (1983) model of cognitive processing to its third level of epistemic cognition, the understanding of which may contribute towards developing epistemic thinking in – and epistemic learning activities for – students.

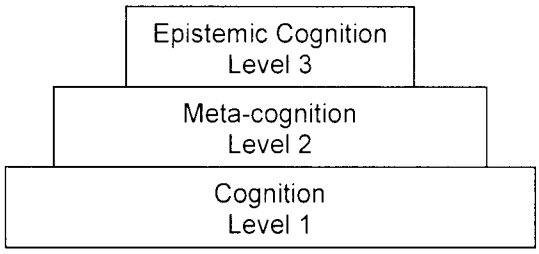

Figure 1: Kitchener's Model of Cognitive Processing (1983)

In Figure 1, the first tier, cognition, includes tasks such as computing, reading and memorising, which help to build knowledge of the world. The second tier, meta-cognition, involves processes of monitoring these level one tasks, bringing into play one's knowledge of these tasks. Epistemic cognition, the third tier of this model, is the most sophisticated. It is at this level that the individual uses processes to "monitor the epistemic nature of problems and the truth value of alternative solutions" (Salner, 1986, p.225). Salner equates Kitchener's level of epistemic cognition with the ability to think epistemogically. "At this level, we not only think about our thinking [meta-cognition or level 2]; we think about, and evaluate, the foundations of thought itself" (1986, p.225).

Mezirow (1991) refers to a number of theories which he considers appropriate for explaining how adults learn. While these will not be discussed here, Mezirow's work considers the important transformative aspects of learning that are relevant when considering movement from one stage to another in the cognitive models discussed earlier. Part of the value of this work in respect of this study is the need to acknowledge the individual student's frame of reference.

2.3 What is Learning?

2.3.1 Learning and Change

I have always held the view that learning involves change of some kind, that being willing to learn is underpinned by a willingness to change. Often I have used - and have heard others use - the phrase, "But haven't they learnt from...?" Such statements infer that learning leads to behavioural

change; and the question that springs to mind is whether this is indeed so, or whether change can happen on a cognitive level without necessarily leading to a change in behaviour. Has learning taken place when one's interpretation or conceptualisation of the world has changed in any way? On the other hand, if there is behavioural change, does this necessarily mean that learning has occurred, or has the change simply been a response to the external environment?

According to Marton et al. (1985, p.235), learning occurs when there is a qualitative change in conceptualisation of a phenomenon; "it is a distinct change in how that phenomenon is perceived, how it is understood, and what meaning it carries for the learner." From this, I would then assume that for students, learning would have occurred if such shifts in conceptions are discernible.

2.3.2 Student Conceptions of Learning

Säljö, a student of Marton and part of his team of researchers, undertook his own research study and reached the following conclusions about college students' understanding of learning as summed up by Smith (1999). Learning is:

1. a qualitative increase in knowledge where learning is acquiring information;
2. memorising, storing information that can be retrieved;
3. acquiring facts, skills, methods that can be retained and applied as necessary;
4. making sense or abstracting meaning; involves seeing relationships among elements of subject matter and being able to make real-world connections;
5. interpreting and understanding reality in a different way; comprehension.

Smith draws our attention to the difference between levels one to three and levels four to five. In the first three, one can note that learning is external to the learner. In the last two, learning is seen as internal, engaging in trying to understand the world.

2.3.3 Deep and Surface Approaches to Learning

In Marton and Säljö's (2005) research study, which included giving students a text to read before answering questions on it, they found that some students focused on the words of the text itself and tried to memorise it. Others tried to understand the meaning of the text as a whole, taking into consideration the author's intention. Interestingly, the students who had simply memorised the text forgot most of it, whereas students who had taken the latter approach, remembered more of the text. These two ways of tackling a learning task are described as a surface approach (the former) and a deep approach (the latter). I would argue then, that students who hold the first three conceptions of learning as indicated above, are those who adopt a surface approach, whereas those who hold the last two conceptions, are those who adopt a deep approach to learning.

2.3.4 The Learning Context

The learning context is complex and may be broadly located within a socio-economic, political and cultural context. For the purpose of this study, the contextual framework consists of "institution, department and courses" (Ramsden, 2005, p.198).

Ramsden (2005) provides a framework of elements that contribute towards understanding how students perceive the effects of a university-learning context. These are: their interests and experience, assessment and teaching and course design. He argues that each of these elements plays a role in directing student approaches to learning. A link is made between student interest and background knowledge. High levels of these can influence a deep approach, and the converse also holds true. In Ramsden's view, assessment methods appear to be vital in influencing learning approaches. Inappropriate methods may lead to students feeling threatened and the response may be a surface approach to an assessment task.

With regard to teaching, Ramsden suggests that it is not the direct effect of teaching that affects learning, but rather the indirect effects of teachers' attitudes and actions that influence learning approaches. A teacher's enthusiasm about – and interest in – her subject and her students, can go a long way towards

influencing a student's learning approach. With regard to course design, greater freedom of choice is advocated for students. According to Ramsden (2005, p.208), "the wide variation in styles of learning preferred by students, together with the logical and empirical links between interest, approach and outcome, suggest that variety in the mix of learning tasks and some choice over subject matter is desirable".

It might do well to mention Vygotsky's theory of social development in the light of the learning context, which asserts that cognitive development is dependent upon social interaction (Wertsch, 1985). According to Wertsch, learning takes place within a cultural context first before it is internalised through a cultural tool, namely language. These two concepts, language and social interaction, are key concepts in Vygotsky's theories.

> "Language arises initially as a means of communication between the child and the people in his environment. Only subsequently, upon conversion to internal speech, does it come to organise the child's thought, that is, become an internal mental function… learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (Vygotsky, 1978, pp.89-90).

2.4 What is Systems Thinking?

2.4.1 Holism

The traditional view of the world is one that sees parts or elements of a whole, rather than the whole itself. This view is reductionist and fragmented and can lead to distorted perceptions. According to Diederik Aerts et al. (1994), our impression of the world is incoherent and formless, simply isolated fragments gathered together. Systems thinking offers a different way of seeing the world. A general systems approach is an attempt to view and understand the world as a whole, rather than just individual parts that make up the whole. Systems thinking acknowledges that the environment is dynamic, highly complex and interrelated. Inherent to a systems approach is the recognition of the interrelationships amongst parts.

2.4.2 Paradigm Shift

Systems thinking demands a paradigm shift - a change from one way of thinking to another. It entails moving from "parts" thinking to "holistic" thinking. According to Capra (1983, p.16), this shift is “a new vision of reality”, a “shift from the mechanistic to the holistic conception of reality”.

Kuhn (1962, p.10) asserts that scientific advancement is a "series of peaceful interludes punctuated by intellectually violent revolutions". It is essentially change agents that bring about these revolutions, in which one conceptual view is substituted for another. According to Kuhn (1962, p.68), "failure of existing rules is the prelude to a search for new ones". Continual change brings with it new questions, new problems, new complexities and anomalies. If the existing paradigm with its shared assumptions is not able to address these, pursuit of a new way of thinking emerges to confront the novelties which, according to Kuhn, are what bring about paradigm changes.

I would assert that the potential systems thinker, in undergoing a paradigm shift, has also demonstrated a willingness to learn and change. There has been some cognitive development in order to see phenomena in a different way. I would further assert that this characteristic is essential for ongoing engagement in systems thinking practice.

2.4.3 Systems Thinking as a Language

Systems thinkers propose that the framework for systems thinking and practice is "a language that offers a way to communicate about dynamic complexities and interdependencies" (Anderson & Johnson, 1997, p.12). In general, Western language syntax is linear, thereby encouraging linear thinking. The reality is that the world in which we live and the problems that we face are not linear. Systems thinking provides a language of relationships, together with its tools that allow one to understand, interpret and interface with the world better. Like any language it contains rules that engender shared meaning.

Day (1999) suggests that spoken words are a reflection of the world one inhabits. The inability to share language implies an inability to share meaning and therefore an inability to share worlds. According to Day, language can create or repair interpretation systems. I would argue that developing a systems approach involves learning its language, a language that is able both to transcend different subject disciplines and yet be spoken by all.

Handy uses the term "reframing". According to Handy (1989), reframing is the ability to look at things, problems, situations or people from a different angle. He proposes that metaphors and analogies are useful tools to reframe. Handy compares reframing to a key that can unlock problems. Day (1999) uses a similar comparison, likening metaphor to a key for problem framing and transformation. Day argues that conceptual systems are unconscious metaphoric structures and that language enables one to access conceptual systems. Whether one uses word metaphors or whether one uses picture metaphors, the very act of reframing may not only test understanding, but can also open doors to new insights. Developing a systems approach therefore includes learning to reframe.

The language of systems thinking includes visual representations - causal loop diagrams, behaviour-over-time graphs, concept maps, flow-charts, models, diagrams and pictures - diagrammatic representations that include right brain usage. Moving from the "text" paradigm to the "pictures" paradigm might facilitate deeper understanding and also produce constructive conversations.

> "In prose, the worst thing one can do with words is to surrender to them. When you think of a concrete object, you think wordlessly, and then if you want to describe the thing you have been visualising, you probably hunt about till you find the exact words that seem to fit it. When you think of something abstract you are more inclined to use words from the start, and unless you make a conscious effort to prevent it, the existing dialect will come rushing in and do the job for you, at the expense of blurring or even changing your

meaning. Probably it is better to put off using words as long as possible and get one's meaning clear as one can get through pictures or sensations" (Orwell, 1946, p.7).

It is imperative for the potential systems thinker to learn this new language, which in itself might present an unending challenge and demand continuous and rigorous practice.

2.4.4 Systems Thinking Approaches

Checkland (1981) asserts that because of the natural science paradigm being unable to address the kind of complex, real-world problems that are being experienced in our current Systems Age, as opposed to the Machine Age, systems thinking provides an alternative paradigm for managers.

Jackson (2000) uses social theory to categorise approaches to systems thinking. This is done with the intention to "provide 'frameworks of ideas' to which existing systems approaches are related" (p.21), so that greater knowledge of relevant social theories can result in improved systems approaches. He focuses on four types of social theory – functionalist, interpretive, emancipatory and postmodern. It is not my intention to focus on these different approaches to systems thinking, but simply to highlight the common and core features of a systems approach. According to Jackson (2000), there are three possible commonalities.

1. Holism is central to all approaches even though adherence to it ranges from holism replacing reductionism to regarding it as complementary to reductionism. As mentioned in Section 2.4.1 of this chapter, holism allows for examination of the interrelationships that exist amongst parts of the whole. In many ways the whole is seen to be greater than the sum of its parts because of the emergent properties that a highly complex system demonstrates.
2. Human knowledge is organised in "cognitive systems", in which elements of knowledge are cohered into wholes. These systems form the core of the scientific method and hypotheses become laws when they are integrated into the scientific body of knowledge. The parallel is drawn between an orderly world and the development of cognitive systems so

that the gap between systems-based theories and the real word narrows. A systems approach can provide the basis of an epistemology in a research inquiry. (Rescher, 1979 cited in Jackson, 2000).

3. Systems approaches lend themselves more easily and to a greater extent to practical implementation as opposed to social theories when intervening in real-world problems. The choice of a systems approach is important as it needs to be relevant to the particular problem at hand. According to Jackson (2000, p.19), systems thinking can "help us engage, in a theoretically informed way, with real-world concerns".

Midgley (2000) puts forward two key concepts of systems thinking – those of "boundary" (p.36) and "the opposition of systems thinking to mechanism and reductionism" (p.38). I have commented on the latter concept in Section 2.4.1 and will focus here only on the former.

Midgley (2000) argues that the concept of "boundary" is pivotal to systems thinking. Once one has acknowledged that complete comprehension of how one views the world is an ideal, rather than a reality, the concept of boundary is essential. Drawing on Churchman, he posits the view that "boundaries are social or personal constructs that define the limits of knowledge that is to be taken as pertinent in an analysis" (p.35).

Boundaries show both inclusions and exclusions. In order to better show the exclusions a second boundary is needed. The boundary is explained as indicating "a distinction between an object and that which it is not" (Midgley, 2000, p.38).

2.5 Epistemic Development, Cognition, Science and Systems Thinking

Salner (1986) draws a parallel between epistemic development and the development of science philosophies. She compares the three phases of scientific beliefs, which she sees as a society's collective attempt to understand the world, with the three stages of Perry's (1970) epistemological development model, which she sees as the individual's attempt to understand the world.

Perry's model, therefore, might be seen as a microcosmic development taking place within the macrocosm of scientific philosophical development.
I shall briefly describe Salner's comparison in which she cites Manicas and Secord (1993).

1. Traditional empirical science – in which the human observer is separate from what is observed in the real, physical world. Humans impose their theories on an external world where they are either proven or unproven by testing them against the observable data. Salner sees Perry's first-stage student reflecting this type of thinking – the world is external and separate.
2. Kuhnian science – which stems from Thomas Kuhn (1962) – asserts that science is a social activity in which different disciplines have their own rules of practice. Truth criteria become relative to paradigms and are seen separately from truth criteria in science. Salner compares this phase with Perry's second-stage student, for whom multiple answers exist. More than one "truth" is valid.
3. Realist science – is the school of thought that arose in response to Kuhn's unrestrained relativism. The observer is seen to be in a dialectical relationship with the world, which is viewed as "a complex organisation of interacting systems in a continuously merging process of reconfiguration" (Kuhn, p.229). "Truth" becomes dependent upon context. This phase mirrors Perry's third-stage student, where context plays an essential role in determining truth value.

From the above comparison it may be seen that Salner focuses only on Perry's model. However, each of the epistemological development models described in the first section of this review – Perry (1970), King and Kitchener (1981), Baxter-Magolda (1992) and Kitchener (1983) – may be seen to reflect a similar process of development that scientific philosophies have undergone. Table 1 shows these parallels.

Table 1: Comparison of Epistemological Models

Cognitive & Epistemological Development Salner (1986)	**Epistemological Development** Perry (1970)	**Reflective Judgement** King & Kitchener (1981)	**Epistemological Reflection** Baxter-Magolda in Bock (1999)	**Cognitive Processing** Kitchener (1983)	**Science Philosophy Development** Manicas & Secord in Salner (1986)
Stage 1	Dualism	1: Knowledge is absolute and predetermined 2: Different views are acceptable, but alternative views are wrong 3: All problems are ultimately reducible to well-structured ones	1: Absolute Knowing	Cognition	Foundationalism of traditional empirical science
Stage 2	Multiplicity	4: Knowledge understood as an abstraction	2: Transitional Knowing 3: Independent Knowing -	Metacognition	Pluralism of Kuhnian science
Stage 3	Contextual Relativism	5: Knowledge is contextualised 6: Ability to compare and contrast relationships across contexts 7: Construction of knowledge through critical inquiry or synthesis of existing views and evidence	4 Contextual Knowing	Epistemic Cognition	Dialectical realist science

Salner (1986, p.231) asserts that general systems theory has an implied epistemology, even though it is not clear. Based on particular tasks that are pivotal to systems inquiry, she identifies the following "systems competencies:

- The ability to see parts/wholes in relationship to each other and to work dialectically with the relationship to clarify both similarities and differences. This, in effect, means the ability to balance the processes of both analysis and synthesis.
- The ability to abstract from complexity so that organising structures (visual, mathematical, conceptual) are revealed rather than imposed.
- The ability to balance flexibility and real world change against the conceptual need for stable system boundaries and parameters.
- Command of multiple methods for problem-solving as opposed to employing a limited range of algorithms to the widest variety of situations.
- Awareness that 'the map is not the territory' and the ability to act accordingly in the utilisation of systems models."

The point that Salner (1986, p.231) makes is that systems competence shows the ability to combine "a contextualising sensibility with flexibility in epistemic strategies". This ability may be seen in all the final stages of the models in Table 1, as well as in realist science.

2.6 Conclusion

With the emphasis on managers developing a systems awareness (Checkland, 1981) of the world in order to better manage in it, it makes sense then, that students would engage in epistemic learning in order to develop systems competencies. As indicated in Chapter one, this study seeks to understand students' experiences of learning systems thinking in a post-graduate management programme and what implications that holds for the teaching and learning situation.

CHAPTER 3
INQUIRY FRAMEWORK

3.1. Introduction

This study uses a qualitative, inductive approach, where theory is exploratory and emergent. Both the nature of the research question and the nature of the phenomenon under investigation determine this approach. Morgan and Smircich (2001), like many other theorists, argue that choice of methodologies and methods derive from issues of epistemology and that qualitative research in social science starts with a move away from objectivism. This chapter explains my choice of inquiry framework based on issues of epistemology, theoretical perspective, methodology and methods, as informed by Crotty (1998). It also describes the specific procedure used in the study.

Crotty (1998, p.6) claims that a research structure allows for "soundness of research" and coherence within the process, so that understanding of the interrelationships among the research elements is demonstrated. Crotty's (1998) model of an inquiry framework, is illustrated below in Figure 2.

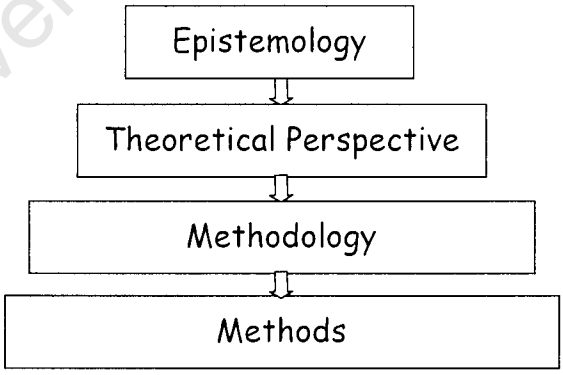

Figure 2: Crotty's Diagram of an Inquiry Framework (1998)

According to Crotty (1998), there are various permutations of the four elements that constitute this inquiry framework. What one chooses in terms of methodologies and methods depends on the purpose of the research. For the purpose of this study, which seeks to understand the views of people who have experienced a phenomenon, I have applied the following framework shown in Figure 3.

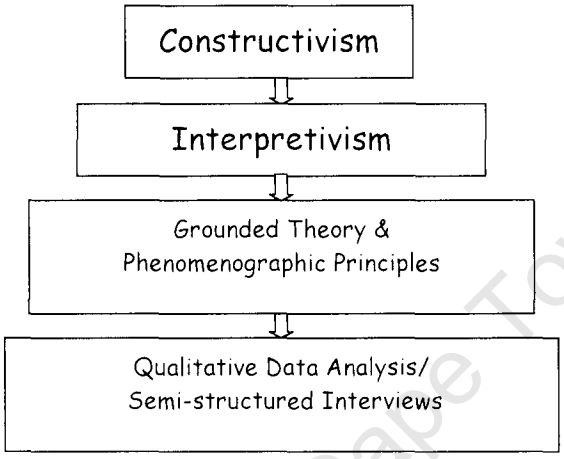

Figure 3: Inquiry Framework for Thesis

3.2 Epistemology – Constructivism

"Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate" (Maynard, 1994, p.10).

The epistemology that concerns me is constructivism, which informs this study. Put simply, constructivism may be seen as the construction of knowledge as human beings interact with their world in order to make meaning of it. Objects in the natural world remain objects until they have meaning conferred upon them by humans. According to Kegan and his theory of meaning-making (Kegan, 1982, p.11), "the activity of being a person is the activity of meaning-making. There is no feeling, no experience, no thought, no perception, independent of a meaning-making context in which it becomes a feeling, an experience, a thought, a perception, because we are the meaning-making context." Knowledge and meaning then are seen as the result of our engagement and interdependence with the external world.

3.3 Theoretical Perspective – Interpretivism

A theoretical perspective follows on from a particular philosophy, which is embedded in its own epistemology, ontology and axiology. A concept is the relationship between the world and an idea or conception. Concepts enable us to impose some sort of meaning on the world. If our perceptions of the world are determined by the concepts available to us (onto-epistemological), it follows that people with different sets of concepts will tend to view the same objective reality differently (Cohen, 2000).

The theoretical perspective becomes the lens through which we view the world and this determines the research methodology to be applied. The converse also holds true, where this presupposes that any research methodology has embedded within it not only theoretical perspectives but also epistemological assumptions. Before I elaborate on my chosen theoretical perspective, interpretivism, also referred to as anti-positivism (Crotty 1998), it might be useful to consider briefly its antithesis, positivism, which, for a long time, dominated the research world. The following summarises Cohen's (2007) perspective of posivitism:

All genuine knowledge is based on sense experience and can only advance by means of observation and experiment, thus abandoning metaphysical and speculative attempts to gain knowledge by reason alone. The natural sciences are accepted as the paradigm of human knowledge. Positivist analysis must be expressed in laws or law-like generalisations of the same kind that have been established in relation to natural phenomena. The social scientist acts as the investigator that analyses or interprets the subject matter. Positivism is less successful in its application to the study of human behaviour – where there is immense complexity of human nature and intangible quality of social phenomena that contrast strikingly with the order and regularity of the natural world.

We see that the epistemological assumptions inherent in positivism favours seeing the real world as external from the self. Objects exist as meaningful entities separately from human beings. Knowledge and meaning are independent of the knower.

According to Cohen et al. (2007), opponents of positivism have a variety of different schools of thought, but all reject the common belief that general, universal laws, which are characterised by underlying regularities, govern human behaviour. Interpretivists see human social systems as dynamic and flexible, in which meaning is actively constructed by human beings. Multiple interpretations and perspectives are the norm and phenomena need to be viewed from the perspective of the participants rather than the researcher.

> "The central endeavour in the context of the interpretive paradigm is to understand the subjective world of human experience... [Interpretive researchers] begin with individuals and set out to understand their interpretations of the world around them. Theory is emergent and must arise from particular situations... Theory should not precede research but follow it... The data thus yielded will include the meanings and purposes of those people who are their source....theory becomes sets of meaning which yield insight and understanding of people's behaviour. These theories are likely to be as diverse as the sets of human meanings and understandings they are to explain." (Cohen, 2007, pp.21 - 22)

The above quotation shows clearly that researchers who adopt interpretivism engage in a research process that is inductive, based in social reality and where the researcher is subjectively linked to participants in the study.

It was mentioned earlier that knowledge and meaning are seen as the result of human engagement and interdependence with the external world. This is demonstrated further in an interpretivist domain known as symbolic interactionism (Crotty 1998), which involves interaction with the world through symbols and subjective meanings. The human being is in a constant state of seeking to make meaning within a social context. The essence of symbolic interactionism is encapsulated in the following assumptions by Blumer (1969, p.2 cited in Crotty, 1998):

- "human beings act toward things on the basis of the meaning that these things have for them;
- the meaning of such things is derived from, and arises out of the social interaction that one has with one's fellows;
- these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters".

From the above we see that it is via the interaction with others and the meanings attributed to this interaction that social life is in a constant state of flux – formed and reformed. Meaning is dynamic and this happens through continual interpretation by the individual. We see then, that it is this meaning and its interpretation that links symbolic interactionism to the interpretive research paradigm.

3.4 Methodology

3.4.1 Grounded Theory

Strauss and Corbin (1990, p.23) explain grounded theory as follows:

> "A grounded theory is one that is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed and provisionally verified though systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis and theory stand in reciprocal relationship with each other. One does not begin with a theory, then prove it. Rather, one begins with an area of study and what is relevant to that area is allowed to emerge."

The systematic steps that characterise grounded theory include coding, constant comparison, identifying core variables and saturation of data. It is through this process that the theory emerges, grounded in the data and accounting for all of it. There are three types of coding – open, where the data is taken apart, examined and placed into various categories and sub-categories; axial, where the researcher looks for links between – and patterns in the data; and selective,

where a core variable is identified and relationships between this and other variables are clarified.

Constant comparison occurs throughout the coding process. This involves taking new data and constantly comparing it with data that has already been coded and categorised. It is through constant comparison that a core variable is identified, which forms the basis of the emerging theory. Saturation is reached when new data no longer brings new insights, codes or categories, but fits into the existing ones (Strauss & Corbin, 1990).

According to Strauss and Corbin (1990), data collection and analysis are interrelated re-iterative processes. Concepts are the basic units of analysis used in the coding process. One needs to account for patterns and variations and hypotheses about relationships should be verified as much as possible.

As in phenomenography, described in the next section, the researcher's role is a subjective one. Hence Strauss and Corbin (1990, p.18) encourage researchers "to step back and critically analyse situations, to recognise and avoid bias, to obtain valid and reliable data, and to think abstractly".

3.4.2 Phenomenographic Principles

Phenomenography has been described as the qualitatively different ways in which human beings experience a particular phenomenon (Akerlind, 2002). It seeks to encapsulate the limited number of different ways of understanding a selected phenomenon, categorises these descriptions and shows the logical, internal and hierarchical relations between these understandings.

Characteristic to phenomenography is the awareness of variation in conceptualisations of the phenomenon, and it is this variation that educators may find useful in the teaching and learning situation.

The most common form of data collection is the individual interview, in which participants are questioned about their experience of the phenomenon under study. The interviews are tape recorded and then transcribed verbatim. A fundamental aspect of the data analysis process is that these transcripts together constitute what Martin and Booth (1997, p.133) term a "pool of meaning". Interviewees are therefore not seen as individuals, with individual conceptualisations, and what they have to say as individuals is overridden by the collective "pool" of meaning, which becomes the focus of the analysis.

Analysis procedures are similar to those of grounded theory in that the process is serendipitous, one of "discovery" and categories need to be emergent, rather than being predetermined (Hasselgren & Beach, 1997 cited in Akerlind, 2002). According to Akerlind (2002), it is essential that the researcher be open-minded when analysing the data, able to entertain different thoughts when faced with multiple perspectives.

The process involves examining the collective data for meaning units – both similarities and differences. These are then placed into categories by the researcher, termed "categories of description", which should form some kind of hierarchy. At the same time, there should be the search for logical structural relationships among these categories of meaning, which Martin and Booth (1997, p.125) describe as the "outcome space - complex categories of description comprising distinct groupings of aspects of the phenomenon and the relationships between them." Although described as such, the process is far from linear. Iteration and comparison should constantly be part of the analytical procedure.

In practice, different researchers have used varying ways of approaching and managing the data, but central to these various ways have been viewing the transcripts as a whole (Akerlind, 2002).

Akerlind (2002) describes some of the various foci by different phenomenographic researchers:

- Focusing on the referential or structural components of the categories of description;
- Focusing on the "how" or "what" aspects of the phenomenon;
- Focusing on similarities and differences within and between transcripts associated with particular categories;
- Attempting to resolve or understand mismatches or inconsistencies between the interpretations of different researchers involved in the project;
- Focusing on borderline transcripts and those transcripts in which there are aspects that do not fit the proposed categories of description;
- Looking for the implications for all of the categories of description of a change in any one category.

Perhaps it should be noted that the role of the researcher is not an objective one. The very nature of the study determines that the researcher, as interpreter, has a relationship with the data. But because the method is empirical in approach, the data becomes the all-important focus, and it remains incumbent upon the researcher to distance him/herself from any preconceived notions about the phenomenon under examination. According to Akerlind (2002), the final outcome space, therefore, is one of several possibilities, which needs to be argued for because it cannot be empirically proven.

From the above descriptions of the two methodological approaches, grounded theory and phenomenography, it may be seen that they are very different in approach, but also have certain common aspects. The major similarities between the two that have informed this study are the following:

- Both encompass epistemological assumptions of constructivism and theoretical perspective assumptions of interpretivism.
- Both are inductive processes, where theory is emergent.

- Neither is a linear process. Iteration and comparison are characteristics of both methodologies.
- The role of the researcher is a subjective one, but the researcher has to guard against imposing preconceived ideas onto the data.

Differences between the two methodologies will be elaborated upon in the next section where the methods used in this dissertation are discussed.

3.5 Methods

3.5.1 Interviews

Interviews were the primary form of data collected from five adult students who enrolled for a post-graduate management development programme offered at a South African university in 2003. The interviews were semi-structured. Of the original eleven students who enrolled for the course, only seven students (which included me) completed all the coursework (over a period of 18 months). My intention was to interview all six students, but one student moved away and repeated attempts to contact the person were unsuccessful. The interview sample therefore comprised of interviews with five students on which this study is based. I initially did a pilot (described below) with one student. Thereafter a round of interviews followed with all the students. I did follow-up interviews telephonically with three students both to verify and gain added data. I also provided students with a set of e-mailed questions to which they responded in writing.

No sampling was used as I chose to interview all the students who had completed the coursework. In line with phenomenographic principles, all these students had a shared experience of the same phenomenon (Akerlind, 2000).

The purpose of the interview was to gather data that reflected the students' experience of the phenomenon under investigation. The first interview served as a pilot, as well as practice, with my supervisor in the role of observer. Discussion with my supervisor after the interview regarding the set of questions as well as the interview process as it unfolded, resulted in a refinement of the question set and the addition of more probing questions. I also became more aware of

needing to suspend judgement during the interviews and became much more careful about not placing value judgements on interviewees' responses during the interview. The restructured interview was repeated with the same interviewee, this time without the presence of my supervisor. (Appendix A shows the interview schedule.)

My intention was to make interviewees feel as comfortable as possible during the interviews. "It is crucial to keep uppermost in one's mind the fact that the interview is a social, interpersonal encounter, not merely a data collection exercise. The interviewer will need to establish an appropriate atmosphere such that the participant can feel secure to talk freely." (Cohen et al., 2007, p.361) However, it was evident that probing some of the questions caused discomfort for some students.

It has been acknowledged that interviews can be discomfiting experiences for participants, not least because they are expected to reflect, and at times, quite deeply, on issues that they might not have thought about prior to the interview (Marton & Booth, 1997). The student below clearly prevaricates when asked pertinent questions about the lecturers. In this instance I offered him alternatives:

Interviewer: And maybe you want to mention some of those?

John: If you want the names, I can tell you now I've got a memory problem.

Interviewer: Well, maybe you can refer to the course.

In other instances, I might have expressed an empathy with the students with reference to their not having the opportunity to reflect on such a question before, I might have phrased it in a different way or leave the question for a while and return to it later in the interview. Even though some students might have experienced some discomfort at different times during the interviews, many expressed having experienced the interview positively and enjoying the opportunity to reflect in such a manner on their learning experiences.

3.5.2 Qualitative Data Analysis

There are many different ways of doing qualitative data analysis, but essentially the aim for the researcher is to make sense of the data from the participants' perspectives. According to Cohen et al. (2007, p.461), "there is no single or correct way to analyse and present qualitative data; how one does it should abide by the issue of fitness for purpose". The qualitative data analysis, as I have employed it in this study, may best be described as an eclectic approach in that it has been influenced by data analysis aspects of both grounded theory and phenomenography described in the section on methodology. It is important to note that this study is neither a grounded theory study nor is it a phenomenographic study. It simply draws on some of the aspects of grounded theory and phenomenographic data analysis methods for which best suit the research question.

I have found Seidel's (1998) model for a process of qualitative data analysis to be best suited to this research study. In Figure 4 below, one notes that the three components of the process are noticing, collecting and thinking. These actions are constantly working together all the time, so the process is not a linear one. Seidel ascribes three attributes to this process:

1. It is iterative and progressive – a repetitive cycle that resembles a spiral.
2. It is recursive – in the process of doing one part, one might be recalled to a previous part.
3. It is holographic – each step in the process contains the other steps simultaneously.

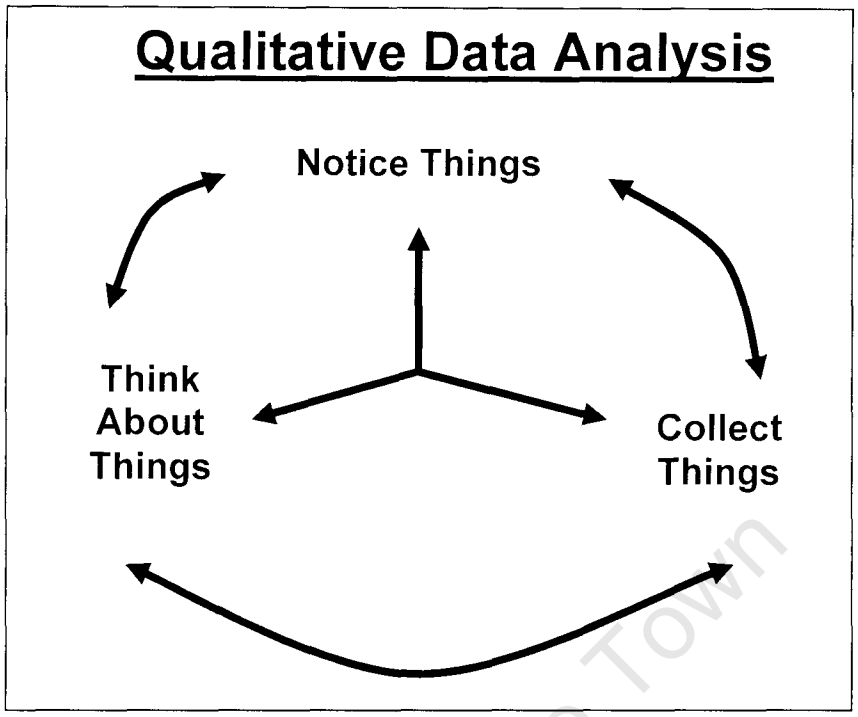

Figure 4: Seidel's Model of Qualitative Data Analysis (1998)

The step of Noticing involves three things:

1. Recording all things noticed, for example, field notes, transcripts of interviews, sourcing documents.
2. Reading this record.
3. Coding the data that is being read.

The step of collecting includes sorting and sifting data. Seidel uses the metaphor of a jigsaw puzzle to explain this part of the process. Even though he acknowledges its shortcomings (no final, completed picture; no pre-cut jigsaw pieces), he still believes that it is a useful metaphor that highlights important characteristics of the model he proposes. He provides an example of how these steps constantly recur in the process, which I have shown below (Freidson, 1975, p.270-71 cited in Seidel, 1998):

"Noticing: ...we had carried out some 200 separate interviews...and had them transcribed....Each interview was *read*, and sections of them which seemed to be distinct incidents, anecdotes, or stated opinions about discrete topics...were then typed on 5 x 7 McBee-Keysort

cards on which were printed general topical categories to guide coding.

Collecting: … then *read* all the cards and tentatively classified them into the simple content categories we had decided upon in advance.

Noticing: He then *read* them again so as to test, revise, and refine the initial gross classification….

Collecting: …all cards bearing on some general substantive topic such as "patient relations" were removed from the total set of cards and put together in a pack.

Noticing: All the cards in that large pack of between 800 and 1 200 were read one by one…

Collecting: …as they were read, the cards were sorted into preliminary topical piles."

We see how the process moves back and forth between the steps. The pieces of the puzzle are constantly being noticed and coded when they are identified and collected when they are being sorted.

The step of Thinking involves close inspection of what has been collected, with the intention to make meaning, to find patterns and relationships both within and across data collections and make general discoveries about the phenomena under investigation. Like the jigsaw puzzle, where pieces are sorted and then fitted together to form smaller parts of the bigger picture, says Seidel (1998), so is the process of analysing qualitative data. Comparison and contrast is standard in order to uncover similarities, variation, relationships and patterns. This is a vital step in the process as one might simply end up with collections of coded data segments that reflect a less complete meaning. Seidel cautions against simply coding endlessly and being consumed by the sorting and sifting process. He advocates two processes that could enhance the analysis process. These are examining a small bit of data intensively and examining unsorted, coded

passages of data (Agar, 1991 cited in Seidel, 1998). One also needs to be constantly aware of the bigger picture so that the coded data segments don't become stand-alone bits. One of the ways of protecting the analysis is to work back and forth between the segments as well as the whole of the data.

The research question, "How do students experience system learning in a post-graduate management programme?" expects the answers to reflect the experience from their point of view. Such a question lends itself to a phenomenographic approach, which examines the variation in ways of experiencing a phenomenon rather than the phenomenon itself. This perspective is known as a second-order perspective (Martin et al., 1993). It is in the above model of qualitative data analysis that one can detect the incorporation of data analysis aspects of both methodological approaches i.e. grounded theory and phenomenography.

After the interviews were recorded, I transcribed each of them verbatim. The transcriptions served as an initial reading of the data set. At this stage already, I made initial notes of corresponding data across the interview set. A second close reading of the interview set follow after the transcription, in order to familiarise myself with the data. During the third reading I started the process of coding whole transcripts. Coding, per se, is not part of phenomenographic data analysis, but provides the foundation of analysis in grounded theory. At this stage of the process I was already engaging in "Noticing" and "Collecting" (Seidel 1998). Bearing in mind Seidel's cautioning against being consumed by intensive coding, and ending up only with coded data segments, I then engaged in examining bits of data.

These meaning units were literally cut into pieces and placed into piles, bringing to life Seidel's jigsaw metaphor of finding smaller pictures of the whole before seeking to synthesise them within the bigger picture. This exercise also allowed me to see how these units of meaning corresponded with the initial codes I had ascribed to data segments, bringing into play constant comparison, principles pertinent to both methodologies.

"Thinking" (Seidel, 1998) about the data involved moving back and forth between the collective data meaning units and the individual transcripts. Similarities and differences within and between transcripts associated with particular categories were noted. I looked for themes, patterns, relationships both within the data segments as well as across the selected segments, with the aim of finding an emerging set of categories/themes of description that reflected students' qualitatively different ways of experiencing systems learning. Eventually this eclectic process of qualitative data analysis, incorporating aspects of grounded theory and phenomenographic data analysis, yielded the results presented in the next chapter.

3.6 Issues of Rigour and Validity

Strategies that protect against bias and enhance validity in qualitative research are various and abundant. Cohen et al. (2007, p.133-134) cite many different types of validity. However, the point made is that even though issues of validity need to adhere to the context of the research paradigm, "the research should not be paradigm-bound".

In the introduction to this chapter I mentioned Crotty's (1998, p.6) claim that "soundness of research" may be attributed to a research structure. I have attempted to show explicitly in this chapter this structure set within a qualitative paradigm with reference to particular endeavours to avoid bias and ensure validity (Cohen et al. 2007). These are:

- acknowledging the researcher as a participant in the research process, yet striving to remain objective about the data and not imposing preconceived ideas onto them.
- verbatim transcriptions transcribed almost immediately after the interview had taken place.
- avoiding leading questions in the interviews and using the same terminology that interviewees used so as not to distort or prejudice their subsequent responses.
- a measure of methodological triangulation by following up the face-to-face interview with a telephonic interview and a written questionnaire.

- working to and fro between the parts and the whole of the data in order to maintain integrity in the analysis.

3.7 Conclusion

My intention, in this chapter, has been to make explicit my choice of inquiry framework for this research study, so that the interrelationships amongst epistemology, theoretical framework, methodology and methods can clearly be seen. The epistemological assumptions of constructivism can be seen in all aspects of the inquiry framework, particularly the relationship of the individual to the world as meaning is sought and knowledge is constructed in the research process.

The results and discussion of this inquiry are presented in the following chapter.

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the analysis of the data with respect to the research question.

There are four categories of description – with sub-categories and descriptors – each of which is supported by extracts from interview transcripts. Words of the students are in normal font and words of the interviewer are in bold. Words of the students that provide particular emphasis are typed in italics. Names are pseudonyms. Table 2 below provides an overview of the results.

Table 2: Student Experiences of Learning in a Systems Thinking Course

CATEGORIES	SUB-CATEGORIES	DESCRIPTORS
1. Learning as a product	1.1 Systems thinking as a toolkit	1.1.1 Collection of techniques 1.1.2 Problem-defining and problem-solving tool 1.1.3 Linguistic and communicative tool
2. Learning as a process	2.1 Learning approaches	2.1.1 Elements of the process
3. Learning as a social activity	3.1 Inter-group and interpersonal relations	3.1.1 Working together 3.1.2 Multiple perspectives
4. Learning as meta-cognition	4.1 Learning challenges	4.1.1 Complexity and vagueness 4.1.2 Holism

What emerged as from the data as a pleasant discovery, were also students' conceptions of their learning context. I have not included these in the table above as a category, but have shown them separately in Section 4.5.

4.2 Categories

4.2.1 Category 1: Learning as a Product

Students view the learning content as a product. They see it as "what" they are learning. It is somewhat quantified and students experience their learning as a body of knowledge to be accumulated.

Reuben

Um, I... in terms of the actual focus on systems thinking and systems science, um, I was a bit disappointed, to be honest with you, there, in that we had a particular individual from the (institution), Theo Smith, who came in and *he could've given us a lot more*, I think, because of his experience.

I think, perhaps, what I'm trying to say is that *there was a lot* in the beginning. There was this *huge amounts* of reading material that was handed out, but perhaps what we needed was something that was very succinct, very clear, that just painted a picture of systemic thinking, system science that helped us to get that big framework in our minds...and then go and give us *huge amounts of work* later on, once you know how that all, you know...

In the first extract, the lecturer is seen as the holder of the content or knowledge that is then transferred to the student. Reuben quantifies this content by referring to it as "a lot more" that could've been given to him by the lecturer. He also quantifies the reading material, seeing it as "huge amounts".

John

Um, when I read, like, the course material and that type of thing, um, I was a bit intrigued by it. Um, there's um, a coupla challenges that I have with regards to work, and the *course seemed to address such issues such as that, um, analysis, paralysis, for instance*, coupla other things. It addressed things like that in the brochures that I read about it. I do have a lot of respect for *what the course has taught me*...

Simon

I mean, if I look at the *course content* for...most of my students were...were Science students, okay. ... You know, I think, realising the role that this sort of course plays, for people who have, um, strong technical skills, strong technical backgrounds, academically and in the workplace. Um, you know, *how much they lack if they aren't exposed to this sort of learning*. And this *sort of content in a course*.

Both John and Simon view their learning as "course content", a body of knowledge to be accumulated. John sees the content as addressing his specific needs and Simon sees the content in relation to what his own students are missing out on.

4.2.1.1 *Systems thinking as a toolkit*

Students conceive of systems thinking as a set of tools. There is the sense of the tool as a practical implement, an object, which can be applied to situations to make sense of them, as indicated in the following:

Luke

This particular course actually gives me *tools that I could use*. So that's why I initially did the course in '94, came back '95 and why I stopped, I wanted to go into business, make some money and come and carry on with the course, not because um, like I said, not to improve my profile, but *to give me the tools for me to use thereafterwards*....I felt that this is something that I need. *It would be more like a tool*.

Simon

...*I'll use the tools* that they gave, like, for instance, the affinity diagrams and all of those...

Mary

I just felt that, you know, with the right approach, *with the right tools* I must be able to do this, you know, and that, I suppose that's really what the course has given us – *those tools to do* what we all...

The conception of systems thinking as a toolkit is evident in the extracts above. Students refer to systems thinking as a set of tools and they see themselves as learning to use the tools when they need them.

a) Collection of techniques

This notion is expanded so that the toolkit is viewed as containing a collection of different techniques, the appropriate ones to be used in varying situations or with different problems.

John

...if I look at soft systems methodology, you know, *using those techniques*, you know, at this stage *the techniques that you use as tools*, um, within a lot of our workshops, you know, it's sort of, I realise that a lot of facilitators out there should not be facilitating. If you do not understand those systems tools and you cannot use that...because to me, you know, probably a *lot of these other techniques* that they use, may not be systemic but, I suppose if you use the systems tools, you know, you can use it in almost any complex situation.

Mary

I suppose that 's really what the course has given us – those tools to do what we all...each one specialises in and that's where it really has, and I'm learning more, even as I'm going to do my research now, and *I'm learning all the techniques*.

As indicated in the extracts above, the idea of the technique is embedded in the view of systems thinking as a tool. It is no longer just a practical instrument, but has been endowed with the systematic procedural characteristic of a technique.

b) Problem-defining and problem-solving tool

Systems thinking is further viewed as both a problem-solving, as well as a problem-defining tool that can be used in difficult and complex situations, as illustrated in the following extracts:

Reuben

...it's helped me *to approach problems perhaps a little bit differently* as well. Um, and it's given me some tools, which have helped me to do that as well in a different way.

Mention to me some of the tools.

Um, what's it – causal loop diagrams? I found that *very, very useful in terms of understanding a particular problem, or what the elements were that were influencing the problem* that was being experienced, so I think that was useful...

Luke

...systems thinking drives me to the different steps of finding a solution. Systems thinking is a way of defining a problem...so when we go into a project, we are now finding a solution to the way that I see the problem.

Both Reuben and Luke see systems thinking as a tool that helps to define a problem – "systems thinking is a way of defining a problem", as well as a tool that helps to solve a problem – "systems thinking drives me to the different steps of finding a solution".

c) Linguistic and communicative tool

Systems thinking is also seen as a linguistic and communicative tool. It is likened to a language with its own jargon of words and images, and is seen as a vehicle for communication, where both articulation and listening are important elements in the communication process. In the following extract, Luke describes systems thinking as a "language" that allows for articulation of a solution and "better" expression.

Luke

So I mean *there's a language I can use to articulate*...uh...a solution or a way to a solution...what brought me to *systems thinking was that it would be a language, a tool that I'd be able to use to express myself better.*

4.2.2 Discussion of Category 1: Learning as a Product

Students describe their learning of systems thinking as a body of knowledge - content which they need to acquire and master, resulting in a product:

Reuben

...he could've given us *a lot more*.

This particular view of learning reflects Säljö's (1979, cited in Smith, 1999) first level outcome, where learning is about the acquisition of knowledge. The content that they need to acquire is the toolkit of systems thinking, which contains techniques that can be used in different ways. This metaphor of systems thinking as a toolkit reflects Säljö's third level outcome of how students understand learning, where what they have learnt can be applied as and when necessary.

Booth (1997), a member of Marton's team of researchers, comments on the findings of their research and reiterates the distinction that they make between

the "what" of learning and the "how" of learning as viewed from a student perspective. "What" is seen as the content of the knowledge that the student has gained. "How" is seen as the nature of the way in which the student has gained the "what". According to Booth (1997, p.135-136), the same body of knowledge, the "what" can be understood in qualitatively different ways by different students. The "how" – the way in which students approach the learning task – can also differ. Seeking to understand a text in terms of its meaning is considered a deep approach, whereas a surface approach is characterised by simply paying attention to the words of a text. It was also found that students who used deep approaches understood the meaning of the text far better than their peers who used surface approaches.

Systems thinking is seen by students as a linguistic and communicative tool, and I mentioned the importance of language in the third chapter. The following extract provides an example of how a teacher's meaning and a student's meaning differs from each other. The outcome of different constructions of meaning in this instance resulted in a learning task needing to be done over again.

Reuben

...I think we've all experienced the situation where verbal direction or verbal instructions can be interpreted differently. For instance, um, *your mom might come in here now and say, "Please do X." And you might think to do it in this particular way and I might think that it's slightly different.* ...Because I can remember words and *I would interpret them in a particular way, and you'd perhaps remember those words and interpret them slightly differently*. Okay, so perhaps if you're asked to do a task, the task should be in writing and that might help to prevent some of the problems. ...*I think we understood it in a particular way* and that's why we approached it in the way we did. *We didn't realise that we had misunderstood the task.*

4.2.3 Category 2: Learning as a Process

Students view their learning as a process that takes place over a period of time. This process is seen to encompass learning approaches that involve particular elements.

4.2.3.1 Learning Approaches

Most students seem to grapple with the idea that their learning process should involve acquiring skills to apply to real-life situations. John describes this as "hands-on training", where theory and practice are brought together and possibly tested, through group discussion.

John

...you have this kind of *hands-on training*. You can learn something and then straight thereafter through your group interaction you can...I guess I can um...I...I draw some kind of a similarity between the...uh, *practicality of it being that um...you...with you sharing your experience afterwards, when you talking about the literature that you read, the theory that you've just read...it's, it's...I guess it's the next best thing other than putting it to practice* because you can know how some of you, um, one of your colleagues or fellow students can um, with them giving their take on the matter, um, you can, you can kind of think it through and you can see the advantages of...or how the theory would apply in the case such as that. Um, and for you to, in certain instances, for example, the action research where you can actually apply it. You apply it and then you try to fix it up and you apply it again and then you have this repetitive thing going. So in that way you enforce your...*you almost to a certain extent emboss your learnings on to um, into your environment, into your workplace where you, where you need the skills*, I would assume.

Reuben's comment below also mentions the acquisition of skills – "apply systems thinking ourselves", but there is the added notion that the learning process is about making meaning and interpreting things differently from what is presented. Reuben's comment incorporates this idea when he talks about developing one's "own thinking".

Reuben

...and I think it would've helped a great deal if we had had that kind of backbone, which would have then allowed us to move away from that and *to develop our own thinking and to actually apply systems thinking ourselves* with regard to our own problems.

Although we are able to talk about product and process as two different things, they are essentially inseparable. One does not exist in isolation of the other. The extract below makes clear the link between the two, perhaps emphasising process as a vehicle for product.

Simon

...So, I guess I, I'm inclined to...to almost to be able to, to learn a little bit faster or learn a little bit more effectively if, if there's something that person did to switch something on in me.
I think because, you know, when, when, when something lights up inside in your mind, it is a lot better, you know, because...*I don't feel that education is not...is not about, it's not like filling a bucket with water. You don't fill people with knowledge, with knowledge, with knowledge. You know, you've got to rather ignite a spark, and make people want to...or make people have an interest in something.* And I think, and that is what he did. You know, he didn't now give us the reasons and that sort of thing, but I think he did light a spark in most of us. I think those that stayed on. He managed to ignite a spark. And I think, to most of us, probably all of us at this stage, it's not about the qualification, *it's more about the experience.*

Why is that important for you?

I think because *that is what learning should be.*

Simon shows a shift in his perception of learning. His initial expectation included the acquisition of a qualification. His current thoughts focus on his experience. He describes what he perceives education to be, where learners should not be a passive recipients being "filled with knowledge", but active, "interested" participants in the learning process.

a) Elements of the Process

Elements of the students' learning process that are encompassed by their learning approaches include reading, learning outcomes, merging of theory and practice, questioning, seeking to make connections and comprehension.

The following student mentions the time constraints with the reading material as a limitation to his learning process.

John

Um, often, then we'll have...er...*literature to read.* Um, and then *you were just given this amount of time to finish it in*; and often you came across something that was really interesting. Um, if I must name one off the top of my head it would be...it would be...um...the deliverable that we had... Um, there was a bunch of other stuff, but... throughout the entire course, *there was a lot of literature that was like seriously*

interesting, and that you'd like to almost ...sit and grapple with the concepts, and then from there onwards work something out. Um, *but you not given that luxury of time* to, to be able to, to, to, to massage it in your head, I guess, and to get something out of it.

In the above extract, we see that reading is important to John because "there was a lot of literature that was like seriously interesting". He laments that this element of the process was not given "the luxury of time".

Many students appear to link the quality of their process to their knowledge and understanding of their learning outcomes, as indicated in the following extract:

Reuben

I found that there was just huge amounts of material that was given to us and we were told to go read it and, to be honest, *it was difficult to find a way of putting this all together*, and as this was going on you were told to do various assignments which you presented on, *and there didn't seem to be a clear goal* where I needed to take...it was almost experimental, you know. Let's see where he or she takes this to, rather than saying: *There's a specific learning here that's linked to systems thinking* and...let's, you know, let's develop that. Or maybe even, you know, discussion up front with you in terms of the first question that you actually asked me is, you know: What were your expectations? What did you want? What was your purpose as you came in to the programme? Maybe a discussion like that, *so that the facilitator then knows what my specific purpose is*, and then shares what, you know, *what they are trying to do with this course*, what, er, what they would see the purpose of the course is, and where they saw the intersection of the, then diagram, you know, in terms of how that perhaps would help my particular purpose. I think that could help a lot, so in other words, *if there's a link between ...there, there's clarity right up front as to where things are going to be going, and in that way you'd see how everything fitted in and you'd be able to then take from that, um, what was particularly important to you, in terms of that journey*.

Reuben expresses difficulty with his learning process as he didn't have "a clear goal" or a "specific learning" outcome. His own purpose is clear to him, but he wants to see the "link" between his goals and that of the course facilitator. Such a "link" would "help [his] particular purpose" and in so doing, improve the quality of his process.

The student below sees an integration of theory and practice as part of the process:

Luke

...that was what I was expecting from the programme...to know, to *get the knowledge, get the skills and apply it.*

And you feel you've been able to do that – in the class, all three?

Ja, I think I can. Somebody was saying that when you learn your knowledge, that's your head, the skills, that's more of your hands, and then the application is more of your heart.

Luke confirms that his expectation of gaining knowledge and skills and being able to apply them was met.

Questioning seems to be an element in the process of trying to gain better understanding of a concept.

Reuben

At the same time *I need to ask the questions* I should be asking too, and maybe there's an obligation on the student to do more and that, you know, *if you don't understand or you are not sure...to ask the questions.*

Mary describes it in the following way:

Um...it's a whole question of what you keep leaving in my head. *Those others didn't really leave a question mark the way he did, and I always wanted to answer. I wanted to figure out: But what? Why?*

Both Reuben and Mary see questioning as a part of their process. Reuben sees students as being obligated to question for greater clarity. Mary sees lecturers as being obligated to leave students with questions so that they can seek answers.

The following student demonstrates the ability to shift perception and comprehend a situation from a different perspective by commenting on how he was able to make a real-life connection from reading a text.

John

...you don't even understand what it is that you're supposed to do. I mean that's seriously frustrating...

And you mentioned, "Now."

Well, um, now, look, I, I guess there's a...there's a piece of literature that I was responsible for in my group and...*I think that allowed me to put a lot of things in perspective.* ... And then at the end of that, after I did that little deliverable, because I was responsible for that piece, *it allowed me to put things into perspective as to how they taught the course.*

John goes from being "seriously" frustrated to being able "to put things into perspective" by drawing a connection between the text that he reads and his experience of the course. He emerges with a clearer understanding of how the course is taught.

4.2.4 Discussion of Category 2: Learning as a Process

In this study I have also labelled the learning product as "what" and the learning process as "how", but these categories differ slightly from how Booth (1997) describes them. The students in this study see the "what" simply as the knowledge content of systems thinking – a toolkit, with its different tools that be used in various situations in order to make better sense of them. They view "how" they learn as "activities" in which they engage, which constitute a process linked to the way in which the learning task is structured. These "activities" may include reading, practical application of theory, working towards learning outcomes, questioning as they go along and looking for connections to real-life situations in order to enhance understanding. Different students may engage in the same "activities" for all learning tasks. Others may use a variety of "activities". What is evident, though, is that "how" they engage in this process of "activities" influences the "product" that results, as seen below.

Reuben provides an example where lack of clarity of the learning outcomes as well as the failure to ask questions resulted in a task having to be redone.

Reuben

....in some of the tasks that we were set, *sometimes it was very unclear of what exactly was required.* When there is a huge amount of work and when people are working as well, um, *it can be quite difficult and a waste of time really to try and figure out what your task is and then have to go back and do the assignment over when you haven't completed what the requirements are.* So I think those kinds of things perhaps are frustrating and unnecessary. To what degree did I learn from, from completing a task again? *I don't think I did learn again from completing a task, from carrying out a task a second time.* I don't, *maybe it...uh...you learn in terms of perhaps of some of the questions you need to ask up front,* but I'm not sure if we need that at this stage in terms of our learning experience...it was really a whole lot of reading that I think we had to synthesise, that we had to...and provide a particular report... Obviously at the same time I need to ask the questions I should be asking too, and maybe there's an obligation on the student to do more and that, you know, if you don't understand or you are not sure, to ask the questions...

The example used above shows a link between process and product. However, the data did not appear to produce clearly, enough evidence to substantiate Booth's (1997) claim that a deep approach to learning results in a better quality product.

John's shifting perception from "seriously frustrating" (on p. 51 in Section 4.2.3.1.a) to "it allowed me to put things into perspective as to how they taught the course" (on p. 50) leads to greater conceptual understanding as he makes the connection between his learning task and his experience of the course as a simulation for a systems concept. This particular "activity" in the process may well reflect Säljö's (1979, cited in Smith 1999) last two conceptions of student learning, where the subject matter is related to the real world, reinterpreted and conceptual understanding enhanced.

4.2.5 Category 3: Learning as a Social Activity

In this category, students view learning as a social activity, where there is the recognition that other people play a role in the process of making meaning.

Mary

I would've liked to have had more interaction, to start off with. *I wished there was more interaction. We just needed each other and our notes.* Um...different kinds of

interaction…um…I think *just more time to really discuss the sort of things that we got started on*, and to maybe work a little, *do a little more stuff together*. A few more projects together. We did a little of that – working together, working on specific projects, but only really at the beginning actually. When we were first divided into groups we did a lot of project work then. Maybe it was part of…I dunno…the way it was set up, but *it would've been nice to continue that learning from the others*. It would've been nice for that.

John

…the lectures was actually a very very rewarding experience because you, not the lectures, *but when we sitting in class together, sharing your experience or your views with one another. Um, I find things like that very rewarding…At least with sharing you might handle a particular problem that you have encountered* with your paper.

Why was it important to you to meet with everybody like that?

Because it would be exactly what the lectures was…um, it was exactly that. You have notes on a topic, um, and then from then onwards it's a…*you sharing your experiences or anything that you can add to the topic or how it is that you can relate to it. Um, and that is what makes the, the classroom such an experience for you to, to learn from.*

Both Mary and John express appreciation for the social experience of engaging with others and acknowledge that their own learning processes are enriched because of it.

4.2.5.1 Inter-group and interpersonal relations

For many students, the course offers a way to work in diverse groups with people who hold different views and perspectives.

a) Working together

The following students show that working with different people can contribute to one's learning.

Reuben

Um, you know, what I found particularly useful was that there were *a variety of people from a variety of backgrounds* on the course. I think *what was a pity was perhaps there wasn't, there weren't more people on the programme, which would have ensured that the variety of experiences were even greater.* If I think first of all in terms of our group the group work that we

did. I think we all approached it, *approached things differently, and perhaps, which was very useful*, is that *everybody had something to contribute* and sometimes it was difficult, because perhaps, um, you'd always find in those groups that individuals will approach tasks differently to you, um, and it takes quite a while sometimes to clarify exactly which way the group is going to go. But I think that was all very, very valuable because *it helps you to realise that* out in the real world or in the corporate world or wherever you are, whether you are an NGO or whatever, that *people understand things differently*.

Simon

You know, you can't just expect people to come into a workplace because *people will always be diverse*. You know, they will always be different, and *you need to have someone that would actually lead them into be able to function as a unit. Or function as units*. And I think this course very much puts you in tune with that sort of thing.

Reuben finds that even in a varied group everyone is able to contribute something that adds to the richness of the pool of contributions. There is also the acknowledgement that "people understand things differently". Simon recognises that a quality of leadership is to take this diversity and "actually lead them into being able to function as a unit."

b) Multiple perspectives

Systems thinking encourages multiple perspectives to create a richer picture of a situation.

Luke

What I enjoyed was the exposure that it gave me in meeting different people...uh...and *interrogating my perspective...of...of the world*. What I enjoyed most is *it opened...broadened my boundary in understanding life*. You tend to see life in one perspective; you don't understand life as a whole; you don't understand that to get to a solution, you need people. *You need people literally as in...uh...tools...ja...but more of...their different understanding...their different perspectives...and put that together and then, the solution that you come up with is more towards a complete solution to your problem*. ...the experience that I got from the class, from the students, was that I realised that we could be speaking about the same thing, if we only give ourselves time to listen; and be able to be in their shoes and see their angle, how they look at the same thing that you're talking about. *We come from different disciplines, different industries, different worlds, and the picture of an elephant to you may not be the same picture that I have, but*

we're talking about the same thing. So, all in all, what I've learnt is to listen, ja, and get to understand...

Luke acknowledges that he has been enriched by the views of others. Having his views questioned has contributed to a broadened horizon.

4.2.6 Discussion of Category 3: Learning as a Social Activity

The third conception of how students view their learning is as a social activity, where they recognise that other people play a role in the process of making meaning. "Ubuntu" is a Zulu word that encapsulates a worldview, one that very simply translated means that "a person is a person through other persons." The concept of "ubuntu" visualises a community built upon interdependent relationships. Ubuntu in no way undermines the individuality of people. It, in fact, engenders a respect for the differences of others and recognises that learning can be greatly enhanced when one encounters "otherness". The individual in "ubuntu" is defined in terms of his or her relationships to others. As relationships change, so do the individuals.

Peter Senge et al. (1994) propose that the concept of "ubuntu" has a legitimate place within systems thinking practice. Most systems thinkers place emphasis on working as a group in order to understand complexity. The culture, the creativity, the productivity that emerges in an organisation is affected by how people relate to one another (Regine, 1998). Senge (1990, p.234) advocates "alignment", when there is "commonality of purpose, a shared vision, and understanding of how to complement one another's efforts".

The main motivator for groups within the systems thinking framework is that the "whole is greater than the sum of its parts". There is recognition that each participant is in relationship with others. The task of the systems thinking manager is to harness the unique qualities of each member of the group to create a synergy that will result in optimal functioning of the entire system. This is shown by Simon in Section 4.2.5.1.a (p. 54)

Senge's (1990, p.13-14) concept of a "learning organisation" includes building "learning teams". For Senge, learning is a fundamental requisite for any organisation. He states,

> "At the heart of a learning organisation is a shift of mind – rom seeing ourselves as separate from the world to connected to the world, from seeing problems as caused by someone or something 'out there' to seeing how our own actions create the problems we experience. A learning organisation is a place where people are continually discovering how they create their reality. And how they can change it. Through learning we re-create ourselves…we become able to do something we were never able to do…we reperceive the world and our relationship to it…we extend our capacity to create, to be part of the generative process of life."

Most students in this study indicate an enjoyment of working with others in a group and articulate the value of it. The student comments below confirm Senge's assertion that people need to be continually discovering how they create their reality and consider their changing perceptions of the world and how they relate to it. Here we see how being part of a group and his engagement with others allows the student to question his own view of the world:

Luke

…and *interrogating my perspective…of…of the world. What I enjoyed most is it opened…broadened my boundary in understanding life. …*ja*…but more of…their different understanding…their different perspectives…and put that together and then, the solution that you come up with is more towards a complete solution to your problem.*

Through the lens of Vygotsky's theory (Wertsch, 1985), it makes sense then, that students view their learning as a social process and engagement with others through social dialogue plays an important role in their learning experience.

It is within the socio-cultural environment that meaning is made and students recognise that their learning is mediated both by the lecturers and their fellow students.

Reuben

...the experience that I got from the class, from the students, was that I realised that we could be speaking about the same thing, if we only give ourselves time to listen; and be able to be in their shoes and see their angle, how they look at the same thing that you're talking about. We come from different disciplines, different industries, different worlds, and the picture of an elephant to you may not be the same picture that I have, but we're talking about the same thing. So, all in all, *what I've learnt is to listen, ja, and get to understand...*

It is also this environment that provides greater opportunities for assumptions to be challenged epistemologically. Students at each stage of their cognitive and epistemological development are challenged by the socio-cultural context that pervades the learning environment, and this may well lead to epistemological leaps to another developmental stage. The following extract shows that the student recognises that people understand the world differently and that interaction with others can either reinforce one's personal understanding or cause it to change.

Reuben

People come from different backgrounds and you have to communicate very, very clearly if you are asking a... for a particular task to be done*, or if from another direction you're sharing a vision or you're trying to persuade or influence people, it helps to realise that you've got to approach those tasks differently for different individuals.* In any situation *we all have different ways of understanding...um...the world. We have different world view*s,...What was very useful is that it *helped reinforce perhaps the thinking that I already had*, that you needed to be very understanding *because sometimes I was way off track and sometimes one of the individuals in the team was way off track.* So you actually *needed time to talk through, and you also needed to verbalise where you were*, in other words, your mental model. You actually had to create that picture for others, um, to understand where you were, otherwise you just talk at cross purposes and you miss each other... even though the person, you know, the person may be saying that I am not happy with that, and even though that person doesn't express why they are not happy, they actually got to be patient and to draw that out, and I understand that picture in that person's mind because there might be some very, very valuable information there that you've missed and,

you know, stops you from making an error and a mistake. So perhaps that was what was most valuable.

4.2.7 Category 4: Learning as meta-cognition

In this category, there is a move towards internal processes. Systems thinking provides the opportunity for students to engage in meta-cognition, where they reflect on the things they are learning and the ways in which they are learning them.

John

... that's the time that you throw everyone on paper, and that's the time that *you really sit and you think about what it is that this little journey that you've being on* since the previous position papers, I guess. Um, so then...later on then I realised that the position papers have to kind of...*it's kind of your diary of your learnings from start till end, well, till, from start till at that point in time.* So, it was cool to have the whole thing unfold, and you kind of predict how the story unfolds, so with you sitting there and with you mapping out – okay, that's what I...how I approached the previous paper; and, um, *what did I do from that period in time until now? What did I learn? What did they teach us?* And then, then *I'll think about what significance that particular, whether it be, for instance, chapters that I, that we now covered in class, for instance, what significance that had on me and that type of thing.*

Right. And that whole process, for you. Why was that important to you?

Um, but it's not often that you sit down and you...*and you collect all your thoughts on what it is you learnt. Er...so then there you sitting and you...and you now...and you now kind of...trying to...you're now gathering all your learnings from what it is that you've picked up* now since the last period, and then you...*so you're kind of really reflecting about it.* And then, so, I guess I don't, I don't do that with the other little short courses that I do through the company...So that, for me, is significant.

John shows that he engages in meta-cognition where he monitors his thought and learning processes. He is "kind of really reflecting about it."

4.2.7.1 Learning Challenges

The following student enjoys others questioning her thinking processes because this allows her to question her own thinking.

Mary

I would expect someone *to challenge my way of thinking. That I enjoy when going into a learning situation*. I don't want to just be given something that...the information that I could just have read up myself, very easily. *I enjoy a challenging classroom situation* where you need to, where it's not easy, *where you have to struggle for the information*, and discuss it.

Reuben finds the challenge in needing to make decisions around appropriate ways of tackling his learning task.

Reuben

I think it's...I think it's just working totally on your own, totally on your own, not working with other people. You have to be very focused about what you're doing. Um, and I think I have that, but it's just...it's not easy to, to do it day in and day out, and the other issue that I suppose that I should mention*, is the battle of the academic requirements, of being able, you know, having to grasp a particular philosophy, understanding the different methodologies, the methods, what is appropriate to choose for a specific purpose that you're trying to achieve,* and there maybe, even though we had that week, I found that perhaps I came out of that week in terms of that research method period, that full-time week, with a lot of things flashing around, but not having pulled it together as a whole, and really understood what, maybe, methods and methodologies would be appropriate for what I was wanting to do. Um, that, that part I found really difficult in trying to say*: Okay, this is my purpose. Now, what is the appropriate way of approaching my problem that I've actually got here? That I struggled with, and also the feeling all the time that perhaps I have to do it in a particular way, and to try and understand what that actually meant as well.*

Both Mary and Reuben find that these challenges engage them at a meta-cognitive level where either they have to question their thinking or make appropriate self-monitoring decisions.

a) Complexity and Vagueness

Issues of both complexity and vagueness present a learning challenge and students see systems thinking as a means of dealing with these.

Reuben

...I don't think I went into it with huge expectations or looking for anything other than that *it would give me a means to understand a very complex issue and to deal with that issue in a different way...* a way that was different to the way governments, directors, etc. were dealing with the subject around the world.

Even though students articulate their sense of unease and confusion at the lack of clarity regarding learning outcomes and task deliverables, on some level they recognise that this may have been part of their learning process, that the nature of the course has been contrived to mimic both a complex and vague environment.

John

Right, John, you mentioned that the course was a lesson in itself. What exactly do you mean by that?

The fact that you...well, the course promises to teach, um...how...*to teach you the skills on how to cope with um, complexity rule or, er, the vagueness in your working place* or wherever. Um, so the course itself, when, when they gave out deliverables, Sometimes then you sitting there and they'll say: "So we need this by this date," and then you think: Jeez, did they just give a deliverable now? And you...because all that you know is that you had a conversation and then after that then they say: "We need this in by this date." So, it's a kind of shock to your system. So...I guess...in, in that manner then it um, the *course itself teaches you to...the way that they present the course at least. Um, it also, it teaches you how to deal with vagueness and complexity.*

Mary

Um...I think Shlomo should've given us a bit more warning that it would be like that. Not what his technique is, not the how, *but just to prepare us for that uncertainty, that confusion,* because I found that people bad-mouthed the programme at the start. Martha left because of that, whereas...maybe if it was just explained to us from the start that's how it's meant to be...and I'm still not hundred percent sure, *I'm assuming, I think often that he's doing that just to teach us, you know, that we're learning...*

Both John and Mary reach the conclusion that their learning context , which seems to contain both a lack of relevant and accurate information,

as well as issues of ambiguity has been structured in such a manner to teach them particular lessons in systems thinking.

b) Holism

Holism is seen as a way of dealing with complexity and vagueness. Systems thinking is viewed as a holistic approach to dealing with this complexity. The "bigger picture" becomes important.

Mary

I liked the *holistic nature* of it. It was the way...I like to see *the bigger picture of things*, and for me, it was the type of course that brought in the bigger picture of whatever it is you're doing. And that's what really attracted me to it – *the whole systemic approach*...

Mary comments that it is "the whole systemic approach" that attracted her to the course. Reuben, on the other hand, struggles to find the "bigger picture" in his description of his experience in dealing with a vague situation and wants to find the links between his real-life experience and the theory given to him to read.

Reuben

There was *this huge amounts of reading materia*l that was handed out, *but perhaps what we needed was something that was very succinct, very clear, that just painted a picture of systemic thinking, system science that helped us to get that big framework in our minds*...and then go and give us huge amounts of work later on, once you know how that all, you know, that you've developed some framework in your mind to be able to make maximum use of that material that you're given later on. I found that there was just huge amounts of material that was given to us and we were told to go read it and, to be honest, *it was difficult to find a way of putting this all together*...it was almost experimental, you know. Let's see where he or she takes this to...

Um...I think *sometimes it was quite tricky to see the relevance of what we were doing* sometimes, um, and sometimes it was a little bit hazy to see how what we were doing was going to fit in with my purpose and what I was looking for, but I think I was always able to get around that, but perhaps it meant that the journey was a bit longer than it needed to be.

4.2.8 Discussion of Category 4: Learning as meta-cognition

As mentioned earlier, the focus is on internal processes. Systems thinking provides the opportunity for students to reflect on their learning. Kitchener (1983, p.222) describes meta-cognition as: self-monitoring on simple cognitive tasks, which generally comprises three parts:

"(a) knowledge about self and others as cognitive processors when they are engaged in a task or goal, (b) knowledge about specific cognitive tasks or problems themselves and (c) metacognitive experiences, i.e. feelings of wonder or puzzlement which lead to the re-evaluation of strategies." Simply put, meta-cognition is thinking about thinking.

Boud et al. (1985) argue strongly that reflection is essential in learning. What one needs to bear in mind are the following points:

- The learners are at the forefront of the reflective activity. Teachers may assist, but the learner is in complete control.
- Reflective activity is purposeful, intentional and goal-directed.
- There is an interrelation and interaction between cognitive and affective domains.

In the extract below, the student really engages in reflection about his learning experience on the course and comments that this is particular to the course. He describes it as "potent stuff" when meaning is made. Clearly there is a self-monitoring process in action:

John

...so with you sitting there and with you mapping out – okay, that's what I...how I approached the previous paper; and, um, *what did I do from that period in time until now? What did I learn? What did they teach us? And then, then I'll think about what significance* that particular, whether it be, for instance, chapters that I, that we now covered in class, for instance, *what significance that had on me* and that type of thing. Um, but it's not often that you sit down and you...*and you collect all your thoughts on what it is you learnt.* Er...so then there you sitting and you...and you now...and you now kind of...trying to...*you're now gathering all your learnings* from what it is that you've picked up now since the last period, and then you...*so you're kind of really reflecting about it.* So...it's when you now sit down and then you now realise: Sheez, *that was potent stuff.* And then I tend to see, oh, *this is what this means* and that type of thing. And then, so, I guess I don't, I

don't do that with the other little short courses that I do through the company... *So that, for me, is significant*.

We see students trying to make sense of a seemingly senseless situation and monitoring their own ways of dealing with complexity and vagueness. There is the desire to find relationships and patterns, as indicated by the following extract:

Reuben

...to be honest, *it was difficult to find a way of putting this all together*... and t*here didn't seem to be a clear goal* where I needed to take...it was almost experimental, you know...*if there's a link between...there, there's clarity right up front as to where things are going to be going, and in that way you'd see how everything fitted in* and you'd be able to then take from that, um, what was particularly important to you, in terms of that journey."

In this instance the student appears to grapple with the uncertainty of knowledge and at the same time, tries to find the "link" between the facilitator's intentions and his own purpose. We see a second stage student reflecting Baxter-Magolda's transitional knowing and independent knowing, seeking to understand the lack of clarity. This instance also reflects Säljö's fourth conception of student learning, where meaning is abstracted and there is the attempt to see the bigger picture and the relationships in the variables of the situation.

Students express a consciousness of their learning. When a student comments on the intrinsic motivation to learn by using the following metaphor,

John

...when *something lights up inside in your mind*, it is a lot better, you know... You know, you've got to rather *ignite a spark*, and make people want to...or make people have an interest in something. And I think, and *that is what he did*...I think those that stayed on, he managed to ignite *a spark*. And I think, to most of us, probably all of us at this stage, it's not about the qualification, it's more about the experience.,

then we see a student whose perception has shifted from Säljö's (1979) first conception of knowledge being acquisition,

John

...learning is not...is not about, it's *not like filling a bucket with water.* You *don't fill people with knowledge...*

to a sophisticated metaphorical reinterpretation of a concept.

It is important for the student because he thinks that "that is what learning should be." In this instance we see that reflection is necessary for conceptual change. Students are extremely aware of the lack of clarity regarding learning outcomes and task deliverables and demonstrate uneasiness and confusion. They recognise that this may have been part of their learning process, that the learning environment has been contrived to mimic a complexity and vagueness.

John

The fact that you...well, *the course promises to teach, um...how...to teach you the skills on how to cope with um, complexity rule or, er, the vagueness* in your working place or wherever...to...*the way that they present the course* at least. Um, it also, *it teaches you how to deal with vagueness and complexity.*

Mary

...maybe if it was just explained to us from the start *that's how it's meant to be*...and I'm still not hundred percent sure, I'm assuming, I think often that *he's doing that just to teach us, you know, that we're learning...*

Students who articulate the above conception of learning demonstrate a capacity for meta-cognition. There is an awareness of the learning environment and how they themselves are thinking about their own learning in their interaction with that environment. The above situation demonstrates that unfamiliar contexts and constantly changing situations can allow for meta-cognition to take place where existing knowledge and practice is not enough.

4.3 Student Conceptions of the Learning Context

The following conceptions relate particularly to teaching and course design, one of the elements that Ramsden (2005) considers as part of the learning context. It is evident that students struggle with some of the methodologies employed by some lecturers as they have certain "expectations" of the teaching and learning

situation. There is also a clear sense that they need to be aware of what is expected of them and what they need to deliver.

John

I think the *most difficult part of the programme was, was actually trying to figure out exactly what the deliverable was – at any stage.* What was a position paper? A year ago, a year and a half ago, what was a position paper? He wanted one. *I basically just did what I thought was best, and handed it in, and he would have like: It looks promising…*

Why was it important for you to know that?

I think, because if I know, for example, and probably, I don't, it's only because I'm a technically-minded person, I think I'd, it's also because I mean *I'd like to know what is expected of me,* and it's probably one of the things where…and I think *it's done rather deliberately in that he would not communicate exactly what it is that he wants,* you know. There's nothing that was given to you that said: This is a position paper. But what he did give to you was the SCQARE technique. You know, *it's knowing exactly what was expected of you and, he, um, and I think it was done deliberately that he didn't exactly tell you. He would tell you: "Go and ask your team mates, or your group members. They should help you."*

How did that process make you feel?

A complete idiot, because, because whatever I read, or whatever someone else's approach was to that position paper, was totally different from mine.

John sees the need to have clarity regarding task deliverables and the lecturer's expectations of him. He is always "trying to figure out exactly what the deliverable was" and prefers to know what was expected of him. We see that his lack of clarity makes him feel "a complete idiot" when his task deliverables differ from his classmates.

Some students perceive the lecturer as the "authority" in the classroom, where only one right answer exists and that right answer lies with the lecturer.

Mary

...he wouldn't try and steer us in a direction, where, *I sometimes felt, he should have,* because we just weren't getting to where we should have been, and I thought: *Hereshe's the authority. He should have come and done something about it.*

Luke

The…these assignments that we got, especially the group assignments, *there was no right model there and there was no wrong model.* Uh, so the content or the depth of your model depended on the people who were in your group. As a result, the different groups came up with different things. Whereas I was more used on getting the right answer, and if I get the right answer, and if this is the right answer, and then the other groups who don't have the same answer, are wrong. So that was my experience and *that was probably the most difficult thing for me to comprehend.*

And who would've had the right answer, for you? Who held the right answer?

Well, to me, the *lecturer must come and say: "Right, you've tried, but this is the right answer."*

It was the lecturer?

Ja. And that comes from old school - the way I was taught and ja…

Has that thinking changed?

Consciously, yes – when I put my mind to it. But subconsciously I go back to right/wrong) and I need to move from that.

Reuben

I would have said that right up front Theo Smith or *anybody who was an expert in systems thinking* would have, uh, at that point helped me to get a very good picture, or as I described, a framework, um, that would have then allowed me to have my specific purpose and to learn and to be able to take more from all the material that was given to me,…so what I'm trying to say is: *I would have liked to have seen a systems thinking expert right up front giving us something* that, uh, was, would have been useful to us right through the programme …

All the students above show that they see the lecturer as the "expert". The authority should "do something about it." It is the "expert in systems thinking" that

conveys "the bigger picture" to students". It is the lecturer who has the "right answer".

Other students view the lecturer as a "facilitator" of their learning process.

Simon

You know, this is a different sort of thing. *They're more facilitating your learning.* And I think that small classes like this is ideal for this sort of education. If we were seventeen in a class, it would've been a lot different, you know, but I think it's a perfect size and I think it's a perfect method of tuition, *facilitating other people's learning.*

The notion of lecturer as facilitator is further expanded in the idea of this leading to their discovering things as they go along.

Mary

It shouldn't all come from the lecturer, even though one sometimes expects that, and maybe I also intuitively expected that, sort of, the way it's always been, but...ja...*a process of discovery, where you also discover for yourself,* where the lecturer facilitates that process of discovery, but doesn't reveal necessarily all at once.

Reuben

...perhaps it's how you can actually immerse yourself in particular problems and *learn as you go along rather than having to know everything right up front,* which is a bit of a contradiction of what I said earlier, but what I was trying to say earlier, was that we needed a bit more before we immersed ourselves and learnt as we went along.

The process of facilitation by the lecturer is seen as a process of discovery learning by the student when they discover and learn as they go along.

4.3.1 Discussion of the Learning Context

This study shows a range of student responses to the learning context, where, on the one side of the spectrum we see students with clear dualist assumptions and on the other, students who portray non-dualist assumptions. Then there are those who come face-to-face with epistemological dilemmas that force them either to retain their current place on the spectrum or to make the cognitive and epistemological shifts demanded of them.

I referred to Ramsden (2005) in Chapter two, who claims that the teacher plays a vital role in influencing student approaches to learning. In the examples that follow, we see that this is indeed so. Students view the lecturers in two different ways – the first, where the lecturer is the "authority" or "expert". There is an expectation on the part of the student that the lecturer is responsible for what is happening.

Mary

"Here *he's the authority*. He *should have come and done something* about it."

On the other hand, the second way in which the lecturer is viewed is as a "facilitator", where the lecturer is seen to facilitate their learning rather than simply lecturing them in the way they would expert from the authority figure.

Mary

...– he doesn't take the normal teaching/teacher approach. I think *he tries to facilitate*, and ja, I think he's done a fairly good job of that, but then again, *he doesn't try and steer* – like we would have our group discussions – *he wouldn't try and steer us in a direction*...

Through the facilitative approach, students discover new knowledge for themselves.

Mary

It shouldn't all come from the lecturer, even though one sometimes expects that, and maybe I also intuitively expected that, sort of, the way it's always been, but...ja...*a process of discovery, where you also discover for yourself, where the lecturer facilitates that process of discovery, but doesn't reveal necessarily all at once*.

We see students beginning to question their own assumptions and recognising their own development with an unexpected approach to their learning by the lecturer.

We also see students struggling with epistemological dilemmas, being presented with differing views:

Luke

…there was *no right model there and there was no wrong model…the different groups came up with different things.* Whereas *I was more used on getting the right answer, and if I get the right answer, and if this is the right answer, and then the other groups who don't have the same answer, are wrong.* So that was my experience and that was probably the most difficult thing for me to comprehend."

The dualistic student is presented with more than one view and has to grapple with the idea that there can be multiple views. We can almost see the transition from a dualistic type of thinking to a more multiplicist view, or King and Kitchener's (1981) second-stage student moving to the third stage with the further response:

Luke

Well, to me, *the lecturer must come and say: "Right, you've tried, but this is the right answer.*"

Has that thinking changed?

Consciously, yes – when I put my mind to it. But *subconsciously I go back to right/wrong* and I need to move from that.

4.4 Conclusion

As indicated previously in Chapter one, learning is linked to change in meanings of understanding the world. The shifts in the students' conceptualisation of learning from the first outcome to the last outcome are distinctly discernible. There is a definite shift from seeing knowledge as acquisition and expecting others to take responsibility for their learning to constructing new knowledge, seeking to understand their own learning behaviours and taking responsibility for their learning.

CHAPTER 5
CONCLUSION

5.1 Summary of Results

As indicated in the Introduction to Chapter one, this dissertation was undertaken with the intention of exploring students' experience of learning systems thinking in a postgraduate management programme, examining the implications for teaching and learning and providing possible recommendations.

Students see learning in the context of systems thinking as:

- A product – where knowledge is content that is acquired;
- A process – where "activities" like reading, questioning, practical application become the vehicle towards the product ;
- A social activity – where meaning is made through engagement with others, which can contribute to a richer understanding;
- Meta-cognition – where self-monitoring of cognitive processes occurs.

The longitudinal studies by researchers cited in Chapter two typically show that most undergraduate students are either at a dualistic level or progress from this to a level of multiplicity. The number of students who exit universities or colleges at the second stage far outweighs those who progress to the third stage of epistemic cognition (West, 2004). The data of this study show that, even though these students are mature students at a postgraduate level and not of similar age to Perry's (1970) or Baxter-Magolda's (1992) undergraduate college students, it is possible for them to range from being first-stage dualistic thinkers to third-stage contextual relativists.

Students also have conceptions of the learning context, which include:

- Seeing the lecturer as an "authority" figure who holds the key to knowledge;
- Seeing the lecturer as a "facilitator" who assists them in their journey towards greater conceptual understanding.

The data show that students were influenced by the learning context, particularly by the indirect actions, behaviours and attitudes of the teachers. This, in turn, led to specific student responses, e.g. withdrawing from engagement with the teacher.

5.2 Implications for Teaching and Learning

According to Salner's (1986) argument, it is third-stage contextual relativists who are able to think epistemically who best engage in systems thinking practice. It means, therefore, that teachers, who assume this position, have a responsibility towards their students to facilitate their journey along this epistemological path towards epistemic cognition, particularly if they have not already reached it.

The following are some the ways that teachers can facilitate students' learning journeys towards epistemic cognition. Some of the suggestions echo Salner's (1986) guidelines, which have been offered by other researchers as well.

Salner (1986) specifically cautions against differing constructs of meaning by teachers and students leading to unintended outcomes. Teachers need to be conscious of the language they use and how they mediate their thoughts, ideas and expectations of students.

It helps that teachers have knowledge of cognitive and epistemic developmental levels and are able to identify them in students so that they are able to structure their classroom practice accordingly.

Knowledge of "how" their students learn and why this can result in different conceptions of "what" they learn (Booth, 1997) can help teachers to try different strategies to change their students' learning approaches. As indicated earlier, a deep approach to learning results in deeper understanding than a surface approach to learning.

Dualistic thinkers can be presented with a range of multiple perspectives and conflicting points of view to challenge their own thinking and possibly provide what Salner (1986, p.231) terms "personal epistemological dilemmas" in order to move them to the next developmental stage.

From the data it is evident that the process of discovery learning results in a sense of accomplishment for the student. Providing learning tasks that facilitate such a process means that students may be epistemically challenged when grappling with unknown concepts and situations.

Based on the results of the data, collaborative learning situations are vital to furthering epistemic cognition. When group members provide conflicting points of view for one another, they need to reflect on and possibly reconstruct their ideas. I have shown that learning is a social process and group tasks can go a long way towards moving a student along the epistemic developmental path.

Salner (1986) contends that the move from multiplicity to contextual relativism is more difficult than that from dualism to multiplicity. Facilitating this move means providing students with opportunities for meta-cognition and meta-learning, so that they reflect explicitly on their own and others' thinking and learning. I would argue that this has to become the norm. As shown by the data, it is these internal processes of reflection that can contribute greatly towards developing epistemic cognition.

5.3 Conclusion

The study of student learning is not new and remains a fertile area for ongoing exploration. There have been numerous studies of student conceptions of learning. However, with each new investigation of this topic with different students in different times within different learning contexts, there is always the possibility of discovering something new or something different. I have no doubt that despite what is evident in the literature about student conceptions of learning, any teacher serious about

accompanying their students on epistemological and epistemic development "journeys" remains excited by this possibility.

Although the implications for teaching and learning considered above are located within a systems thinking context in this study, they are transferable and may be considered by teachers in general. This study has contributed to my own "journey" of practice as a teacher. In conclusion, I wish to concur with Salner (1986, p.232) that, "For general systems learning, with its emphasis on structures rather than on content, epistemic competence may be the most critical competence of all."

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APPENDIX A – FACE-TO-FACE INTERVIEW QUESTIONS

Each interview started with standard information for the interviewee – purpose of the interview; thanks for their availability and willingness and their permission to record the interview.

The following set of questions formed the basis of the interview:

1. Why did you want to do the Y programme?
2. What were your expectations of the course? Were these met? How? If not, why not?
3. What does systems thinking mean for you?
4. Describe your experience of learning systems thinking.
5. Tell me about the most significant or defining moment of your learning experience since starting the Y programme.
6. How has systems thinking impacted on your life?
7. How have you used systems thinking in your work and/or personal life?
8. Let's talk about the lecturers or instructors. What do you expect from them to help you learn effectively? (Follow up if necessary: What relationship do you think instructors and students should have to make learning effective?)
9. What kinds of experiences have you had with other students that help you learn? (Follow up if necessary: What kinds of interactions would you like to have that would help you learn?)
10. Talk to me about the most difficult part of the programme.
11. Would you change this in some way? If so, how? Why?
12. Is there anything else you would like to share to help me understand your perspective on the learning you have experienced over the past year?

Unstructured and probing questions included:

- Can you provide me with a concrete example of what you mean?
- Could you tell me more about that?
- What do you mean by that?
- Why was that important to you?

APPENDIX B – WRITTEN RESPONSE QUESTIONS

1. What do you understand by systems thinking?

2. Describe your experience of learning systems thinking.

3. Has systems thinking changed your approach to life in any way? If so, how?

4. Since being introduced to systems thinking, mention some examples of how you applied it to your work and/or personal life?

APPENDIX C – TRANSCRIPT OF AN INTERVIEW

Preliminaries: thanking the student for her time, offering some refreshments, putting the interview into context and getting permission to record the interview.

Interviewer: Why did you want to do the course, the Y programme?

Mary: In the field of work that I do, you get more recognition when you're a Master's student. When I look at job adverts, it's usually minimum requirements three years experience and a Master's degree. And I knew that if I wanted to get ahead, beyond the organisation where I'm working now, I would need to get a Master's qualification. So then it's a question of a Master's in what? I wasn't really looking. Now and then I would look on the website and then I saw the ad in the newspaper. I thought: That looks interesting, you know - fairly neutral. It wasn't environment-specific, which was also good because I wanted to focus more on my management skills. And I didn't know what part of the environment I wanted to specialise in. I just knew I wanted to work in environment community development. And I suppose…and that's how I got there.

Interviewer: Okay, so it wasn't the course specifically in terms of: I want to do the Y course. It was: I want to do a Master's and then of course you…

Mary: And then, ja, primarily a Master's, secondary, okay, that one, the Y course.

Interviewer: What was it about that particular course that appealed to you?

Mary: I liked the holistic nature of it. It was the way…I like to see the bigger picture of things, and for me, it was the type of course that brought in the bigger picture of whatever it is you're doing. And that's what really attracted me to it – the whole systemic approach and that it was sort of a generic course that could be used for…it would aid me in what I'm already doing. I didn't have to go and learn something new. It was something which would enable me in a practical way. You know, I often felt that I was sort of, a bit in over my head in the work that I was doing. I really needed the extra skills. I needed the additional skills - practical application.

Interviewer: How long have you been in that particular job? Is it still your job? Is it your current job?

Mary: No. I've left them. It was two and a half years I had been working there.

Interviewer: What were your expectations of the course?

Mary: Oh, my goodness. I didn't have huge expectations. I'm very much a wait-and-see kind of person. Um, the course itself, umm, I really didn't have specific…I was just expecting to do a course which would enable me to really manage to…to do what I am doing at work better. And I like the practical aspect of it, really. That was an expectation for me, to see how the two could work together – which is again very unusual for X education, or any university education.

Interviewer: So you say that an expectation was that you would be able to do your job better, you would get the management skills and secondly the theoretical and practical component, that you would be able to do that as well. So you do say that was an expectation?

Mary: Mmm.

Interviewer: Okay. Do you feel that these expectations have actually been met?

Mary: They have, to a degree. I do view people and situations I find myself in differently. Um, especially the people dynamic, I especially try and put myself now in the other person's shoes. I think I am that way by nature, but I think the skill has been more refined. Systems theory – I think, you know, I think it goes back again to what drew me to the course. It's very much what's in me already, so I don't think it brought something new as such, not totally new, but just enhanced or improved what was there. So, I guess, if my expectation was to improve my skills and my job, yes, it has. It has done that, because it has…how can I put this…umm, in some ways, ja, it has, and other ways also not. But in term of those expectations, yes, it has. I am able to do my work better. But it's difficult for me to see it specifically that. I can just feel I've got a greater confidence. You know, even to quit my job, a stable job at Z and to go on my own, you know. I just felt that, you know, with the right approach, with the right tools I must be able to do this, you know, and that, I suppose that's really what the course has given us – those tools to do what we

all...each one specialises in and that's where it really has, and I'm learning more, even as I'm going to do my research now, and I'm learning all the techniques. It's honing what's there already. It's developing what's there already.

Interviewer: You mentioned the theoretical and practical and the merging of the two as an expectation. Could you tell me more about that?

Mary: I think that the only way that expectation could really have been met is if I had made the effort to do that. Take, for example, the business course. I haven't really written proposals or business plans since then, but I have actually attempted, I have used it to some degree. Systems theory not – not in terms of specific theory. There's some of the things that I haven't really had the opportunity to apply. Now, if you take, for example, Mark. Mark immediately went in there and started using CLDs. I, in my work, haven't had the opportunity to do that, but I know, I can see now, also the way my job was going then, I felt that I was not getting the scope that I wanted, you know, to get out there, do things. I was too confined to the office, so I haven't really put that into practice. And I don't think it's something that Shlomo could have really taught us how to do it – something that we ourselves had to go and figure out, and I think he will always be there, you know, to assist us in that. So I personally haven't put enough effort into realising that, but I think, that he, in the course, has done his bit to assist us in developing, that's why he could, you know, as the other, we ourselves need to...

Interviewer: Tell me how he's done that.

Mary: In his teaching...umm, not so much in his teaching, okay, more in the reading he's given us. Umm, I dunno, his style of teaching is just not – I dunno... I don't know if he does it deliberately or if it's just something he lacks, but there's often that, you know, that confusion. But some of the readings he's chosen and the sources that he's pointed us, the direction he's pointed us in – that has been very useful in terms of acquiring the theoretical information. But his teaching style – he doesn't take the normal teaching/teacher approach. I think he tries to facilitate, and ja, I think he's done a fairly good job of that, but then again, he doesn't try and steer - like we would have our group discussions – he wouldn't try and steer us in a direction, where, I sometimes felt, he should have, because we just weren't getting to where we should have been, and I

thought: Here he's the authority. he should have come and done something about it. Um, I don't know if that's just his teaching style.

Interviewer: It's a question that I would have asked you later on, but because you've mentioned it, I just want to carry on from there. You mentioned that he doesn't have the traditional or the normal – "normal" was the word you used -teaching approach or teaching style. What, for you, is a normal teaching style? Tell me more about that. Unpack that a bit for me.

Mary: Umm, it would be revealing everything. That's the normal teaching style. He would have stood up there, told us, given us a summary of all the information that he would point us to. So he would've given us a summary and an outline and this fits in there and that fits in there; umm, ja, basically given more information – summarised – before sending us to go and look at the materials.

Interviewer: Okay, so we're talking about lecturers, instructors or facilitators at the moment. What did you expect from them to help you learn effectively?

Mary: From Shlomo, or in general?

Interviewer: All of them. You don't have to confine it to him only.

Mary: I would expect someone to challenge my way of thinking. That I enjoy when going into a learning situation. I don't want to just be given something that...the information that I could just have read up myself, very easily. I enjoy a challenging classroom situation where you need to, where it's not easy, where you have to struggle for the information, and discuss it. You know I like a learning situation where people discuss with each other. You have your things like focus groups. We did that a lot in our Honours year at varsity. You would be given a topic. You would like go and read up on that and then in a group, you would discuss the issue, talk about it. Umm, I like a learning environment where the students themselves are able to facilitate a discussion around a topic, umm, and raise issues themselves. It shouldn't all come from the lecturer, even though one sometimes expects that, and maybe I also intuitively expected that, sort of, the way it's always been, but...ja...a process of discovery, where you also discover for yourself, where the lecturer facilitates that process of discovery, but doesn't reveal necessarily all at once.

Interviewer: Do you feel that any of what you've just explained to me actually did happen on the course at all?

Mary: It did.

Interviewer: And to what extent?

Mary: I think to a very large extent.

Interviewer: And with whom would you say that happened?

Mary: It happened amongst us, amongst the students. We struggled through things together, as we cursed Shlomo for not telling us, you know, that was our process of discovery, umm, where we able to ....

Interviewer: Were you able to do that with any of the other modules, where Shlomo wasn't the instructor?

Mary: No, definitely not Project Management.

Interviewer: Why not?

Mary: Because that was your, oh, traditional learning style – very old school. Sit in front and Matthew just blurted out everything – literally ja, like gave us the notes and he would give the summary up in front of the class.

Interviewer: And the discussion groups and the working groups that he had asked students to get themselves into?

Mary: Ja, I didn't really. We, we did. We got together when we had to do the assignment, but I think the nature of those assignments wasn't, wasn't really much to discuss about, um, or when we got together, it was really to get through the worksheet. You know, let's figure out how to do this calculation. That was always the focus, and I was with students from... people I didn't know, and so they didn't understand what we had, the situation we had come out of, you know, and Y course, so we all just wanted to get the work done. There wasn't much discussion about issues.

Interviewer: Tell me what relationship you think instructors and students should have to make learning effective.

Mary: Mm, um, it should be an easygoing relationship, not as firm as in our primary school days, you know, where you should… It should be a relationship where you can call up your lecturer and say: I need to chat to you about this. I'm struggling with this, and the lecturer should be available, but should also be stern enough to say: "Look, you actually just need to figure this out for yourself now," sort of a balance of the two. It should be a fairly open…not authoritative, definitely not.

Interviewer: Did you find that this could happen – the lecturers or instructors with whom you came into contact?

Mary: With Shlomo, yes, Matthew, yes. Um, I did find that. Ja, um, I think it was also I had to initiate, to see just how far I could take the relationship with that lecturer, cos I mean, they've got hundreds, thousands of students. Um, it was up to me to initiate that and I saw it with Matthew. I saw it with Shlomo. I didn't initiate anything like that with the other guys. Business! New Ventures! What's his name?

Interviewer: Peter Perry.

Mary: Peter! But I'm sure…he seemed like a guy who would, you know, um, arrange a meeting to see you if you had an idea you wanted to run by him.

Interviewer: Right. Okay. Thank you. Tell me, what does systems thinking mean for you?

Mary: I guess, kind of…mixed…up… arrows going all over the place – things aren't linear. They go in whichever direction they need to go – to put all the parts of the system together. It's about finding the real connections where different things meet and not trying to place them in boxes – just because it's easier to deal with. It refers to the interconnectedness of different elements/parts of a system. I guess…it's about being able to recognise those things I normally…wouldn't see as a related factor in a problem or situation. Um, one has to be able to look at and analyse the situation holistically. This requires…some measure of…um, creativity and

out-of-the-box thinking. Without this one will tend to see things in a linear fashion and miss out on the real/more important issue.

Interviewer: Okay. Mary, can you describe for me your experience of learning systems thinking.

Mary: Um, I've always known in theory that all things are interconnected, but never really…applied it intentionally in real life situations…only focused on the obvious linkages. It's been an…uncomfortable experience, um, delving into issues I'm not familiar with. It's easy to focus on the core…one's area of expertise…but going into issues surrounding the core is unfamiliar territory. But it's been exciting, waking up areas of my mind I'd forgotten about…or chose to ignore.

Interviewer: Right. Okay. Thank you. Tell me about, for you, your most significant, or defining moment of your learning experience, since starting the Y course.

Mary: Since starting? Okay. Most defining learning experience… Oh dear. What was the most significant…? I think it was when I stopped um, sort of reserving my comment in our group discussions, where I actually just allowed the flow to happen, and just if something, if I felt I wanted to say something, I would just say it, where normally I would be very cautious of when I speak, what I say and so on…when I became comfortable with, with the group, and that didn't take too long actually. It didn't take very long.

Interviewer: About how long was not "too long"?

Mary: Um, we started with Luke and Martha. Okay, there I felt a bit restricted, because there was a bit of a strange dynamic between Luke and Martha, a bit of a clash. I was a bit cautious there. Um, oh, it really, really kicked off actually now recently when we did research methodology. We had it during that one week of…that one week. Um, I'd say there I really felt the freedom to just express my opinion and to also share my knowledge and, cos sometimes you know, if you say too much, people think: "Oh you know everything," which is what I also sometimes used to think, especially at high school, and at varsity actually.

Interviewer: You say that it didn't take that long, that it happened fairly quickly, and if you look at the research methodology module, that took place in this year, (Mm) and the course started in June last year. What makes you feel that it actually didn't take that long for you to find that freedom?

Mary: I dunno. Maybe I just felt quite comfortable from the beginning. It was the people in my group and their nature that sort of, you know, I held back at times.

Interviewer: When you say "not long", are you talking about each group, or are you talking about a time period that elapsed? I just need some clarity.

Mary: Maybe, I think, you know, it's been so long. Maybe my perception of time is a bit warped. Um, I don't know. It's like this gap at the start, you know, from what we did in the beginning, the initial stuff, and those are like, you know, starting off, initial introductory type things – fluffy, you know, psychology-type things, which were very useful. Um, did we have much discussion? It wasn't as challenging, I think, maybe that's it - as now. This is the kind of debate I like to have, the kind of stuff we talked about then, you know. Um, and that's when the opportunity really started – to have, like, that kind of debate. Before it wasn't really…we really weren't discussing that much…opposing views, and each one trying to interpret differently, different people's interpretation. It was fairly straightforward, you know. What were those psychology theories and that kind of thing? And what did we do after that? Then it was Peter. And then we did a bit of methodology as well. There wasn't much scope for that then, I think. Um, so I don't know what I mean by "early off" actually. Ja, it's not that early off.

Interviewer: Well, I'm just wondering, whether you're seeing it, you know, whether you're seeing it differently in terms of…

Mary: Maybe from when the opportunity arose.

Interviewer: Ja, ja, well, it might be. That's what I'm trying to gauge from you.

Mary: Ja, me too. I think when the opportunity arose. Mm.

Interviewer: Okay, so are you saying that the opportunity perhaps wasn't that present in the first group?

Mary: Not necessarily the group, but the first set of modules, the first learning set-up, initial learning…set-up wasn't really conducive to that kind of discussion.

Interviewer: Right. Okay. Mary, I want to come back to something that you mentioned right at the beginning, not right at the beginning, but when we spoke about your expectations, what it was that you wanted to get from the course and so on, you mentioned the words "right approach" and "right tools" (Mm), that this was what the course would give you (Mm). Won't you just unpack for me a little bit, in terms of: What is the "right approach"? What are the "right tools"?

Mary: You know when I did my studies, they…we were taught very much in…it was always the content and the context of the environment and sustainable development and issues around that, but there was nothing which gave you tools to implement that in the real world, so that's what I meant by "tools", the tools of how to actually take a project and manage it and manage the people who you work with and so on. I struggled through that, I can tell you, when I started working at Organisation B. I really struggled through that, because there wasn't even some sort of training programme or no one really showed me. I had to sort of figure it out by myself…; and the "right approach" for me is a holistic, you know, holistic approach that considers everything and I think that became more and more significant to me as I learnt more and more about my director, who I worked for at Organisation B. It was very much **his** approach, the way **he** wants it done. And I really started questioning that, and I thought: But there must be other ways out there to do this. Who said that his approach is the right approach? That was the only thing I ever knew. Straight from varsity I went to work there. So I want to discover, you know, there must be other ways of doing this, a different approach in terms of the tools that one uses, management styles…also a different approach in terms of how one views environmental protection and conservation, and that different approach I'm getting through my new job, where it's more…and I'm busy discovering new approaches also through my research.

Interviewer: Thanks, Mary. Tell me, how has systems thinking impacted on your life?

Mary: Well, since doing the Y course I now intentionally look for the linkages to things that are less obvious…and um, pay more attention to general issues surrounding a problem, not just the core of the problem. I'm more open-minded when analysing and trying to understand a situation.

Interviewer: Okay. Have you used systems thinking in your work and/or personal life? And if you have, how?

Mary: Yes, I have. I've been doing social impact assessments. We go into the field; we meet with people; we look at the social and economic issues around whatever development we're working on. Then, you, know, we come back with all these interviews and I sort of analyse the information and come out with what are the key issues that need to be addressed here…in an assessment and then look at how they are linked just to get a baseline overview of what people's concerns and issues are. So I do use it. I've just used it again now with an impact assessment and the project manager was quite impressed – with the methodology, with the description. He thought it was a very thorough description because he was in the field with me. He thought it was a very thorough description of what we found.

Interviewer: You've mentioned before that you see systems thinking as a tool. So have you used it like this? Can you explain to me exactly how?

Mary: I've used the actual grounded theory analysis – perhaps not in as much detail. We usually have about two to three weeks to do a write-up to complete a baseline current situation. Plus look at what are the impacts, plus do a management plan for how to mitigate the impact, the negative impact. So I used a grounded theory analysis, first in terms of finding out what are the key issues, come out with the top four or five key issues, and then being able to explain it. It really helps for me to write the story to explain what the current situation is, because what we do is describe the current scenario and then we say how it's gonna change – based on the development, whatever development might be brought in – be it a road, or a mine, whatever… With the last impact assessment I did the diagram, the causal loop diagram – which really impressed the project manager.

Interviewer: Okay. I want to ask you if you see grounded theory as a systems thinking tool? You don't see it as a research methodology?

Mary: Mm…I guess it's both, but it is a method. But I think the underlying thinking behind it is systems thinking, because if I was just doing…if I was using a different method…that was just putting things, you know, on their own separately, I wouldn't say it's systems theory. The way I describe it, there's always inter-linkages and the one always leads into the other.

Interviewer: Okay. Tell me a little bit about your causal loop diagram, how you used that.

Mary: Mm…I basically look at the five key things that I come up with, and then I look at how the one influences the other, how the one relates to the other. And then show how…you know…this activity reinforces that, and as long as this happens, then that will continue…

Interviewer: Okay.

Mary: I was explaining something to a friend, and my colleague…we have an open-plan office…and my colleagues were listening and they said: "Wow, what's that? Sounds interesting! You must tell us more." So they're also very keen to learn the methodology, which I've not really sat down…oh, I was explaining to a colleague of mine… She was going into the field. She was going alone for the first time and she had to collect information to do this baseline. It's called a baseline, which is just sort of assessing what the situation is before the development, and I was explaining to her, you know, grounded theory. And my colleague went, "Wow! That sounds fantastic. You should show us some time. We do so much research for the actual impact assessment reports that methodology becomes so important. And I think a lot of people struggle through it…or others have…they sort of came up with…I don't know how other people really do it, but I don't see any consistent methodology for writing up the main issues. And you know, have they covered everything? Is it clear…because we're talking about hot-shot developers who want to take over…and in the causal-loop diagrams I've got like three paragraphs that just summarise the situation. And thereafter, the rest is sort of detail. I see huge value in this for the kind of work we do.

Interviewer: Alright then, thank you. Let's move a little bit to the students now, um, and you did mention some of your interaction with your group earlier on. Um, I don't know if you'd like to pick up with that again, or just consider other kinds of experiences as well that you've had with other students that help you learn.

Mary: That help me learn?

Interviewer: Ja. You have mentioned, as I've said, a bit of that in terms of students themselves facilitating discussions (Mm) and so on, but perhaps you just want to reflect a bit on what kinds of experiences you had with other students on the Y course (Mm) that helped you to learn.

Mary: Um, well, it was really interesting to see how each one took a different approach to, you know, like if you were to ask the question, if I had to ask somebody a question, um, like, take Project Management, for example, um, how to answer this question, go to Simon, and he would give you this long-winded explanation of the answer, you know. You go to Luke and you get a very logical, you know, well-structured answer, and you go to...okay John wasn't...John says: "No, no, no, Guys. Go to the answers. Here's my old past papers. Um, it was interesting to see the way each one has a different style, had a different style of interacting with me to help me through my learning experience. Umm, some more dominant, some more dominant personalities, e.g. Mark, **very** dominating, got a very strong, domineering personality, but I don't think it's intentional to overpower somebody else. I think it's just his nature; he's just so driven, and he needs to be careful of that. No, I think his, the rest of, you know, his personality makes up for that, I think. But I also learnt quite a bit from him, from him being so assertive, and like, "Come let's work through this thing," and, you know, it was a good learning experience. From Luke I learnt, sort of, you know, just take it step by step, think it through very carefully, you know, logically and so forth. Um, John, I didn't really get much learning from him. I found I was assisting **him** a lot of the time. Um, you know, we've had this discussion before (Ja), he *does* have a bit of a childish attitude about him – he **does**. I think it's just, you know, he's...it's that immaturity of that... you know, boyish...the boyish nature of him, you know...um...and...who else is in the class? Simon. I've gotten to know Simon a bit better now, through, um, the Project Management, because we both rewrote the exam last week. Um, initially I, especially in the New Ventures project module, I found him a bit...he just goes off and talks

about things which aren't really relevant. And when the pressure was on for this exam, he didn't do that. He was more to the point. Um, I think, ja, I think there also the course just allowed me to interact with different personalities. I don't know if that answers your question.

Interviewer: Mm, mm, um, tell me a little bit about what kind of interactions you would have liked to have had (Mm) that would've helped you to learn.

Mary: I would've liked to have had **more** interaction, to start off with. I wished there was **more** interaction. Um, not all our classrooms…it would have been nice if we had, like, if our classrooms were such an awful environment to be working in…um…because it's such a practical thing, you know…um, we weren't confined to the classrooms, no, there was no reason for us to be confined to there. We just needed each other and our notes. Um…different kinds of interaction…um…I think just more time to really discuss the sort of things that we got started on, and to maybe work a little, do a little more stuff together. A few more projects together. We did a little of that – working together, working on specific projects, but only really at the beginning actually. When we were first divided into groups we did a lot of project work then. Maybe it was part of…I dunno…the way it was set up, but it would've been nice to continue that learning from the others. It would've been nice for that.

Interviewer: Okay. Thank you. Talk to me a little bit about the most difficult part of the programme.

Mary: Gee! Uh, difficult…it's putting it all together, figuring out what Shlomo is trying to teach us. You know, that's been really difficult for me. Um…that whole struggling through it. That's really been difficult. Cos I would sometimes question, question what I'm questioning and, you know, but I always find it alarming. I think that's been most difficult – you said "difficult" hey, the "most difficult"…in trying to figure out Shlomo…but I do understand the man, because how he can manage and do this…

Interviewer: What was your kind of almost support system for yourself in dealing with that difficulty?

Mary: Um…talking about it with you guys was definitely part of it, and just sitting down and thinking: **What** is he trying to do? Just reflecting on what this programme is about, what he's trying to achieve and trying to see some connection there.

Interviewer: Would you change that, if you could…um…that difficulty, in terms of what made it difficult, and if you could, how?

Mary: Um…I think Shlomo should've given us a bit more warning that it would be like that. Not what his technique is, not the **how**, but just to prepare us for that uncertainty, that confusion, because I found that people bad-mouthed the programme at the start. Martha left because of that, whereas…maybe if it was just explained to us from the start that's how it's meant to be…and I'm still not hundred percent sure, I'm assuming, I think often that she's doing that just to teach us, you know, that we're learning… Obviously I can maybe ask him right at the end.

Interviewer: Right. You say that Martha left because of it. Um, do you know that as a fact (Partly) or…

Mary: No, partly, partly. She, I know she also had personal problems. It was becoming too much for her – the restructuring of the C department was taking up too much of her time, but before that she was in my group, my small group and she did say to me that, you know, she, she was gonna leave the course if it continued like that. She **did** say that to me.

Interviewer: Okay. Okay…and she actually *did* go. (Mm) Um, Mary, (Yes), this is the final question. Is there anything else that you would like to share with me to help me understand your perspective on the learning that you've experienced over the past year?

Mary: Umm…I think the whole aspect of struggling through an issue was very, very good. Umm…and maybe if it weren't for Handy's reading on learning I probably would have still been very frustrated. I think that was very significant for me. Um, it really is a new type of teaching method; it really is something different, totally different from what I had expected, even though my expectations, I didn't know **what** I was gonna expect, different from what I was used to in terms of a X teaching, you know, perspective. Um, the interaction with you guys was fantastic. Um, that was extremely valuable. Um, we have…I think we've got… Shlomo's got

a very good source of information to give us. He's very, very good. He gives us **relevant** stuff, **new** stuff, you know, not old, ancient theories and approaches. I like that…that…you know, what's the word…contemporary nature of the theories and information that we got. Um, I think the department itself needs to get more organised, um, in terms of the information they give us, you know, the schedules and…**that** they definitely need to work on. And Shlomo, as the head of this course, needs to…he needs to do something there. Um, I really think it's a fantastic course, but it's not…you know, you can send out nice brochures as much as you want, but *we* are the best marketers of this course. And like I said in the beginning, when people didn't understand what was happening, we were marketing it in a very negative light, and we were talking to other people out there, you know, not knowing that down the line, that this **is** actually a good thing and they could be benefiting from that. So I think they really need to change something there or else they're just not going to get the number of students – and I think **more** students should do this course. I think it's an excellent course. They should change Project Management.

Interviewer: Why do you say that?

Mary: I dunno - Matthew's approach to engineering. They've got to take the focus away from engineering when they do Project Management. I'm sure there's a lot of, there **are** a lot of useful things that I took away from there, but there's too much focus on engineering. And if you look at it, it's also a generic programme. Even though it's in the engineering faculty, the marketing is as a generic programme. They shouldn't focus Project Management in engineering. And if you just chat to Simon – he teaches Project Management – at the technikon. And he failed the course. You know, that's got to tell you something. I think he also lacked the interest. I lacked the interest in really applying myself to study for it, you know. So I think that's something they should look at. So, that's it.

Interviewer: Mm. You've mentioned Shlomo's name quite a bit. Just tell me a little bit about…um…that emphasis on him as the instructor.

Mary: Look, he was central to the programme. Um, because you're a student, you rely, especially in the beginning, you rely a lot on your instructor. He plays a very key role. Even though we were there to assist each other in learning, we still needed him as someone we could fall back on. And

because of that uncertainty I didn't know how to approach him, you know. I didn't know...Did I feel resentment towards him...or... I don't know. But I think he plays a very key role, and um...ja.

Interviewer: Was there any other instructor who stood out for you in any way?

Mary: Not the way he did. Um...because I think everybody else's teaching was fairly standard, hey, actually. Anyway, okay, the psychology and the drama lady – that was a different approach; it was a different subject, so they had to be very practical, you know, very...um...maybe it was because of the nature of the subject. Drama – you've got to put on an act; you need to be very dramatic, you know, that you do. But if you had to take that approach on a theoretical course, um...it's a whole question of what you keep leaving in my head. Those others didn't really leave a question mark the way she did, and I always wanted to answer. I wanted to figure out: But **what**? **Why**? And that's what kept me going. I guess.

Interviewer: Okay. Anything else, Mary?

Mary: *Shakes head.*

Interviewer: No. Then let me thank you very much for (You're most welcome.) sharing as honestly as possible. I appreciate that.

Mary: You're welcome.

APPENDIX D – TRANSCRIPTS OF TWO QUESTIONS FROM EACH CANDIDATE

Interviewer: Right. Thank you. We started talking a little bit about the lecturers, the instructors, the facilitators or whatever it is that you want to call them, and you've mentioned a little bit particularly in Theo Smith's case. What was it that you expected in order to help you learn better? I want to ask you if there is anything else that you perhaps want to mention – thinking about all of them, and not just Theo Smith. Um, what would you also perhaps have expected? You mentioned that the Project Management, for example, needed massaging... um, what is it that you would have expected from the lecturers, the instructors, the facilitators to help you learn effectively?

Reuben: Um, look, um, I think that we are all at the stage where we are not looking to be babied along. You're not wanting to be spoon fed. You want to learn, um, but I suppose what I'm saying is that you don't want it to be more difficult than it needs to be. If there are lessons that have been learnt from the past, um, in terms of what has worked for students, what hasn't worked for students, what has got in the way of students, what has made it more difficult, then those need to be considered and to be taken account of, taken account of in the programme. Um... perhaps one of the areas that they could have focussed on or helped us a little bit would have been in some of the tasks that we were set, sometimes it was very unclear of what exactly was required. When there is a huge amount of work and when people are working as well, um, it can be quite difficult and a waste of time really to try and figure out what your task is and then have to go back and do the assignment over when you haven't completed what the requirements are. So I think those kinds of things perhaps are frustrating and unnecessary. To what degree did I learn from, from completing a task again? I don't think I did learn again from completing a task, from carrying out a task a second time. I don't, maybe it... uh... you learn in terms of perhaps of some of the questions you need to ask up front, but I'm not sure if we need that at this stage in terms of our learning experience. Um, um, what I meant with the Project Management side, I suppose what I described there, what I was trying to say... there is... perhaps it needs a refresh... it needs a bit of refreshing, um, in terms of the notes. Some of the notes appeared like they'd been around for quite a long time. Sometimes it was difficult to read those notes.

Um, also with the Systems Thinking side of the first year...we sometimes got notes that were cut off that were difficult to read, that went to small writing – that's unnecessary, that. Um, those things in terms of a quality programme, shouldn't be there.

Interviewer: Do you perhaps want to mention, um, what should be there in terms of a quality programme?

Reuben: Well I think that there's certain things that are just um...how would you put it, that should just be there, that you shouldn't have to concern yourself with, um, and that would be for instance, um, that any readings that you got were very clear and that you could read them, um, that um, that right up front that you'd have a very clear idea of what the programme entailed, what the purpose of the programme was, um, how the programme was going to unfold, um, what were the learning objectives along the way of that programme, who would be involved, what resources you would require to ensure that you got the most out of the programme, and perhaps some readings that were appropriate for those stages...

Interviewer: Right.

Reuben: And then individuals who were facilitating the course that were experts in that field, uh, so for instance, I think there's no doubt that, uh, that the Venture Business Planning, the appropriate person was brought in for that, but maybe on the Systems side, perhaps we need to pass things, you know, cast the search a little bit further afield, um, if Theo's too busy, then is there somebody else that could come in here...and really right up front I'd have liked to have known about Stafford Behr and those kind of individuals who contributed a great deal from a cybernetic point of view. Um, sorry, I'm harping a little bit. I'm going back to what I said earlier on, but perhaps I'm reinforcing what I was trying to say.

Interviewer: Thanks Reuben. Just on that, would you mind providing me with an example of lack of clarity in a task? You mentioned that you had to redo a task. Would you just provide me with an example...?

Reuben: Oh, I think that the task that perhaps springs to mind was the one that I think our group had to redo. I think your group, I can't remember...there were at least two groups that had to redo a particular task, um, and it was really a whole lot of reading that I think we had to synthesise, that we had to...and provide a particular report. Um, there was a large amount of work and the task had to be redone again.

Interviewer: Right.

Reuben: I just think that, you know, perhaps what might help is that...I think we've all experienced the situation where verbal direction or verbal instructions can be interpreted differently. For instance, um, your mom might come in here now and say, "Please do X." And you might think to do it in this particular way and I might think that it's slightly different.

Interviewer: Right.

Reuben: Um, and um then, you know, if we have got a quality programme, then perhaps what should happen is if there is a specific task that you need to do, perhaps just put it down in writing as well.

Interviewer: Right.

Reuben: Because I can remember words and I would interpret them in a particular way, and you'd perhaps remember those words and interpret them slightly differently. Okay, so perhaps if you're asked to do a task, the task should be in writing and that might help to prevent some of the problems.

Interviewer: Right.

Reuben: Obviously at the same time I need to ask the questions I should be asking too, and maybe there's an obligation on the student to do more and that, you know, if you don't understand or you are not sure to ask the questions, but I think if I go back to that particular example I gave you, I think we understood it in a particular way and that's why we approached it in the way we did. We didn't realise that we had misunderstood the task.

Interviewer: Right. Thanks Reuben. How many times did that happen to you, having to redo a task?

Reuben: Fortunately I think it only happened once.

Interviewer: Only once?

Reuben: Yeah.

Interviewer: Okay. Reuben, I just want to move on a little bit and for you to think about some of your experiences on the course. What kind of experiences have you had with other students that have helped you to learn?

Reuben: Students that are on the course...?

Interviewer: On the course, yes.

Reuben: The Y Programme?

Interviewer: Yes.

Reuben: Are you looking for specific examples, or are you just...?

Interviewer: You can provide those for me as well and/or just talk about it generally...

Reuben: Um, you know, what I found particularly useful was that there were a variety of people from a variety of backgrounds on the course. I think what was a pity was perhaps there wasn't, there weren't more people on the programme, which would have ensured that the variety of experiences were even greater. If I think first of all in terms of our group the group work that we did. I think we all approached it, approached things differently, and perhaps, which was very useful, is that everybody had something to contribute and sometimes it was difficult, because perhaps, um, you'd always find in those groups that individuals will approach tasks differently to you, um, and it takes quite a while sometimes to clarify exactly which way the group is going to go. But I think that was all very, very valuable because it helps you to realise that out in the real world or in the corporate world or wherever you are, whether you are an NGO or whatever, that people understand things

differently. People come from different backgrounds and you have to communicate very, very clearly if you are asking a... for a particular task to be done, or if from another direction you're sharing a vision or you're trying to persuade or influence people, it helps to realise that you've got to approach those tasks differently for different individuals, and I'm not talking racial issues or anything like that, from a particular background like that. In any situation we all have different ways of understanding...um...the world. We have different world views, and I think that was...What was very useful is that it helped reinforce perhaps the thinking that I already had, that you needed to be very understanding because sometimes I was way off track and sometimes one of the individuals in the team was way off track. So you actually needed time to talk through, and you also needed to verbalise where you were, in other words, your mental model. You actually had to create that picture for others, um, to understand where you were, otherwise you just talk at cross purposes and you miss each other, so I think...probably my...what was most valuable to me is when I misinterpreted a particular requirement which was that first task...and I persuaded the group to go along that particular line, to do it in that way, and then we had to redo it again. So that was very, very valuable because it made me realise that I had misinterpreted the specific task, instruction. So I think that was most probably a most valuable lesson to me - to listen more carefully to the rest of the group...and to make sure that, even though the person, you know, the person may be saying that I am not happy with that, and even though that person doesn't express why they are not happy, they actually got to be patient and to draw that out, and I understand that picture in that person's mind because there might be some very, very valuable information there that you've missed and, you know, stops you from making an error and a mistake. So perhaps that was what was most valuable. This part of the year, unfortunately, there has been so few of us and there seems to be so few opportunities to have those kind of experiences...which is a pity.

Interviewer: I want us to shift our focus now to the instructors, facilitators, whatever is that you want to call them and ask you what it is that you expect from them to help you, what it is that you expected from them to help you learn effectively.

Simon: I, you know, I think also, you know, one must bear in mind that this is a, a post-graduate, one of the highest qualifications you can have at an institution, at a university, and...and...you...you...number one is...there's a definite deliverable at the end of it, you know, whether it's a dissertation or a technical report. Now, that has certain, you know, if I say a dissertation or a technical report...they can expect you to do a technical report, I mean, I've done a technical report for my Honours degree, and you know, they took you out and gave you a few lectures in writing styles. You then had to apply that writing style to your area of interest. Here they are giving more than a writing style. They're not even focusing on a writing style. Here they're focusing on laying a very good foundation in philosophy of leadership or the various philosophies of leadership, laying a good foundation and saying: Now apply this to your area of interest. Now, also the fact that it's a higher...you know, that, to me, I think makes it an excellent course. On the other hand, they're not there to sort of give you, go through lectures with massive amounts of, of, of, sort of...uh...you know, we have a lecturer stand up front and tell you about all these people, which is the sort of education we're, we're very much accustomed to as undergraduates. You know, this is a different sort of thing. They're more facilitating your learning. They don't tell you, and you know, the nice thing that has happened, Shlomo has given us...un...that file, and I've got two more, all those sort of handouts on, on, on people, sort of right through the year, sort of thing, and it's been great, and, and, and, you get to go...I think he does a heck of a lot. I think he does a lot more for us than I do for my students, I realise. Okay, it's for a few people, so it's maybe a bit easier. And I think that small classes like this is ideal for this sort of education. If we were seventeen in a class, it would've been a lot different, you know, but I think it's a perfect size and I think it's a perfect method of tuition, facilitating other people's learning.

Interviewer: Mm. You mentioned Shlomo doing that. Is that what all of your instructors or lecturers did?

Simon: I think the role Magda has played has played has been a very important one. You know, if it wasn't for her, stuff we got from Theo Smith, Tabitha, um, the other bloke, the project guy. What's his name?

Interviewer: There was Joe Bloggs and there was...

Simon: Joe Bloggs, Matthew (Matthew) and, and even Peter. I think he sort of made sure that those different approaches were not sort of disjointed from each other. You know, he's actually, he's actually kept it all together. I mean, even though we were going through project management pains with Matthew, which is a painful method of learning, you know, he...he was still giving us the other...the other approach, you know, guiding your learning by giving you readings that sort of that...very much different from...although I'm saying that Matthew's approach to project management is painful, but there's also a need for that. I mean that is very much the skills that your former managers used to have, you know, sort of have a list of items to do and could tick everyone in a checkbox.

Interviewer: What was painful about it?

Simon: I think, I think what was painful about it was going back to that undergraduate way of actually learning, where you, where you would write an exam at the end of it, and to me, I think, moving from the one to the other was very difficult. I mean, could you imagine us sitting for four lectures or five lectures a day as undergraduates at this stage after sort of being exposed to it? It would be very difficult. I mean, imagine, having to go write an examination, four examinations at the end of the semester. It would have been extremely difficult. You know, so this course...besides the fact that this course doesn't lend itself, it's just the people we have, their focus, it's too diverse. You know...

Interviewer: You say you found Matthew's method painful and because of it, you relate it to an undergraduate style and methodology. What was different about the other courses or the other teachers that made it not painful?

Simon: I think the fact that, that...that with Matthew at any stage of project management, you know, he had to stop the course and assess you via an examination, would've been difficult, you know, whereas the others, let's say, the fact that you...that you...because there's... in project

management and those other courses, there's only one correct answer, unfortunately, and even when it came to certain things where you could be rather creative like, for example, like um, like, sort of the design of an organisation, he wasn't very open about it. In the first assignment I was very creative about how I thought that organisation could've been designed. And he said it's very innovative, but, you know and, but he wasn't very open to the innovation and that sort of thing. You know, it wasn't...unlike for example, systems engineering practice. Now how do you apply this to your work environment? You know, I'm not saying that Matthew's is wrong. Maybe it's good to...to...because that is very much um, focusing on...you know, it has to be done a certain way.

Interviewer: Right. Thanks for that. I was going to ask you...um...just now to move from the lecturers to the students and perhaps just tell me a little bit about the kinds of experiences you've had with the other students that have helped you to learn.

Simon: Well, um, like I said first of all, that, that the students were very diverse. You, for example, and this is my perception, that, that as a teacher you probably taught languages or something, you know. And to Mary, I know, is bringing endless environmental science stuff, you know, so, and, and, regardless as to what your area of expertise is, you've got to acquire first, a certain...um, you have to have a philosophy as to how you approach your work. Um, and, and a particular philosophy about the various areas, you know. And in our case, that leadership philosophy could be the very same thing, you know, and could have varying degrees of success, but I think the real thing is that you have to be so dynamic that you could actually adapt or alter your approaches. And um, if one looks at, at Mark's job, for example, the work he does, you know he's very much that...I imagine very much what I always thought that leaders were, but realised they're not really. You know, very charismatic and that sort of thing. I realised that does not symbolise leadership. You know, it just symbolises that that's a charismatic person, not necessarily a good leader, okay. But whereas you could be a good leader. But it may not be with every charismatic person, you know. Um, a lot of...um...there were two people who were very much alike, who would probably not be able to get along in a group. It would be Mark and Thomas. You know, both are very headstrong and feel that the way they wanna do things, it's the best way. There's absolutely no other way of doing that. Any other way...but there was a failure. So you know, it's very good not to have worked with

Mark at the same time. You know, we'd get nowhere. Okay? And then working with Mark and Mary together - Mary and Mark are...are...you know, very different from one another. Mary's a...she's very much a person that thinks through things, um, very carefully, you know. Everything that she says, she thinks through it, whereas Mark, everything comes off the top, you know, without...you know, and...it comes off the top and if it doesn't work, it's okay. I can change it. Whereas Mary is: I think through it carefully and maybe it could work well first time round. Mark is probably very good, I mean, in his business, I mean, you don't have the luxury to think through things a lot. You've got to give answers really fast, and that's fine if they're the wrong answers. Nothing, you know...they could work and if they don't work, well, the worst that could happen to you is you get fired. And he seems to work well. Whereas Mary, on the other hand, she wants to think through things very carefully, and the answer she's gonna come up with, is probably gonna be the right thing, the right approach, you know.

Interviewer: Simon, can you give me an example perhaps of any interaction with any of these people whom you've mentioned that made your...that was a meaningful learning experience for you?

Simon: Um, I think a meaningful learning experience for me would be a um, Reuben, for example. I suppose it comes with maturity. Reuben is, you know...and he could've been a lot different in the past, but, I mean, he's a very matured person, he's, he's, you know, very knowledgeable about things and, you know, and for an accountant to have, uh, you know, to not be a grocery type of guy, I suppose, that, to me, is wonderful. It just about breaks that stereotype. So the interactions I've had with Reuben have always been sort of...he's very much a paternal type of person. You know, he...he...he...I wouldn't say paternal, uh, more like, you know, more like an older friend, willing to give advice and willing to listen and that sort of thing, that I find very nice about him. I mean, you know, if I were to phone Reuben now, you know, um, he'd sort of lead you to either stating that you have a problem or that you need assistance or stuff like that. He would never sort of...it's just his approach. He's, he's very approachable. I mean, take Mark, for example. You would phone him now and think: Hey wait, what did I wanna say? He come: Quick, Simon, what is it? You know, sort of different, you know. One is very rushed in his approach and the other one is very, you know, would sort of...is very approachable.

Interviewer: You've mentioned that particular interaction that you've had with Luke, which was meaningful for you. Are there any other kinds of interaction that you would find meaningful?

Simon: Um, um, well, working with Muriel and Luke, okay?
Um, you know, seeing also, I mean, growing across the cultural barriers as well, I mean, Luke is, is, I don't know, um, he's, he's a very intelligent person, but he, he...I noticed that him and Muriel didn't get along well because Luke was very secretive about the fact that he was from P. You know, and then I wondered why, you know, and, and...um, Muriel, she said: I don't know why Luke didn't tell me that he's from P, because I asked him and he said he was from the Q and I asked him if he knew that area and he doesn't speak any of the South African ethnic languages. So, um, you know, it's...the diversity that exists between two people that one would have thought was so much, that's supposed to be so alike, you know, it's, you know, Luke and Muriel couldn't be further...more diverse than what they are, you know. And, and that was also another striking thing, that they are so different. Um, and then people, two people who should've been very much different, but were very much alike, Mark and Thomas. You know, so I think, you know, the idea of stereotyping people because of pop culture, backgrounds and that sort of thing it's a complete taboo. If there's any two people, Thomas and I because of our same cultural backgrounds, we should've been very much alike, but we couldn't be more different. Thomas, he was sort of flippant about other people's abilities, ag, the Lukes again or the Living Legends, you know. His approach was: Let's see what nonsense they're gonna come up with, you know, like, all this dismissal of other people. I don't think it's a bad thing, you know. He's almost, you know, um, it probably stems from his confidence that he has, you know, the fact that he would just shoot other people down like that. Whatever they gonna come up with, cannot come close to what I'm gonna have, better than what I have. So I'm not saying it's a bad thing. I'm just saying it's possibly something you lack. Depending on where you are in your personal development, you sometimes lack confidence. I know I do, and, and Thomas was always confident. I mean, there were times when I thought the task was, you know, if you don't tackle it now, we were gonna run out of time, and Thomas would say: Ag, we'll have the time. I tell you what, I'll take off from work and then we work together. You know, that was his approach, he would, you know...

Interviewer: And did you do that?

Simon: Ja. You know, so whereas, for example, Mary, would say: We do a little bit there and there and we can get there on time, and you know, time to spare, and we can think things over.

Interviewer: So her approach was completely different?

Simon: Ja.

Interviewer: Right. Thank you. Okay, let's just shift focus a bit and talk a bit about the lecturers, the instructors, the facilitators, whatever you want to call them. (Ja). Um, what did you expect from them to help you learn effectively?

John: Um, I definitely didn't expect what we got. Um, but I guess with it...with it being such a completely different course as to what it was I expected, um, I guess there needed to be some sort of difference in terms of the way that the, the information and the learnings come across as well. Um, I'm...I'm not gonna...I...my view, or my...my views on the way that the course was brought across, um, now and then is different, because then I was, I guess I was getting frustrated quite quickly. Um...

Interviewer: When you say "Then", what particular period are you talking about?

John: I'm talking about much earlier before you can now, before you can now grasp all of these concepts together. So then, at that time, um, you don't understand why it is that they must give you a deliverable in that manner, that you don't even understand what it is that you're supposed to do. I mean that's seriously frustrating because I really only just had time to work on my assignments like late at night, because I used to bring my work home – office work and that type of thing. Um, and then...for you to be that dead at, at night and for you to start working on something that you're not sure that you were going in the right direction, um, it can get pretty frustrating. So, with you not being led in that manner, um, in the manner that you're accustomed to, I guess, then, um, you tend to get put off by it pretty easily.

Interviewer: And you mentioned "Now".

John: Well, um, now, look, I, I guess there's a...there's a piece of literature that I was responsible for in my group and...I think that allowed me to put a lot of things in perspective. Um, I think it was...jeez, I'm now gonna try and think what piece it was, but they were talking about how you...the right way to, to interview people, for instance. Um, you ask open questions, that you don't kind of lead your, your, what's it, interviewee, um, into a certain way of answering your questions. You allow him to, to navigate the way forward, for instance. So, um, but, there was, there was a piece on...on how you don't lead the other person into, into where, almost, because you almost...um...it's almost like you're being, not biased, um, but you're not allowing the information to flow in the way that they, um, should let it come out. And then at the end of that, after I did that little deliverable, because I was responsible for that piece, it allowed me to put things into perspective as to how they taught the course.

Interviewer: Just tell me...you mentioned you didn't expect what you got, okay, in terms of the lecturers. What was it that you expected from them?

John: I guess after twelve years in school and another couple of years doing a degree you expect that type of thing.

Interviewer: Which is what?

John: Um...your normal sitting in a class, someone gives something in front, you jot it down. Um, exam time, you swot it out, and then when it's exams, you just regurgitate it on paper. Um, but then, so in X amount...What does it amount to? Fifteen years of, of studying, you...you know that you should be...you know that your deliverable...you know what your deliverable is at the end of the day. They tell you you need to hand in a paper or an assignment. You know what it is they expect you from you. You should write a programme on this and you go home and you can swot and when you phone your buddies that night that's also in the class with you, um, you can gauge where one another is, where he is and where you are: I am now writing the code for **this**, so now you know, not that that's important, but there's nothing intangible about your deliverables. You can, you can almost measure the whole thing out, from start to finish. And that was lacking in our deliverables when we were doing the Y programme, because, I can speak to you for

an hour on the phone and still not know where the hell you are, as opposed to where I am in the paper.

Interviewer: Right. John, what relationship do you think instructors and students should have to make learning effective?

John: Um…I…I can see the effectiveness of their…of that particular teaching style, the vagueness and all of that. Um, however, it doesn't gel too well with me. Um, I…uh…after a while I…I was more inclined to **not** ask questions that I, in order for me to understand something in class, because there was like, this blank stare at you when you ask a question and you think: did I just ask a stupid question now? And then I'll tend to **not** ask questions, and then, so you've got this whole repetitive thing going on where, um, you unsure about something, but you **not** gonna ask the question, and then, the less questions you ask, the more unsure you gonna get about the deliverable, for instance. And then you have this cycle just going on, and then at the end of the day when it comes to D-day, when you need to hand in the paper, then you sitting there with all these questions that you didn't end up asking.

Interviewer: Did you experience that kind of vagueness with all your instructors?

John: No.

Interviewer: Do you want to unpack that a little bit for me?

John: I didn't experience that with all of them. I'm not quite sure what you're asking.

Interviewer: I know you probably haven't reflected on such a question before. Um, let me put it this way. When you talk about the course as a whole, I'm, I'm not sure if you're referring to certain instructors. There were different instructors. (Ja. Sure. There were different instructors.) And your experience, in terms of the vagueness with a particular instructor, um, is that what almost in a sense um…is that your…is that what you were left with about instructors as a whole?

John: Um, no, no, no, no. Not at all.

Interviewer: Okay. Was there anybody with whom you enjoyed the relationship, or the instruction or the facilitation?

John: Ja, there's many of them.

Interviewer: And maybe you want to mention some of those?

John: If you want the names, I can tell you now I've got a memory problem.

Interviewer: Well, maybe you can refer to the course.

John: Uh, what's his name – the guy that gave the Project Management? Joe. (Joe) Joe was cool, well, maybe because I related to, I could relate to what he was teaching. Um, that **is** what I do – project management and that type of thing. Um, so I could engage easier. Then there's uh…what's that lady that gave the…the…uh…it was in our first contact week. Um, she was teaching rational and irrational behaviour and all that type of stuff. (Tabitha) Tabitha, ja. Um, who else was there? Who else was there?

Interviewer: Um…we had…

John: There was a couple of people in that first contact week…

Interviewer: There was Leonie van Niekerk.

John: We got her on the first day?

Interviewer: Yes.

John: It's too far back. Can't remember.

Interviewer: Then there's Matthew…

John: No, Matthew is the coolest.

Interviewer: Why, was he the coolest?

John: Well, look, I guess it was…I did Project Management first. And I didn't have any other introduction to the Y programme. This was prior to the Y

programme that I did it. And um, Matthew, too, the topics that he was teaching, was stuff that I could relate to. And then, um, he had a…I guess I can engage with someone easier if…if they kind of have a sense of humour. And Matthew, like, just used to crack them like every minute.

Interviewer: Right. And that's what you enjoyed – about it?

John: Ja. I…look, that was so with me…with me starting with Matthew's courses, um, I was now in the…my routine was work, work in the office at least and then um, go home and then work some more. So all of a sudden then that routine was changed. I 'm sitting in lectures now. Um, and at first I couldn't cope with it. I'd fall asleep in Matthew's classes. So, and then, as my body adjusted now, and then it was Matthew's sense of humour that could make me bear the lectures and that type of thing. Because I think when I started I had lectures on Tuesday and Thursday evenings. Tuesday was Project Management and Thursday was the Managing Performance Improvement in Projects, um and it…it's pretty demanding if you not accustomed to lectures after work and that type of thing. So, he, he made it a bit easier for me to cope with, with the classes.

Interviewer: So whose instruction did you enjoy the least?

John: It depends on who you're referring to as lecturers or instructors?

Interviewer: Everybody – whoever presented anything to you.

John: Um, look I said that um, at that time…um…with you not understanding what the intentions are, and why it is that they teaching the, the, the way that they **are** teaching…it was definitely Shlomo.

Interviewer: Okay. Did that improve at all – as you went along?

John: Well, you kind of learn to deal with it, without realising what the intention is. Um…and um…ja, so you kind of just learn enough to go along.

Interviewer: Okay. Um, I just want to move our focus away from the instructors now and move to the students. Um, what kinds of experiences did you have with other students that helped you to learn?

John: Um...do you mean...uh...if I learnt anything from the others...? I'm not quite sure....

Interviewer: Yes, what were the kinds of experiences that helped you to learn?

John: Look, the simple fact that you...

Interviewer: It might have been, sorry, it might have been an experience with them that helped **you** to learn something; (Ja, no problem.) It might have been something that you learnt from them...um, you know...

John: There is...um...there is definitely a lot that I've learnt in terms of the...the...the learnings that you made...the fact that because there **is** some sort of a stigma attached to um...to sitting in class with, with, with other groups, um, whether it be race or creed and...for, for you to be learning about the same topics, um, and for you to realise that...er...the questions that this other guy's asking that's sitting next to you, is actually something...it's, it's quite similar to what **you** wanted to know as well, so it kind of, it kind of breaks down this imaginary walls that you, that you have now set up...between...in terms of how different you are from the next person. So for you to sit and engage with the work in class and then for you to realise that this person has actually got a similar question or, um, need to understand the something in a certain way that you have, um, that, to me, came second to none.

Interviewer: Okay. Um, any other experience?

John: Ja. Look, then there was um, certain people in the class that could make me...that could me...uh, **want** to underst...geez, I didn't say that aloud, that could encourage my learning, and others that you might not see eye to eye with that will, that will maybe hamper you learn.

Interviewer: Do you want to give me an example of each of those, um who might want to encourage you and then another example where it hampered your learning?

John: Um, I'm not quite sure exactly why...I...there was a tendency for me to excel with one person or one group of persons as opposed to the next. But, like for instance there was...there was a...there was a deliverable that I had, that we had, that I enquired by someone about what exactly it

was, and um, the description that that person gave me was like um…you just do this and this and then I asked them: Is that what you did? And they said, "Ja." And then um, when I…when I checked again when our papers were given back, it wasn't and I couldn't actually work with that person. Whenever I was thrown in a group together with that person, then I'd…I'd like lose interest in it. It's like a ja, ja, let's just go on. Um, it's like there's this conniving air going on and um, I don't work well in things like that.

Interviewer: So that was an example of how that hampered your learning?

John: Ja.

Interviewer: Give me an example of how it encouraged you.

John: Um, I actually started off with that one when I said I don't know exactly what it is that makes you just click with that person or group of people, but…there's, there's **something** that they'll do, um…and like, for instance, um…Reuben once told me something for a position paper that I, that we needed to write and for some reason, I didn't phone Reuben as, or, I didn't enquire by Reuben as often as what I did by anyone else. Um, and then once he told me: "You know what you do, John, you just take the time that you have and you look at what it is you think you must do and you just divide that up with the time that you have and that's all you give. You don't give anything more because you gonna burn yourself out and…a simple thing such as that. That definitely did it for me for, for that paper. So, I guess I, I'm inclined to…to almost to be able to, to learn a little bit faster or learn a little bit more effectively if, if there's something that person did to switch something on in me.

Interviewer: Mm. Thank you. Um, are there any interactions that you would have liked to have had that would've helped your learning?

John: Um, such as what?

Interviewer: Anything, that perhaps didn't happen, that you would've liked to have happened, have had happen.

John: I can't think of anything in particular. Um, but it's maybe because I don't fully understand what it is that you mean by interactions…

Interviewer: ...with your fellow students.

John: Oh, um...for instance, for I think the most recent one would've been for our papers that we're working on now. Um, I, I, not often, but I do on the odd occasion run into some of the students that did the Y programme a while ago. Um, and there's one in particular, there's one guy in particular, um, Paul Sack, and he...I was talking to him about, about our papers that we need to work on now and he mentioned that you actually, you have to work in your groups, not in your group, in your class, all of the individuals in the class. Um, it's a lot better if you all get together and, um, you discuss your paper or the way that you progressing with your paper with the others, so that you can, you can bounce the ideas off one another, um, you can get a different perspective on it, for instance, um, and I was seriously hoping for that because it was our...the way I saw it, it was gonna be our last stab to work on something together and the...the lectures was actually a very very rewarding experience because you, not the lectures, but when we sitting in class together, sharing your experience or your views with one another. Um, I find things like that very rewarding, so with it being like our last deliverable that we had, it was the ultimate, it is the ultimate deliverable at the end of the day. Um, for you to have this once-off, last opportunity with sharing your ideas. At least with sharing you might handle a particular problem that you have encountered with your paper. For that, for instance. But um, the Saturdays, well, not necessarily the Saturdays only, but the times that we spent um, uh, reflecting on our works that we did, um, that is, it's valuable.

Interviewer: And you've not raised this particular issue with um, your...with Shlomo, the course convenor.

John: I don't think it's up to him. I think it's up to, it was up to us and, um, the person that initiated this whole thing in my head, for instance, was Simon, and he said, "Maybe we must work together." And then...now Mark, the guy that I was referring to, he also knows Simon. Um, and when I was talking to Mark, Mark was like: "Ja, ja, we must do it." And I, in fact, got another old student that didn't complete his paper, and he too was very keen on joining and then, just like that, out of the blue, it just kind of fizzed out...um, his... Simon's suggestions to, to, to do it together like that, and then I guess I just lost momentum...

Interviewer: Why was it important to you to meet with everybody like that?

John: Because it would be exactly what the lectures was...um, it was exactly that. You have notes on a topic, um, and then from then onwards it's a...you sharing your experiences or anything that you can add to the topic or how it is that you can relate to it. Um, and that is what makes the, the classroom such an experience for you to, to learn from.

Interviewer: Do you want to come back to the other question now, or (I think I will, ja) in terms of the lecturers and facilitators and instructors? Would you like to talk a little bit more about that?

Luke: Ja, like Joe Bloggs, ja. How it gave me, I could now see that you can actually use this. And it's effective. You see, that's one of the problems I experienced with the conventional way of learning, ja, learning where, in the conventional institutions you get the knowledge, then they leave it all up to you to get in the industry or in the market and see how you combine your application or your experience there with what you've learnt. And it's not always easy. It's like two different worlds, and actually, you have to put more effort to try and match or marry the two. Whereas when Joe, when Joe Bloggs, it was more of the address box. He came from actually...I don't know why he ended up doing the course, but he, beginning of his lecture he said the problems that he was getting on doing projects and why projects were almost like failing in his uh, the company that he's worked for. And he came back and after doing the course, he came up with a model that solved most of the problems.

Interviewer: Right. Luke, just to go back to what you've said, just to help me clarify, so from what you've said about Joe, you received from him tools and you were able almost to marry within the course, the theory and the practice and is that what it is that you were actually wanting from the lecturers in general?

Luke: Ja, if you say it that way, but that was what I was expecting from the programme...to know, to get the knowledge, get the skills and apply it.

Interviewer: And you feel you've been able to **do** that – in the class, all three?

Luke: Ja, I think I can. Somebody was saying that when you learn your knowledge, that's your head, the skills, that's more of your hands, and then the application is more of your heart.

Interviewer: If I were to ask you what relationship you think instructors and students should have to make learning effective, what would your response to that question be?

Luke: I think lecturers should problem ja, ja should know exactly where the learners are coming from, not only coming from, but where they are and make sure that in the learning, that in their lecture, that they come down to the level where the students are. And more, they shouldn't actually match the... facilitator and get the learners to sort of educate, it's not educate themselves, but get them to be both.
