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Open-book Assessment in the Qualifying Examination of South African Chartered Accountants

by

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ABSTRACT

Open-book assessment in the qualifying examination of South African chartered accountants

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The global financial environment is constantly and rapidly shifting. This has resulted in changes to the International Financial Reporting Standards (IFRS). In support of the developments in the global business environment and the swift changes in IFRS, the local financial regulators have had to follow with supporting changes in national regulations. Taking the above factors into consideration, the auditing and accounting professions all over the world face various challenges, and South Africa (SA) is no exception. Thus, it was imperative for these professions in SA to make the same radical alterations. One of the areas demanding attention was the process of becoming a Chartered Accountant (CA). *Inter alia*, one focus area was the final examination in the qualifying process. The Chartered Accountant Qualifying Examination Part One (QE Part 1) has been changed from a closed-book assessment to an open-book assessment. This change is relevant because of the importance of the examination itself and the apparent lack of intensive research on students' perceptions of this type of assessment.

In my research I explored the perceptions of taxation students on open-book assessment in the QE Part 1. My study commenced with a focus group (consisting of students that had no previous open-book assessment exposure). I used Interactive qualitative analysis (IQA) as qualitative research method. During this focus group, the students identified ten perceptions (also referred to as affinities) on open-book

assessment. For each affinity the focus group provided a descriptive name and an explanatory definition. These affinities were: good preparation, back-up, encourage, general advantages, improve quality of answers, negative symptoms, negative environment, personal experience and hindrance, different approach and time management. This group of students also identified relationships between these different affinities. These relationships were summarized and reflected in a system interrelationship diagram (SID). Findings from this SID indicated that students perceive good preparation as the strongest driver for successful completion of an open-book assessment. The SID indicates three primary outcomes namely negative symptoms, a different approach and time management.

The affinities as identified by the focus group were then used during the interviews (conducted with students who had previous open-book assessment exposure). During the IQA interviews, the students were asked to comment on the posed affinities and the possible relationships between them. These findings were summarized and reflected in an interview SID. This SID indicated that these students perceived the primary driver in the system to be a different approach with two primary outcomes - negative environment and improvement in quality of answers.

The IQA method is in essence a theory–generating tool that assisted me in my understanding of a group and individual students' perceptions, before and after exposure to an open-book assessment.

Keywords: Open-book assessment, qualitative research, Interactive qualitative analysis, affinity, perception, focus group, semi-structured interview, chartered accountant, taxation.

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ABBREVIATIONS

ACT	Axial Code Table
AERA	American Education Research Association
ART	Affinity Relationship Table
BCom	*Baccalaureus Commercii*
CA	Chartered Accountant
CTA	Certificate in the Theory of Accounting
IFRS	International Financial Reporting Standards
IQA	Interactive Qualitative Analysis
IRD	Interrelationship Diagram
MCom	*Magister Commercii*
QE Part 1	Chartered Accountant Qualifying Examination Part One
SA	South Africa
SAICA	South African Institute of Chartered Accountants
SAQA	South African Qualifications Authority
SID	Systems Influence Diagram
UP	University of Pretoria
USA	United States of America

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Chapter 1: Overview and Rationale

1.1 Introduction

The global financial environment is constantly and rapidly shifting. According to *Time Magazine*, the world economy was plunged into a recession over the last two years (2008-2009) (Schuman 2009), and world leaders had to devise bail-out plans for businesses. For example, the government of the United States of America (USA) had to provide the automotive industry in Detroit with funds to keep it afloat (Smith 2009). The extent of these bail-out plans was more complex than had been anticipated (Schuman 2009). According to Schuman (2009), leaders of the world economy argue that we can expect to emerge from this recession in 2010. However, these changes in the global financial sector pose integrated and real-life problems for the regulators of world markets, global economies and, which is very relevant to my[1] research, the auditing and accounting professions, both locally and abroad.

The regulation of the auditing and accounting professions has been fraught with problems. This could be seen in the high profile accounting cases in the USA of WorldCom in 2002 (Lavey 2006) and Enron in 2001 (Thomas 2002), when accounting loopholes were used to hide billions of dollars-worth of debt. Such incidents highlighted the shortcomings of the accounting profession, giving rise to questions on the regulation of these (Wikipedia 2010).

The rapidly-changing environment has resulted in changes to the International Financial Reporting Standards (IFRS). These have been rewritten and new ones compiled to support the global economy and to provide guidelines for the auditing and accounting professions to meet the new challenges of the changing world economy. In support of the developments in the global business environment and the swift changes in IFRS, the local financial regulators have had to follow with supporting changes in national regulations. At this point, taking the above factors into consideration, the auditing and accounting professions all over the world face various challenges, and South Africa (SA) is no exception.

[1] Owing to the qualitative nature of my research, I have chosen to write in the first person throughout (Creswell 2002).

In the light of all this, it was imperative for these professions in SA to make the same radical alterations. One of the areas demanding attention was the process of becoming a Chartered Accountant (CA). Inter alia, one focus area was the final examination in the qualifying process. The Chartered Accountant Qualifying Examination Part One (QE Part 1) has been changed from the traditional closed-book assessment to an alternative open-book assessment. Although this change had already occurred in 2004, this remains relevant because of the importance of the examination itself and the apparent lack of intensive research on students' perceptions of this type of assessment. This change is integral to my research and will be examined as this chapter unfolds. I start by discussing the motivation and rationale for my research, after which I will briefly contextualise the theoretical terminology I have used and will position the research methodology and strategies that I used. I will conclude the chapter by outlining and setting out the remainder of my research report.

1.2 Motivation

My interest in the concept and practice of assessment was sparked during the period 1993 to 1996, when I taught Accounting and Geography as school subjects to secondary school learners.[2] Most learners seem to find assessment situations stressful and evince correspondingly high levels of anxiety. The type of assessments I used during this time was mainly closed-book assessment applications for tests and examinations.

I continued with my own studies, and at this point started to lecture at tertiary level, and realised that assessment tended to pose a threat even here. The uncertainty inherent to the assessment process and the fear of forgetting the theoretical content seemed to play a major role in both students' preparation and their increased personal anxiety levels. I started to explore the idea of alternative assessment quite early in my professional development, but thoughts on the topic were always present in the background.

[2] When I refer to a learner, this will mean a schoolchild, while the term student will mean a university scholar.

My experience as a student, educator, trainee and lecturer, as well as my exposure to learners' experiences of assessment, made me realise that issues relating to anxiety levels, remembering theoretical content, handling large amounts of study material, and application of theory appeared dominant issues at all levels of education.

The South African Institute of Chartered Accountants (SAICA) changed their assessment policy for the QE Part 1 from the traditional closed-book assessment to an alternative open-book approach in 2004. According to SAICA, the aim of this examination was to assess the integrated application and cognitive knowledge of a candidate. This pertained to all four major subject areas: Auditing, Taxation, Financial Accounting and Management Accounting. SAICA's main objective for such assessment was to establish whether candidates were able to apply the prescribed concepts and principles to real-life situations (SAICA 2005).

This change in assessment practice re-invigorated my interest in assessment and I started asking questions on whether this different assessment practice would influence the existing challenges and deliver individuals better-prepared for the workplace. I started to ask myself the following range of questions:

- What is the reason for changing a closed-book examination to an open-book examination?
- What are the real differences between open-book and closed-book assessment?
- Would the use of notes, textbooks and/or other resources help students during the examination, or could this be a hindrance?
- How do students' perceptions of open-book assessment influence their preparing for and writing the examination?
- To what extent is it necessary to change the compilation of an examination paper when setting it for a closed-book or open-book examination?

From the above-mentioned questions I am particularly interested in the question of students' perceptions of open-book assessment, and decided to direct my research towards this area.

1.3 Rationale

The anticipated theoretical value of my research lies in creating a better understanding of open-book assessment, specifically in relation to Taxation.[3] My interest has increased since the QE Part 1 was changed from the traditional closed-book to the alternative open-book assessment situation. In a more practical sense, the findings of my research could be applied to maximising the current preparation and assessment of Taxation students before they write the QE Part 1.

Current literature concurs that open-book assessment apparently creates a better understanding of the contents of a subject area (Baillie & Toohey 1997; Durham 1990; Feller 1994; Theophilides & Koutselini-Ioannidou 2000).[4] On the other hand, Boniface (1985)[5] contends that the possible use of notes, textbooks and/or other resources might discourage students from preparing thoroughly, as they will have all the relevant information at hand.

When preparing for an assessment, students tend to take the type of assessment into consideration (Struyven, Dochy & Janssens 2002). Their perceptions of the specific assessment type might influence their attitude towards both preparing for the assessment and writing it (Struyven *et al*. 2002[6]). My research therefore focuses on attempting to understand students' perceptions of preparing for and writing open-book assessments.

1.4 Research questions

Within the broad title of my research,[7] I chose to focus on understanding students' perceptions of open-book assessment, delimiting it to students registered in Taxation at the University of Pretoria (UP). My research question is formulated as follows:

What are taxation students' perceptions of open-book assessment?

[3] As a lecturer in the Department of Taxation, I have used Taxation students as participants in my research, and I maintain a keen interest in Taxation.

[4] Authors will be referenced in the text in alphabetical order.

[5] In my research I do not hesitate to incorporate older primary references. Many recent publications continue to refer to this particular landmark study.

[6] From the second instance onwards, I shall refer to the first author followed by *'et al.'* in a reference to three and more authors.

[7] My research title is: 'Open-book assessment in the qualifying examination of South African chartered accountants'.

My research question is divided into the following sub-questions:

- What perceptions of open-book assessment emerge from taxation students' responses?
- How do these emerging perceptions of open-book assessment relate to one another?

1.5 Theoretical terminology

This section defines the theoretical terminology used in my research. The sequence will follow as it appears in the title of my research, including the constructs taxation, taxation students and Interactive qualitative analysis (IQA). This section also serves as delimitation, as these terms will be delineated for what they are and what they are not.

1.5.1 Open-book assessment

According to the American Educational Research Association (AERA), **assessment** is defined as any systematic procedure for collecting information that can be used to make educational conclusions about the characteristics of people or objects on all levels (AERA 1985). There are different types and different definitions of assessment. One type of assessment is called an **open-book assessment**. During an open-book assessment, students are allowed to consult textbooks, notes and/or other materials while writing the assessment test (Koutselini-Ioannidou 1997). This may have different applications with possible stipulations of what resources are permitted in the assessment situation. For purposes of my research, **open-book assessment** will therefore be defined as an assessment type with access to various supporting resources during an assessment situation. However, the only supporting documents allowed into the QE Part 1 assessment are specific prescribed resources, including the SAICA handbook and the SAICA legislation handbook.

1.5.2 Qualifying Examination of Chartered Accountants

QE Part 1 is the first component of the examinations on professional competence for Chartered Accountants in South Africa. The aim of this examination is to test the integrated application of cognitive knowledge in the fields of taxation, financial accounting, financial management and auditing. The objective is to establish whether candidates are able to apply the concepts and principles underpinning the defined field of study to the problems within the relevant domain (SAICA 2005).

The body of knowledge required by an accounting student has proliferated in recent years. It had become virtually impossible to gain sufficient accounting knowledge without neglecting the supporting subjects, and SAICA conducted research into the practice of open-book assessment before drawing a final conclusion on a solution. The research included several universities in SA as well as institutions abroad. Various organisations were asked to comment on open-book assessment in general and to state their current practices. Of the seven universities included in the research, two were in favour of open-book assessment; three were neutral and two were against the application. The main concerns were those of time management, suitable questions, the related marking and, finally, reproducing irrelevant information which is then presented as a solution. Three of the seven universities had experience of this type of assessment. They felt reasonably positive about open-book assessment and focused on its advantages. Four overseas institutes were approached for their comments. Three of the four had included open-book assessment as part of their assessment techniques during the final examinations and thought it represented real-life situations more closely than did the traditional closed-book assessments (SAICA n.d.).

After a great deal of thought had gone into the above research, literature reviews and other input, QE Part 1 was changed in 2004 to open-book assessment, and future students will be assessed according to their expertise and understanding. The ultimate purpose of QE Part 1 is to ensure that continuous education is integral to the professional lifestyle of all chartered accountants (SAICA n.d.; SAICA 2005).

When writing QE Part 1, students are allowed to consult their own copies of the specific prescribed resources/ textbooks. The Examination Committee supplies candidates with additional references that have not been included in the permitted text. The students may highlight, underline, sideline and flag relevant text. However, candidates are not allowed to include additional pages or write on open pages in the textbook. The QE Part 1 was changed from a closed-book assessment to an open-book assessment in order to concentrate more on applications and less on theory (SAICA 2009). After the original changes were made, additional changes followed (SAICA 2009). Wadee (2010) noted that these changes were essential if the CA (SA)[8] designation was to remain relevant and growing. Wadee (2010) stated that the latest changes were designed to enhance the quality and status of future CA (SA)'s by including broad-based business skills.

In order to qualify for this examination, candidates have to complete a three-year *Baccalaureus Commercii* (BCom) Accounting degree or equivalent qualification at a tertiary education institution, and have to complete the Certificate in the Theory of Accounting (CTA) at an accredited tertiary education institution (SAICA 2006).

1.5.3 Taxation

Although taxation is not mentioned in the title of my research, I would like to elaborate further on the subject. I am a lecturer in the Department of Taxation at the University of Pretoria, using Taxation students as participants in my research, has a keen interest in Taxation, and Taxation is one of the four areas assessed in the QE Part 1.

Taxation can be defined as the subject area that focuses on resources used by governments to finance their expenditure by imposing charges on citizens and corporate entities. Although taxation should primarily be impartial in its effects on the different sectors of an economy, governments employ it to encourage or discourage certain economic decisions (*Business Dictionary* 2009).

[8] CA (SA) is the official designation for a registered chartered accountant in South Africa.

Croome and Olivier (2010:2) referred to the case law of *Nyambirai v National Social Security Authority and Another 1996(1) SA 636 (ZS),*[9] when the concept of 'tax' was defined as:

> …a compulsory (not optional) levy imposed by the legislature or other competent authority upon the public as a whole or a substantial sector and which is utilised for the public benefit and to provide a service in the public interest.

1.5.4 Taxation students

Although students of taxation are not mentioned in my research title, I would like to elaborate further on who these taxation students are.

Students classified as Taxation students are registered at the University of Pretoria in the Department of Taxation. In my research, I was interested in two different groups of Taxation students, specifically those who are eligible to write the QE Part 1. This would include the BCom (Honours) in Accounting students (starting Taxation studies in their second year) and students enrolled for the *Magister Commercii* (MCom)[10] degree in Taxation, specifically those who had been exposed to open-book assessment in QE Part 1.

1.5.5 Interactive Qualitative Analysis (IQA)

Although IQA is not mentioned in the title of my research, I would like to mention it at this early stage of my research report. IQA is a qualitative method of research that attempts to incorporate and merge some of the disconnections in theorising about the purposes and methods of qualitative research, and also describes a detailed, application-orientated systematic process by which data, analysis and interpretation are merged as a whole (Northcut & McCoy 2004). Consult Chapter 3 for a detailed discussion on IQA as a qualitative technique/ method of inquiry and analysis.

1.6 Scope

My research ran from 2007 to 2009 and, focusing on two types of data collection, I explored how students perceived open-book assessment. The first data collection

[9] I will not include this case law reference in my reference list, but will instead refer to Croome and Olivier (2010).

[10] Various students are eligible to study the MCom in Taxation. For purposes of my research, I am interested in those who wrote the QE Part 1. The only prerequisite is that they had to be part of the group who were exposed to open-book assessment during the QE Part 1.

took place by means of a focus group, as prescribed in the IQA method. The group of students identified as a population for the first data collection in my research were the BCom (Honours) in Accounting students at UP, with Taxation as a subject. This group of students were selected because they had had no prior experience of open-book assessment and they were preparing to write the QE Part 1 in March of the following year. The timing of the focus group was vital. It was conducted at the beginning of the academic year, before the students could be exposed to any open-book assessment.

The second data collection took place in the form of semi-structured interviews. The group of students identified as a population for the second data collection of my research were the MCom (Taxation) students in the Department of Taxation at UP. The timing of these interviews was less vital, and the only other criterion was that these students had to have a history of experiences with open-book assessment in the QE Part 1.

It is beyond the scope of my research to do a quantitative analysis with a representative group of students with the aim of extrapolating and generalising any results. My research was concerned with the in-depth understanding of open-book assessment in a specific group of students. The analysis of open-book assessment question papers also falls outside the scope of my research.

1.7 Research methodology and strategies

The research paradigm and design that I used will now be briefly discussed, followed by an outline of the data collection and analysis processes. Consult Figure 1.1 for an outline of research issues considered in my research.

Figure 1.1: Outline of research methodology issues considered.

	Phase 1 Focus group	**Phase 2** Interviews
Research design	IQA focus group (Exploring and identifying themes)	IQA semi-structured interview (Understanding, confirming and discussing themes)
Selection process (sampling)	Probability systematic type (Group)	Non-probability – convenience type (Individuals)
Data collection	Focus group according to IQA	Semi-structured interviews according to IQA

Population used	B Com Accounting (Honours) students in the Department of Taxation (10 participants who have not yet written an open-book assessment)	M Com (Taxation) students in the Department of Taxation (5 participants who have experienced an open-book assessment in Taxation)
Data analysis	• Inductive coding • Axial coding • Theoretical coding • Emergent coding	
Quality criteria	*Phase 1 and 2: Rigour properties adhered to:* • Confirmability • Credibility • Transferability • Dependability	
Ethical considerations	*IQA process - data collection and analysis have to be:* • Public and non-idiosyncratic • Replicable within reasonable bounds • Not dependant on the nature of the elements themselves • Part of same process *Other considerations:* • Confidentiality and anonymity • Informed consent • Voluntary participation and withdrawal • Approval from the University of Pretoria *No deception and/or betrayal of participants.*	

1.7.1 Research Paradigm

I chose constructivism as the research paradigm for my research. In embracing this paradigmatic orientation, the primary purpose of my research was to represent the meaning of a phenomenon (open-book assessment) in terms of elements and the relationships present (subjective perceptions by different participants in different contexts on open-book assessment) (Northcut & McCoy 2004). I acknowledge that the understanding of people's subjective experiences (their realities) is valid, multiple and socially constructed (Adams, Collair, Oswald & Perold 2004). In essence, constructivism assumes that the generation of meaning is regarded as social, arising from human interaction (Creswell 2003; Terre Blanche & Durrheim 1999).

Constructivism was ultimately chosen because it resonates with my own world view. I believe that for human beings to have complete understanding, interaction with people is essential and that dialogue amongst people can lead to a higher order of comprehension.

1.7.2 Research design

As constructivism was chosen as the research paradigm for my research, I was interactively involved with the participants' responses throughout the process. They were represented in the qualitative data collected, in an attempt to construct and finally understand their perceptions of open-book assessment. My research explored these perceptions before and after the students' experienced writing an open-book assessment. The research design will follow a qualitative design using IQA. The IQA will consist of a focus group in Phase 1 and semi-structured interviews in Phase 2.

During **Phase 1** a number of participants were invited to take part in a focus group, as formulated by the IQA. The participants in the focus group were chosen at a stage in their studies when they had not yet encountered open-book assessment as an assessment tool. The idea was to explore the themes emerging from the focus group (participants with no experience of open-book assessment) and include it in the guidelines for the semi-structured interviews (participants with experience of open-book assessment).

During **Phase 2** the semi-structured interviews were conducted with students who had already completed a number of open-book assessments, including the QE Part 1. The exploration framework in Phase 1 was employed, and themes that emerged were included during the semi-structured interviews in Phase 2. This design was chosen because it focused on exploring and identifying themes pertaining to a specific phenomenon, in my case, open-book assessment (Creswell 2002).

1.7.3 Data-collection procedures

My research followed the formal process of the IQA developed by Northcutt and McCoy (2004). I initiated the process by collecting data from an IQA focus group

(Phase 1). This focus group started with a brainstorming section on the group's perceptions of open-book assessment, during which a number of themes, called affinities, emerged. An affinity is described as a single perception of open-book assessment as described and defined by the group. The group was then later asked to identify the nature of the relationships, if any, amongst the different affinities. This process yielded an affinity relationship table (ART) which is a table describing the perceived relationships of the group. The process that followed is called theoretical coding, and requires the group to search for connections between the different affinities by developing statements of cause and effect. The result of the process was the construction of the interrelationship diagram (IRD). This diagram represented a matrix for the relationships amongst the different affinities. The final stage for the focus group was to compile a systems influence diagram (SID), which is a visual representation in the form of a modified mind-map. The SID presents the entire system of influences and outcomes on the perceptions by the focus group on the phenomenon (in this case, open-book assessment).

The outcomes of the focus group were then also presented to the interviewees in the individual semi-structured interviews in Phase 2. During these interviews, the affinities defined during the focus group were included in the compilation of the questions asked. The findings of the interviews lead to the individual interview axial code table (ACT), which represented the meaning the interviewee gave to each affinity. By means of further questions, I requested the interviewees to report on any relationships they perceived between the different affinities. These relationships were used to compile a theoretical code ART for each individual interview. The final stage was, as for the focus group, the compilation of the SID.

1.8 Personal role

My role in my research was initiated during the first (written) interaction I had with the participants when I invited them to be part of the focus group in Phase 1 of my research. My role was further reinforced when I took part as an observer during the focus group and afterwards in various electronic communications as the IQA process unfolded. My position then shifted to that of interviewer in Phase 2. During this interaction, I enacted the role of facilitator, communicator, data collector, interviewer, and even participant observer. It must be reiterated that the sole purpose of the interaction with participants was to collect data. Following these data collection activities, my role as researcher shifted to that of analyst, interpreter and integrator.

1.9 Ethical considerations

The IQA method used in my research emphasises that data collection and analysis have to be public and non-idiosyncratic. It should be replicable within reasonable bounds, and should not be dependent on the nature of the elements themselves (Northcutt & McCoy 2004). Data collection and analysis form part of the same process and the participants carry it out themselves. Ethically this would give the assurance that the data generated the authentic voice of the group displayed. It is furthermore very important for the participants to receive feedback on the final results, which was carried out.

The following ethical issues were considered and will be discussed in more detail in Chapter 3:

- Confidentiality and anonymity;
- Informed consent;
- Voluntary participation and withdrawal;
- Approval from the University of Pretoria; and
- No deception and/or betrayal of participants.

Since participation in my research was voluntary and the participants were free to withdraw at any stage of the process, this gave the assurance that there had been no violation of rights. This also enhanced the level of mutual trust between the role-players in my research.

The Dean of the Faculty of Economics and Management Science at UP gave permission to include registered students in my research. In addition, my research topic was approved by the faculty's Postgraduate Research Committee, while the faculty's Ethics Committee gave ethical clearance, ensuring that I did not coerce the participants into taking part in my research.

1.10 Outline of chapters

The outline of the chapters in my research report is as follows:

Chapter 1: Overview and rationale

In Chapter 1, I started by discussing the motivation, rationale and research questions for my research. Thereafter, I briefly contextualised the theoretical terminology I used, positioned the research methodology and strategies I had chosen, highlighted the ethical considerations adhered to, and finally outlined and organised the remainder of my research report.

Chapter 2: Literature grounding

In Chapter 2 I will position constructivism as the theoretical framework underpinning my research. The purpose of my research is to understand how students perceive open-book assessment, the assessment tool used in the QE Part 1. In my determination to address this systematically, it was vital to have a deeper understanding of the constructs of learning, assessment and, specifically, open-book assessment.

Chapter 3: Methodology

Chapter 3 will discuss the research paradigm chosen, which ultimately frames the research design I implemented. Further, I will justify the research process and strategies used. The data analysis process will be outlined and explained, together with issues relating to the rigour properties to which I adhered.

Chapter 4: Data analysis and research findings

In Chapter 4, the data analysis and findings of my research will be discussed in accordance with the two phases in which the data was collected. For each phase, affinities will be described, followed by a description of the relationships between these affinities.

Chapter 5: Interpretation and conclusion

In Chapter 5 I will revisit the research question, as presented at the beginning of my research report. I will integrate the research question with the findings, as set out in Chapter 4, and the literature reviewed in Chapter 2. This will be followed by a discussion of the contributions of my research, together with recommendations for future research. Finally I shall present some limitations of my research and offer a final conclusion.

Chapter 2: Literature grounding

2.1 Introduction

The purpose of my research is to understand how students perceive open-book assessment, the assessment tool used in the QE Part 1. In my determination to address this systematically, it was vital to have a deeper understanding of the constructs of learning, assessment and, specifically, open-book assessment.

I chose to start this chapter with a discussion of constructivism as the theoretical framework underpinning my research. I had to choose the lens through which to 'look' at the constructs - learning, assessment and open-book assessment. I will analyse each concept and contextualise existing literature within these domains.

2.2 Constructivism as theoretical framework

Constructivism is the paradigmatic orientation for my research. It is also the fundamental theoretical anchor and framework for my engagement with literature (further discussed in this chapter) and for making sense of data (further discussed in Chapter 3).

Adhering to a constructivist paradigm and/or constructivist theoretical framework does seem to promote an inclusive approach to thinking and learning. Ultimately this would entail the acknowledgment of students' subjective experiences (realities) as valid, multiple and socially constructed (Adams *et al.* 2004).

If I am to justify constructivism as the theoretical framework for my research, I will have to contextualise it in history as part of a process of learning/knowledge creation and decide how one thinks of it. Mayer (2001) shows that learning theories went through three different periods, which originated mainly in the study field of psychology. The first period focused on theories of **response acquisition**, strongly influenced by the behaviourist framework of classical conditioning. According to these theories, we learn by means of different modes of positive or negative reinforcement that could be tested by observing human behaviours and using experimental scientific methods. The second period shifted away from the emphasis on behavioural responses to information-processing and focused on **knowledge acquisition**. Various groundbreaking cognitive constructs, such as the different types of memory, categories of learning, types of knowledge and meta-cognition, were born from this. Mayer (2001) suggested that the third period was more concerned with **knowledge construction**, whereby learning was thought of as people's constructions while they interactively engaged with their world. This depends also on social and cultural contexts. The period showed that knowledge can no longer be considered objective, reliable and independent of context (Human-Vogel 2004). This means that knowledge is, to all intents and purposes, relative and that specific realities are constructed through the 'eyes' of social interaction and cultural context (Human-Vogel 2004).

Even though much of the literature and research consulted was done in different paradigms, constructivism can be used to construct new meanings by asking specific questions and being aware of the advantages and drawbacks of each paradigm and framework that may create knowledge (Guba & Lincoln 1998; Northcutt & McCoy 2004). Thus, in my journey through a variety of literature on learning, assessment and open-book assessment, I intentionally remained aware of my constructivist position.

2.3 Learning and assessment

Before I review and conceptualise open-book assessment (the main phenomenon in my research), I believe it is necessary to have a general understanding of the constructs of learning and assessment.

A century ago it was believed that factual recall was the most important aspect of learning, and assessment was conducted accordingly. The most common assessment techniques were completion, matching and multiple-choice assessment techniques. Essay questions were thought of as comprising what was considered important for learning, sometimes diverting students to learn certain content and ignore other material (Shepard 2000). This practice seems to resonate for the most part with the knowledge acquisition orientation to learning and, to a lesser extent, with response acquisition theories (Human-Vogel 2004). In applying these practices exclusively and neglecting to consider the different nuances of knowledge construction, we may gather only a partial picture of people's learning (Ogden 2002). Out of a range of definitions of learning and/or assessment, I chose to use Mayer's (2001) three **different theoretical groupings** to guide me to a more nuanced understanding of the origin of such definitions. If I were to ignore the response acquisition and knowledge acquisition theories of learning and promote only the knowledge construction theories, I would without doubt step out of the constructivist paradigm of thought. For this reason, I would rather pay attention to all the different theories of learning, looking through a 'constructivist' lens to make sense of everything, to include it and be aware of it.

I reviewed many definitions of **learning** from all the different theoretical groupings and chose the following conceptualised definition, because it resonates with a constructivist paradigm and seems to be inclusive: Learning is the broad concept relating to an act or process of incorporating new information, knowledge or skills into a learner's world of logic and value (Colman 2003; Killen & Hattingh 2004). Ogden (2002) enriches the constructivist way of thinking about learning by conceptualising it as a process whereby an individual has the ability to process and construct knowledge through an intra-active reflective self. Lancaster (2006) believes that personal effort and engagement does have a strong influence on the permanency of knowledge that can be called upon throughout a person's career. When a student integrates acquired knowledge and personal experiences with new ideas, the result will be deep learning. This concept is an important goal for Jayaprakash (2005) when teaching students. He believes that there has to be a step-over from surface learning to deep learning.

Assessment is generally seen as any systematic procedure for collecting information that can be used to draw inferences about the characteristics of people or objects, including different methods and techniques (Reynolds, Livingston & Willson 2006). There are various methods, different techniques and types of assessment, ranging from tests and essays to portfolios and orals. Within assessment methods the course outcomes, content, timing, format, appraisal, grading, formality, and contexts ought to be considered (Baker 1996; Reynolds *et al.*

2006). Some postmodern educationists see assessment, learning and teaching as interlinked, not as separate entities (Lubbe 2004). Within this understanding of assessment, there are different classifications and applications of assessment. The South African Qualifications Authority (SAQA) (2001) provides in-depth guidelines on assessment criteria and competence levels, as well as listing a multitude of techniques that can be used. More relevant to my discussion is their division of assessment into either criterion-referenced assessment (where learners are individually measured against a set of predetermined criteria, thus a standard) or norm-referenced assessment (where learners are measured against each other, thus more curriculum-based). Within this structure the assessment can then be formative (designed to support the teaching and learning process) or summative (designed to determine whether a learner is competent at the end of a learning programme) (SAQA 2001). When it comes to open-book assessment in the QE Part 1, it is a criterion-referenced assessment with a strong summative component. A possible question might be to what extent this assessment may also be formative in nature. Struyven *et al* (2002) noticed that the emphasis in assessments lies not in factual feedback to students, but in the use of the assessment as a tool for facilitating further learning and student development, and can therefore also be referred to as formative evaluation. The QE Part 1 is an examination where apart from a final mark, no other feed back of the results is communicated to the student. This assessment itself would thus not facilitate further learning and student development as *per se*. Learning and student development would, however, take place during the student's preparation for the assessment. It seems as if the QE Part 1 mainly is summative, and to a lesser extent formative.

With these aspects of learning and assessment in mind, I believe it is essential to understand the circumstances, processes and/or structures that can lead to more **effective and optimal assessment**. Theophilides and Dionysiou (1996) argue that any assessment (no matter what kind) must create a learning environment that includes evidence and feedback to students and facilitators on the learning processes and accomplishments achieved during the relevant period, and ensures that the level of learning and teaching has been satisfactory. Shepard (2000) believes that the type of assessment carried out has to fit the learning outcomes and that this must be taught intensively to teachers and lecturers in training. It seems vital for students to be helped to change their learning habits in order to match a new assessment technique, as whatever assessment technique is used will influence students' study behaviour (Eilertsen & Valdermo 2000). Killen (2002) insisted that when lecturers set out their instructional planning, they should be aware of and integrate the above mentioned principle as part of their basic schedule. Shepard (2000) found that two fundamental factors had to be considered when implementing effective assessment: firstly the format and contents must be in line, corresponding with the required thinking and problem-solving skills for that specific discipline; secondly, the attitudes of lecturers and students towards this assessment are fundamental.

It is further shown that students' attitudes play a role in both how they complete assignments and in the quality of learning exhibited (Birenbaum & Feldman 1998). These attitudes also seem to influence **preferences.** In a study done by Birenbaum and Feldman (1998) on the assessment preferences of students at teacher training colleges, it was found that these students are inclined to favour types of assessment that take less time and reduce memorising constraints. Zoller and Ben-Chaim (1990) found in their study that female students favour take-home tests, and prefer not to take oral exams. They also reported that high school students favour multiple-choice questions over open-ended questions. Older research results from Zeidner (1987) found that students favoured essay-type questions, believing that this reflects their knowledge better than do multiple-choice questions. It has been shown that if students prefer a certain type of assessment, the results of such an assessment yield a better evaluation of the quality of learning that has taken place (Theophilides & Dionysiou 1996). It has further been shown that there is a correlation between assessment preferences and learning strategies. It appears that the same factors influencing assessment preferences affect students' performances through their learning strategies. When students are confronted with non-preferred assessment techniques, it may lead to negative evaluation of the type of assessment used and the performance level attained (Birenbaum 1997). I believe it is crucial to take cognisance of the attitudes and preferences of students pertaining to assessment, especially as I am interested in students' perceptions of open-book assessment. According to Reynolds & Trehan (2000), students' experiences of assessments have a significant impact on their career choices, as well as on their judgments of their own self-worth. The highest priority is, therefore, that the facilitator selects the most appropriate assessment technique for the given course and the required outcomes.

Now that I have conceptualised some aspects of learning, assessment, components of effective assessment and the possible role of student preferences, I want to focus on open-book assessment (the phenomenon central to my research). Reference to open-book assessment implies that there is a closed-book assessment, so I decided to briefly outline the closed-book concept and practice in the following section, 2.4. I shall devote the remainder of the chapter to the concept and practice of open-book assessment.

2.4 Closed-book assessment

The idea of this section was to give only a short overview of specific concepts relating to closed-book assessment. I will therefore not discuss further information, but will very briefly mention some relevant literature and findings.

Closed-book assessment is seen as a traditional assessment type usually associated with limited feedback on what and how well a student has learnt, whether or not the facilitator has been successful, and whether there are any areas that still need attention (Reynolds *et al.* 2006). Closed-book assessment relies for the most part on students' rote learning (learning by repetition, focusing on memory rather than understanding) (Theophilides & Koutselini-Ioannidou 2000).

Literature on closed-book assessment points out the general behaviours, tendencies, attitudes and outcomes experienced by students exposed to this method.[11] I shall now outline some of these.

[11] I am not suggesting that these behaviours, tendencies, attitudes and outcomes are exclusive to closed-book assessment, nor am I making the assumption that they can be generalised. I am listing these findings to 'thicken' my understanding of the relevant constructs.

Study behaviours before a closed-book assessment

- Students appear to focus on previous assessment papers, spotting possible questions and creating model answers for those questions (Struyven *et al.* 2002);
- Students tend to concentrate on memorizing facts rather than mastering the contents (Mohanan 1997; Struyven *et al.* 2002; Theophilides & Koutselini-Ioannidou 2000);
- Students are urged to study hard, and they usually do for this type of assessment (Koutselini-Ioannidou 1997); and
- Students are likely to study only the assigned text and to mobilise surface learning (Theophilides & Koutselini-Ioannidou 2000).

Answering tendencies of students during a closed-book assessment

- Students are likely to regurgitate the views contained in the prescribed literature (Theophilides & Koutselini-Ioannidou 2000); and
- Students tend to answer less creatively than do students answering an open-book assessment (Theophilides & Koutselini-Ioannidou 2000).

Perceptions and attitudes of students toward closed-book assessment

- Students in closed-book assessment situations appear more anxious than those attempting an open-book assessment (Theophilides & Koutselini-Ioannidou 2000);
- Students appear to be less positive about the assessment in comparison with students answering an open-book assessment (Theophilides & Dionysiou 1996). Even though students acknowledge that open-book assessments are going to require the demonstration of higher-order thinking skills, they nevertheless seem to favour open-book over closed-book assessments (Brightwell *et al.* 2004); and
- Students are generally demotivated by having to study the excessive amount of work usually required for closed-book assessment (Weber, McBee & Krebs 1983).

Outcome of closed-book assessment

- Test grades resulting from an open-book assessment and a closed-book assessment are very similar (Brightwell, Daniel & Stewart 2004; Heijne-Penninga, Kuks, Schonrock-Adema, Snijders & Cohen-Schotanus 2006).

In concluding this section, I would like to highlight one of the findings by Heijne-Penninga *et al*. (2006), which observes that an assessment itself cannot be used to its full extent without the support of appropriate teaching practices and suitable study behaviour. The literature therefore seem to show that it is not appropriate to decide that one assessment type is bad and the other are good, but rather the appropriateness, relevance and purpose of the specific assessment technique should be assessed.

2.5 Open-book assessment

Some of the earliest research done on open-book assessment was undertaken in 1951 in the USA amongst high school students. For the next 27 years, there was relatively little research in this field. During this period, the examination questions asked in the field of open-book assessment do not seem to have been specifically designed for this assessment technique (Francis 1982). Most of the assessment techniques used in research projects can be classified as traditional, including multiple-choice questionnaires, short questions and essay questions. The skills tested in the majority of the research carried out during this period were classified mainly as focusing on the acquisition of factual knowledge. This leads to the conclusion that, in most of the projects, the full potential of open-book assessment was not used, for example, allowing students to apply their knowledge creatively (Feller 1994). This still tends to be the case, although more and more research on open-book assessment looks at it as a tool and technique for simulating real-life situations (Broyles, Cyr & Korsen 2005; Heijne-Pennings *et al.* 2006).

Currently, open-book assessment is seen as one of the alternative assessment types that include assessment requiring students to generate their own responses rather than choosing or taking a response from a given list or text (Jackson, Watty, Yu & Lowe 2006). Open-book assessment allows students to make use of different materials[12] during the assessment process (Theophilides & Koutselini-Ioannidou 2000). This material may include textbooks, lecture notes and dictionaries, but students are not allowed to elicit answers directly or indirectly from fellow students (Kalish 1958). This would imply that students must be able to mobilise the knowledge and skills they have acquired during their studies to unravel problems, using the available resources (Lancaster 2006).

However, open-book assessment is still seen as one of the lesser-used alternative assessment techniques. Other lesser-used alternative assessments are take-home tests, projects and investigations, oral assessment, simulations, portfolios and self, peer and co-assessments (Birenbaum 1996; Jackson *et al*. 2006). More frequently-used alternative assessment types are performance assessment, authentic assessment, direct assessment, constructive assessment, incidental assessment, informal assessment, dynamic assessment and balanced assessment (Birenbaum 1996; Jackson *et al*. 2006).

Open-book assessment applications have been developed over a number of years and many researchers have contributed to the pool of knowledge available on this topic today. I chose not to direct my review by comparing open-book assessment with closed-book assessment but rather to look at the possible advantages and disadvantages of open-book assessment.

2.5.1 Advantages of open-book assessment

"The introduction of computers may nullify the importance of memorising facts." This statement was made by Zietsman (1976:22), who specifically noted that facts themselves are still very important but that memorising them seems to be less significant. The speed at which the body of facts grows and changes presented the real possibility that the facts students learn during their studies may have changed by the time they start their professional careers (Heijne-Pennings *et al.* 2006). Growing interest in the implications of this statement and argument created an increase in and a more intense focus on open-book assessment. Feller (1994) promoted the idea that open-book assessment should be associated with the

[12] There are different applications with specific exclusions of what students may use during an open-book assessment. In this section I am referring only to the specific theme of 'materials that may be mobilised or taken in during an assessment'.

philosophy of "education for the future", and argued that this type of assessment would probably result in the implementation of higher-order skills, such as conceptualising, problem-solving and reasoning. This assessment technique could create a simulated environment where real-life situations could be used for future preparation (Feller 1994).

Some researchers believe that making use of open-book assessment will deliver future students who can think independently and creatively, and who are able to analytically process information (Soh Loi & Yaun 1998). Koutselini-Ioannidou (1997) also contributed by reasoning that open-book assessment tends to provide a higher level of study motivation. Study motivation for open-book assessment is shown to be influenced by three possible factors - the teaching–learning process, the student's expectations of the assessment and finally the student's ability to use the allowed books and materials during the assessment. When implementing open-book assessments, a number of factors seem to be influencing a student's final achievements (Koutselini-Ioannidou 1997).

A summary of the reviewed advantages of open-book assessment seems to provide ample evidence to legitimise and promote its use. Literature on the advantages of open-book assessment shows that certain general behaviours, tendencies, attitudes and outcomes are evinced by students exposed to it.[13]

I shall now outline some of these.

Study behaviours before an open-book assessment

- Open-book assessment appears to prevent last minute cramming (Gray 1993);
- Open-book assessment tends to reduce the focus on the rote memorising of facts (Boniface 1985; Broyles *et al*. 2005; Feldhusen 1961; Jacobs 1990);
- When students understand the possibilities that open-book assessment offers, they tend to comprehend its advantages and react by being more focused and efficient during lessons (Eilertsen & Valdermo 2000);

[13] I am not suggesting that these behaviours, tendencies, attitudes and outcomes are exclusive to open-book assessment, nor am I making the assumption that they can be generalised. I am listing these findings to 'thicken' my understanding of the relevant constructs.

- During the students' preparation for open-book assessments, they tend to focus on in-depth study of the contents, emphasising understanding and applying the facts. Study behaviour mainly constitutes process-orientated activities, where students attempt to interconnect knowledge and concentrate on conclusions, exercising study-skills and encouraging higher order thinking through analysing, synthesising and evaluating knowledge (Theophilides & Koutselini-Ioannidou 2000);
- Open-book assessment enhances the opportunities for self-evaluation, self-regulation of content and receiving feedback through an objective medium (Brightwell *et al*. 2004; Theophilides & Dionysiou 1996); and
- A general advantage of open-book assessment is that it enhances self-monitoring and consciousness about when and how to use skills. This 'know-how' expands in a field of study as a principled and logical way of thinking and representing problems, in contrast to amassing information in a closed-book assessment situation (Shepard 2000).

Answering tendencies of students during an open-book assessment

- Botha, Fourie and Geyser (2005) maintain that, when open-book assessment is applied correctly, a deep approach to learning will develop, where the focus is on personal insight, linking new ideas to previous information and experience and relating evidence to principles. They concluded that the open-book assessment process can contribute to an improvement in the quality of answers;
- Open-book assessment encourages students to practise a deeper study of course material, which leads students to answer questions more creatively (Brightwell *et al.* 2004; Eilertsen and Valdermo 2000; Feldhusen 1961; Gray 1993; Heijne-Pennings *et al.* 2006; Theophilides & Dionysiou 1996); and
- Open-book assessment permits students to be tested on their ability to locate and select knowledge and information in order to create a structured answer and acceptable solutions to problems under reasonably complementary conditions (Francis 1982).

Perceptions and attitudes of students toward open-book assessment

- Open-book assessment is associated with lower student anxiety levels relating to closed-book assessment (Feller 1994; Jacobs 1990; Theophilides & Dionysiou 1996; Theophilides & Koutselini-Ioannidou 2000);
- Informed students perceive open-book assessment more positive than closed-book assessment (Theophilides & Dionysiou 1996); and
- When students are faced with a choice, they seem to favour open-book assessments over closed-book assessments. This is even when they know that open-book assessments will require demonstration of higher-order thinking skills (Brightwell *et al.* 2004).

Outcome of closed-book assessment

- Various studies show that with open-book assessment there tend to be lower student drop-out rates, which correlates with optimistic orientations of students towards examinations (Brightwell *et al*. 2004; Feldhusen 1961; Feller 1994; Gray 1993; Theophilides & Koutselini-Ioannidou 2000);
- Heijne-Penninga *et al*. (2006) emphasise that open-book assessment does not always yield better results than those of closed-book assessment. A student performing poorly in closed-book assessments does not suddenly perform well in open-book assessments. This statement is supported by Brightwell *et al.* (2004). He concluded that the test grades from an open-book assessment and a closed-book assessment are very similar; and
- Open-book assessment is proven to lead to enhanced learning outcomes in the form of professional skills and course content proficiency (Brightwell *et al.* 2004; Feldhusen 1961; Gray 1993; Jacobs 1990).

General

- Open-book assessment provides opportunities for the simulation of real-life situations, future orientation and an apparently more realistic approach to assessment (Boniface 1985; Broyles *et al.* 2005; Durham 1990; Feller 1994; Heijne-Pennings *et al.* 2006);
- Open-book assessment is shown to be a fairer assessment and levels the playing field for everyone (Broyles *et al*. 2005; Feldhusen 1961); and

- Open-book assessment will eliminate, to a great extent, the temptation for students to copy from fellow students (Jacobs 1990) and are therefore easier to invigilate than closed-book assessments (Shine, Kiravu & Astley 2004).

Brightwell *et al.* (2004) proposed that many of these alleged advantages provide, in his opinion, sufficient evidence for course co-ordinators to include open-book assessment in the assessment schedule for tertiary courses.

2.5.2 Disadvantages of open-book assessment

Literature on the disadvantages of open-book assessment focuses on general behaviours and attitudes emerging from both students and facilitators.[14] I shall now outline some of these.

Behaviours before an open-book assessment

- Students tend to study less for open-book assessments because they perceive this assessment technique as being easier than closed-book assessment. An increase in confidence regarding the assessment results will lead to a reduction in the preparation for the assessment. Students then underestimate the course (Boniface 1985; Feller 1994; Jacobs 1990; Theophilides & Koutselini-Ioannidou 2000). Students believe that less or no revision is required for open-book assessment (Clift & Imrie 1981);
- Closed-book assessment will prompt students to study harder, but, when writing an open-book assessment, students tend to anticipate that they will be able to find the answer in the textbook (Koutselini-Ioannidou 1997);
- Students often have a problem with time management, especially when preparing for an assessment, and are undecided as to what to study and what they should take with them into the assessment venue (Boniface 1985); and
- Many facilitators noted that they were busy and had limited time at their disposal. Lack of time proves to be an obstacle to designing creative assessments (like open-book assessment) and to grading these assessments (formative evaluation) (Feller 1994).

[14] I am not suggesting that these behaviours and attitudes are exclusive to open-book assessment, nor am I making the assumption that they can be generalised. I included these findings to 'thicken' my understanding of the relevant constructs.

Hindrances in answering during an open-book assessment

- Time management during the examination also seems to be a hindrance, as students tend to take too much unnecessary material with them into the assessment. The amount of time devoted to referencing material has a negative correlation with the final mark. It has been argued that the more time students spend on referring to the material, the less they will have available to construct the answer. This leads to an incomplete answer with a weak structure (Boniface 1985; Jacobs 1990); and
- Open-book assessment has been shown to nurture lazy students who write their answers directly from the material (textbooks, lecture notes or answers prepared beforehand) (Clift & Imrie 1981; Koutselini-Ioannidou 1997; Lancaster 2006).

Now that I have mentioned the advantages and disadvantages of open-book assessment, I will address various ways in which facilitators can apply open-book assessment in practice. The study by Theophilides and Koutselini-Ioannidou (2000) concluded that study behaviour differs according to assessment technique. This was built on findings by Chalmers and Fuller (1996), which stress that the dominant influence on the quality of students' learning is the assessment technique applied.

2.5.3 Applications of open-book assessment

Open-book assessment focuses on both the process and the product of learning based on a range of abilities and outcomes, and moving away from testing in which a single test score is evaluated (Jackson *et al.* 2006). When applying open-book assessment, it is shown that one should keep the following **issues and purposes** in mind (Koutselini-Ioannidou 1997):

- The learning objectives of the specific course;
- The teaching styles of the relevant facilitators;
- The learning styles of the students enrolled for the course; and
- The administration of the course.

In order to **enhance** the application of open-book assessment, various authors maintain that the following issues pertaining to the relationship between theory and practice must be considered (Eilertsen & Valdermo 2000; Koutselini-Ioannidou 1997; Maharg 1999):

- The models of teaching and learning (theory) used during the course;
- The perceived activities of the specific profession (practice); and
- The best possible preparation for its practitioners (integration).

Although as a reference it is somewhat outdated, the views of the Royal Commission on Legal Education in Scotland (1980:7846) and its suggested applications of assessments in the following paragraph seem quite relevant when it comes to the overall application of open-book assessment:

> We do not think that rote learning in such a framework is of particular value; in such circumstances a 50% or 70% success rate is considered adequate for examination purposes, but such performance in professional practice is unacceptable. Although some courses in some law faculties set examinations for which students will have access to statute and standard text, much as they would expect to have in a professional firm, there is a strong case for requiring all students to sit at least some examinations on this basis; and we so recommended. The pass standard should be raised accordingly.

This statement not only recommended the use of open-book assessment as an assessment technique, but suggested that the pass-rate be raised in order to set higher standards. Yet for the successful implementation of open-book assessment, there must be a subsequent **change in the teaching methods of the facilitator** (Soh Loi & Yaun 1998). Traditional teaching methods seem to be incompatible with open-book assessment. It is of vital importance to transform teaching methods and assessment techniques at the same time (Aitken 2006; Baillie & Toohey 1997). A change in teaching methods seems to relate to the change in focus from quantity to quality of assessment. Killen & Hattingh (2004) explain how, by referring to the following questions, one can differentiate between the quantity and quality of assessment:

Questions based on **quantity**:

- How many impartial questions can the student answer?
- Which specific skills can the student exhibit?

Questions based on **quality**:

- How precisely does the student comprehend important concepts, theories and principles?

- How proficiently can the student incorporate a range of skills and then deliver a complex solution?

The **transformation necessary** to change from quantity to quality assessment will require some adjustments and mind-shifts in the application of open-book assessment (Killen & Hattingh 2004):

- Understanding should replace memorising;
- Creativity will be more important than reproduction;
- Diversity rather than conformity should be encouraged;
- Initiative rather than compliance should be stimulated; and
- Challenging the norm rather than blind acceptance.

During the process of changing teaching methods and assessment techniques, the facilitator must keep the **expectation gap between the students and the facilitator** in mind. Fischer, McDonald & Ritchie (2005) highlight areas applicable to all assessment techniques, where the expectation gap may create unique problems. The facilitator needs to be aware of the following potential problems:

- When students are not English first-language speakers in lectures presented in English. This seems to present one of the biggest barriers to learning. The facilitator's accent may influence a student's understanding. A person not confident in a language needs to listen to the lecture and translate the contents into his own language, and only then can s/he understand the input. This also relates to asking questions. During the translation from English into a student's own language, the next part of the lecture may be lost to the student;
- As far as learning approaches are concerned, there seem to be distinct differences between students from a Western cultural background and those from an Eastern / African background;
- Facilitators and students may not have the same expectations of the final outcome of the studies. This may be owing to the language barrier, cultural misunderstandings or different perceptions of learning;
- Facilitators tend to continue lecturing in the same way that they have always done. Non-reflective teaching practice refers to this practice; and
- Lack of student-centred learning activities throughout the course.

In the practical sense it means that questions in an open-book assessment should lead the students step-by-step through a set of sub-questions, until they reach the final answer (Shine *et al.* 2004). The challenge would then be to ask questions that **assess knowledge and interpretation at the same time** (Mohanan 1997).

Lancaster (2006) noted the important point that **students were appealing for guidance** when they used the materials that they were allowed to take into the open-book assessment situation. This study also revealed that students requested greater clarity when it came to annotations. They still seemed to prefer summarising the text to save time during the assessment and to use their own words to clarify the text. Lancaster (2006) and Durham (1990) provided students with some clarification on such dilemmas. The following solutions were introduced:

- Students were introduced to the text in a way that rendered it less threatening and more understandable;
- Support was given during the exploration of the text and the facilitator taught students the skill required when applying their new knowledge to similar situations; and
- Preparing them for open-book assessment through simulation (Eilertsen & Valdermo 2000).

Eilertsen and Valdermo (2000) argue that the greatest **challenges** in open-book assessment are the development of all-encompassing and diverse tests and assignments, taxonomically and otherwise, that will challenge all students at every level. Traditional teaching methods and assessment techniques were designed for closed-book assessments, so the process of designing tests and assignments will also have to change. When open-book assessments are constructed without changing the assessment designs, the resulting achievement levels are significantly higher on open-book examination for knowledge items, comprehension items and total test scores (Michaels & Kieren 1973). Ultimately open-book assessment should assess understanding rather than rote memory (Soh Loi & Yuan 1998).

For the purposes of my research, **open-book assessment** will be defined as an assessment type with accessibility to various supporting resources during an assessment situation. However, the only supporting documents allowed into the QE Part 1 examination are specific prescribed resources, including the SAICA handbook and SAICA legislation handbook. Within the broader context, I felt it necessary to list all the possible applications of open-book assessment below.

Possible applications for open-book assessment are:

- *Access to any material*: Students are not restricted in the resources that they can use during the assessment (Jacobs 1990);
- *Specific textbook*: Prescribing a specific textbook is a restrictive approach. All candidates must use the same textbook (for example the Income Tax Act);
- *Many textbooks*: Students can also be restricted to one or more textbooks in order to ensure fairness in the use of specifics (Jacobs 1990; Van Tonder 1988);
- *No notes:* Textbooks are allowed provided that they contain no notes or annotations;
- *Own notes:* An alternative approach is to allow students to make use of their own notes while writing the open-book assessment. The advantage of this approach is that it supports better and more organised note-taking by students. Students will be expected to apply more reflective writing and facilitators will find that they are more attentive and participate more during lectures (Eilertsen & Valdermo 2000; Jacobs 1990);
- *Summary of prescribed work:* A further application is relevant when the students are required to prepare a summary of prescribed work, not exceeding a specified number of words. They are allowed to make use of this summary during the assessment (Shine *et al.* 2004);
- *Partly open-book assessment*: The first part of the assessment must be answered from memory only. In the second part of the assessment, the students are allowed to refer to their learning materials. For this application, it will be important to explain the demands and requirements regarding the closed-book section. The reasoning behind this type of assessment is to ensure that students study the basic facts (Eilertsen & Valdermo 2000);
- *Case study in advance:* Another application of open-book assessment is the assessment whereby a *case study* is given to the students in advance. This is

done to give them the opportunity of researching the more complex problems in the subject area, for instance, a case study in Taxation (Fischer *et al.* 2005; Jacobs 1990);

- *The 'power test':* This version of the open-book assessment is an untimed assessment (a whole day is available). There is an assessment room where students can use textbooks (the number of textbooks is limited). They have the assessment paper, while invigilators ensure that there is no cheating. Students are not allowed to communicate with one another in the room, nor are they allowed to take any information in or out. At specific times during the day, students are allowed to take a break, during which they may visit the library or communicate with fellow students. The rationale behind this method is to allow students real-life practice where they will be able to discuss problems directly with colleagues (Baillie & Toohey 1997); and
- *Open-book open-web assessments*: This is a type of assessment in which a student receives the assessment electronically. The assessment can then be linked to various web pages and other resources. The student may use any resource available. This assessment is normally associated with a time limit, for example 24 hours. The rationale for this method is that students are stimulated to think independently, and will be able to use the assessment as a comprehensive assessment to be credited towards completion of the course. At the same time, the student can experience the simulation of a real-life situation. The defining attribute of the open-book open-web approach is a commitment to valid and real-life assessment (Williams 2004). The facilitators at Deakin Australia claim that multimedia-supported assignments can provide the optimal simulation of real-life situations, while solving complex problems by means of computers is an important device. Functions of the computer that can extend the possibilities for high-level simulations are embedded spreadsheets and sophisticated data bases with hyperlinks to multimedia resources (Rees 1996).

2.5.4 Preparing for and writing of an open-book assessment

eHow Education (2009) provides **general** but practical steps for **preparing** and studying for an open-book assessment. They suggest that students start by studying very hard for the assessment and take as much material as permitted into the venue. They should first tackle the questions with which they are comfortable, which will help them feel at ease in the assessment. They should allocate a realistic amount of time for every question, and then start by scanning through the material, using small, sticky notepapers when they find something useful. Outlines for answers can be drawn up, with students using their own knowledge of the contents as well as the information scanned. The written answers are based on the outline.

Specific and **detailed preparation** is also required for an open-book assessment. The student should prepare the material to be taken into the assessment. Interestingly, such material taken in by historically stronger students tends to be in the form of notes, while historically weaker students prefer textbooks (Boniface 1985). Whether this is a pro or con is debatable. According to Van Tonder (1988), the crux of the matter is knowing how to prepare the material, not whether a student uses notes or textbooks. Students must be educated in how to use the material before the open-book assessment to prevent unnecessary waste of time during the assessment.

Broyles *et al.* (2005) recommend a few practical guidelines for **preparing the material** for use during an open-book assessment. These guidelines include:

- Flag important pages using sticky notes with one-word descriptions of the topic;
- Consider different coloured tabs according to topic;
- Underline or highlight words or concepts sparingly to avoid distractions;
- Know the table of contents and the index;
- Know how chapters are organised; and
- Know the information in the textboxes, graphs and case studies.

These are mere guidelines to assist the student in preparing the chosen material. However, the preparation of the material is only one aspect of students' approach before the assessment. They have to study the content as well as internalising the integration of the knowledge before the assessment. *eHow Education* (2009) devised seven steps to take when **studying for an open-book assessment**. They suggest focusing on the very important themes in the study material. Students should copy these themes onto index cards and check course guidelines to clarify which materials will be allowed into the assessment. They should write brief notes on the index cards, using different cards for different pieces of information. They should also make notes on the index cards as to where to find information in the textbooks. Students should make sure they know the cards in case they are not allowed to take them into the venue. The study process should be matched against the students' personal learning styles, reading of the textbook and other sources. Students must learn the structure of the textbook, as this serves as a useful resource for the assessment. They should also focus on comprehending concepts and principles instead of wasting time memorising facts.

When preparing for the open-book assessment, the student should prepare and study the material, but should also prepare for writing the open-book assessment (Broyles *et al.* 2005). Guidelines for students **writing the open-book assessment** are shown below (Broyles *et al.* 2005).

- Keep an eye on the time;
- Students should not consult the material for every answer;
- If they are relatively (60-70%) certain of an answer, there is no need to use the material, but they should indicate this question with a mark in order to check the answer at the end of the assessment; and
- When students do not know an answer, they should search quickly through the material, and then continue to the next question. If they have time at the end of the assessment, they can look for the answer again.

In a study by Broyles *et al.* (2005) the use of textbooks during a test was researched. They found that one third of respondents used the textbook for almost all the items, which created a problem with timing. These students used scanning as their approach. Another third of the respondents used the textbook for unknown answers or to confirm an answer, even using the index as a tool. The final third of the respondents went through the entire test, answering questions and marking those needing clarification, then using the textbook as a guide for those questions at the end of the examination.

As the focus of my research is the application of open-book assessment in the field of Taxation, it is only appropriate to include specialised practical guidelines to consider when **writing open-book assessment** in the subject area of **Taxation** (Bowman 1994):

- Ensure that you have the most current textbooks, including the Income Tax Act;
- Repealed or amended parts of the Act must be acquired;
- During revision you should write the answers down within the required time;
- Compare your answer to suggested solution. Ensure that you understand the differences;
- Study every question and ensure that you grasp the requirements in the question;
- Work meticulously according to the time allocation;
- Limit yourself to information that is required for the answer. Do not provide excess information;
- Quote only sections of the Act if you are sure it is correct; and
- Include all calculations in your answer. This may explain your answer to the examiner.

Boniface (1985) suggested that a practice or **simulation** assessment could be completed before the actual assessment to give the students some necessary experience in writing an open-book assessment.

The guidelines, whether general or specific, must keep the final goal of the open-book assessment in mind. March (1980) argues that open-book assessment should act as a **motivator** to students as well as providing the opportunity to present **evidence of the skills** they have acquired during their studies. This was confirmed in a study by Taylor (2002), in which he exchanged closed-book assessment for open-book assessment in order to motivate students to actively engage with and expand their own complex understanding of the material. The students' response were encouraging, with shown increased motivation.

At this point in the discussion on open-book assessment, it is necessary to explain that this assessment technique can be **applied differently in different circumstances and situations**. Each application seems to have its own advantages. A decision can be made on the specific application in a course, and the purpose of the specific assessment must be rigorously considered. Factors influencing the choice of application could be the size of the classes, aspects of distance education, the availability of appropriate material and the necessary technology (Koutselini-Ioannidou 1997).

The opportunities for optimising the learning environment by using open-book assessments are unlimited, as can be seen in the different applications mentioned above. For each of the applications, the facilitators' teaching method and the students' preparation have to be adjusted. This adjustment can be successfully used to its optimal potential only if it is introduced gradually over time (Jacobs 1990).

2.6 Conclusion

Open-book assessment can be classified as an alternative assessment technique, the value of which cannot be underestimated. Open-book assessments have been researched over an extended period of time, and studies have produced results that support open-book assessment as a worthy assessment technique that has fulfilled the requirements of such an instrument.

The capabilities that will be tested through an open-book assessment are, *inter alia*, the ability to apply theory by testing it with a new set of facts, the ability to explain and interpret its meaning and finally the ability to design and experiment with the new situation to find logical inconsistency (Mohanan 1997).

In conclusion, it must be said that open-book assessment has a vital role to play in training chartered accountants and especially in QE Part 1. As open-book assessment has the capacity to simulate a real-life situation, it can provide valuable practical experience to be used in the profession.

The specialised focus of my study is the application of open-book assessment in the subject area of Taxation. It is believed that open-book assessments can simulate the complex and interrelated field of taxation in practise. When a recently registered chartered accountant is confronted with a taxation problem for the first time, it will be to his/her advantage if a previously simulated experience can support the real-life scenario. Understanding students' perceptions of open-book assessment may bring another dimension into the preparation of these students. Having discussed the literature I have reviewed throughout my study, I will discuss the research design and methodology in the following chapter.

Chapter 3: Methodology

3.1 Introduction

This chapter will present a discussion of the research paradigm I have chosen to work in, which ultimately frames the research design I implemented. Further, I will justify the research process and strategies used. The data analysis process will be outlined and explained, together with issues relating to the rigour properties which I adhered to. Throughout this chapter, the research setting and the roles of those involved will be discussed and explained.

3.2 Research paradigm

Denzin and Lincoln (2000:19) conceptualise a paradigm as "the net that contains the researcher's epistemological, ontological, and methodological premises". My research is anchored in the constructivist paradigm, together with a strong systems theory approach, the primary purpose of which is to represent the meaning of a phenomenon in terms of elements and the relationship amongst them (Northcutt & McCoy 2004). This implies that the way in which participants construct their world and the phenomenon researched is important. The focus is therefore on prioritising discourse relating to the phenomenon rather than on the phenomenon itself (Ogden 2002). In essence, the assumption is that, although there may be a singular reality, people interpret reality themselves (Hayes 2000). In this way, meanings are constructed as human beings engage with the world they are interpreting, and this engagement is based on their historical and social perspective (Ogden 2002). In summary, the basic generation of meaning can be regarded as always being social and arising from human interaction (Creswell 2003). I position myself with what Northcutt and McCoy (2004:16) maintain, that is, that the main object of research is to explore 'reality in consciousness rather than in reality itself'.

Constructivism will therefore guide me throughout my research process as I answer the three fundamental paradigmatic questions posed in Figure 3.1, and I engage in understanding participants' perceptions on the phenomenon studied, namely open-book assessment in the QE Part 1 (Guba & Lincoln 1998).

Figure 3.1: Three fundamental paradigmatic questions (compiled from: Adams et al. 2004; Guba & Lincoln 1998).

Paradigmatic question	The position of Constructivism
What is the nature of reality?	It is relative, thus local and specific constructed realities, e.g. students' subjective perceptions on open-book assessment.
What is the nature of knowledge?	It is transactional and findings are created, e.g. I tried to gain understanding by interacting and listening to students' - specifically when it came to their perceptions on open-book assessment.
How can knowledge and understanding be obtained?	By various qualitative research techniques and methods, e.g. I used a specific type of focus group and semi-structured interview as methodology (IQA type).

In the light of the above outline of constructivism, I posit, together with various other authors, that learning is an active process in which learners formulate meaning out of their social and physical environments (Collins 2003; Donald, Lazarus & Lolwana 2006Hedberg 2003). This therefore refers not only to response acquisition learning theories, or knowledge acquisition learning theories, but also to active knowledge construction learning theories (as posed by constructivism) (Human-Vogel 2004). In stating this, I am reiterating that constructivism is both the paradigmatic orientation that I used in my research, and the fundamental theoretical anchor and framework of my engagement with literature, as well as making sense of the data.

The research design used in my research therefore had to comply with constructivist principles and thinking. In the next section I will outline my chosen research design.

3.3 Research design

A research design consists of different steps in the collection, analysis and interpretation of data collected for research purposes, basically the 'plan' or 'blueprint' for how the research will be conducted (Mouton 2001:55). I chose a focus group and semi-structured interviews, using the IQA as the qualitative research design. With this design, I attempted to construct and finally understand students' perceptions on open-book assessment by exploring their perceptions before and after being exposed to writing an open-book assessment. One of the specific strengths of the IQA is the attempt to incorporate and merge some of the detached concepts in hypothesising about the purposes and methods of qualitative research. A second strength would be the depiction of a comprehensive application-orientated efficient process by which data analysis and interpretation are incorporated into a whole (Northcutt & McCoy 2004). In this way, theory generation and theory testing are driven by the participants (in this case students) themselves, integrating induction and deduction components into the data analysis process (Northcutt & McCoy 2004).

My research design began with a **IQA focus group** (Phase 1) followed by **IQA semi-structured interviews** (Phase 2). My idea was to develop an in-depth framework in Phase 1 which could be subjected to more focused, semi-structured interviews in Phase 2 (Creswell 2002). I therefore focused on exploring a phenomenon and identifying themes during the focus group, and then confirming, elaborating on and discussing these themes during the interviews (Creswell 2002). In essence, the interviews provided richer descriptions of what emerged from the focus group.

I will describe the research process by initially discussing the specific choice of methodology and then outlining the selection of the participants for each phase. The data collection process, instrumentation and analysis will follow and finally the support systems and my personal role in the research process will be discussed. I decided to discuss the complete research process for each Phase separately. Figure 3.2 outlines the structure and content that will be discussed and explained in the following sections 3.4 and 3.5.

Figure 3.2: Outline of the research process

	Phase 1 Focus group	**Phase 2** Interviews
Research design (consult section 3.3)	IQA focus group (Exploring and identifying themes)	IQA semi-structured interview (Understanding, confirming and discussing themes)
Selection process (sampling) (consult subsection 3.4.2 & 3.5.2)	Probability systematic type (Group)	Non-probability – convenience type (Individuals)
Data collection (consult subsection 3.4.3 & 3.5.3)	Focus group according to IQA	Interviews according to IQA
Population used (consult sub-sections 3.4.2 & 3.5.2)	B Com Accounting (Honours) students in the Department of Taxation	M Com Taxation students in the Department of Taxation

	(10 participants who have not yet written an open-book assessment)	(5 participants who have experienced open-book assessment)
Data analysis (consult subsection 3.4.3 & 3.5.4)	• Inductive coding • Axial coding • Theoretical coding • Emergent coding	
Quality criteria (consult section 3.7)	*Rigour properties adhered to:* • Confirmability • Credibility • Transferability • Dependability	
Ethical considerations (consult section 3.7)	*IQA process - data collection and analysis have to be -* • Public and non-idiosyncratic • Replicable within reasonable bounds • Do not depend on the nature of the elements themselves • Part of same process *Other considerations* • Confidentiality and anonymity • Informed consent • Voluntary participation and withdrawal • Approval from the University of Pretoria *No deception and/or betrayal of participants.*	

3.4 Phase 1: Focus group

In this section I will first give a short general overview of what a focus group is, followed by the selection process used for selecting the participants, the data-collection procedures and finally an explanation of the data analysis process.

3.4.1 In general

The first documented use of focus groups as a research technique was at the beginning of World War II. During that period, the military was using it to establish the effectiveness of morale-boosting radio programs (Berg 2007). From then on, different paradigms and different research designs incorporated focus groups in different ways. However, the **overall understanding** of a focus group was that it was a gathering of individuals who shared similar experiences and who were brought together by a researcher. This gathering may be observed by any number of researchers and can be regarded as a group interview where the researcher is collecting data (Cohen, Manion & Morrison 2002; Creswell 2005; De Vos, Strydom, Fouché & Delport 2005). Fundamentally, a focus group is a technique whereby the researcher can listen to participants and learn from them, but the group also generates possible new lines of communication between the researcher and the participants as well as amongst the participants themselves (De Vos *et al.* 2005). When conducting a focus group the researcher acquires insight into possible differences and inter-subjective experiences that can be defined as experiences shared by a specific community (Terre Blanche & Durrheim 1999). However, Cohen *et al.* (2002) advised that the specific community present in the focus group must, where possible, be comprised of participants who are strangers to one another.

Terre Blanche and Durrheim (1999) suggest that a focus group should consist of four **components,** which are of vital importance to the optimal functioning of the group as a research unit. These components are procedure, interaction, content and recording. Procedure describes the set of rules that the group, together with the researcher, establishes at the beginning of the session. These rules explain what will be regarded as acceptable and unacceptable actions of group members. Interaction refers to the interpersonal communication that will take place amongst group members. The researcher must be aware of any kind of discrimination against a group member or avoidance of topics. Content refers to the research question or questions. Finally the researcher should record the discussions that take place in the focus group. This can be done by taking notes or digital/video recording. The researcher must set aside time after the group session to complete the notes and to ensure that the detailed discussions have been recorded properly.

There are several **advantages** to conducting focus groups. One important advantage seems to be that a focus group is highly flexible when it comes to the number of participants and groups, and can be conducted in a short period of time at a relatively low cost (Berg 2007). It can also contribute to explaining a topic that had previously been misunderstood (Leedy & Ormond 2005). From the researcher's point of view, the ability to understand the processes used by the individuals to arrive at a specific conclusion is important. A focus group promotes interaction amongst the group members that will bring different opinions together or create new viewpoints

(Leedy & Ormond 2005; Salkind 2006). The facilitator[15] of a focus group is actively involved in the focus group, and any question can be clarified and comments made by the participants can be elaborated on. Participants can discuss comments and opinions in order to reach consensus on the research problems (Babbie & Mouton 2001; Creswell 2005; Welman, Kruger & Mitchell 2005). The facilitator has to create a protected environment in which participants can feel sufficiently secure to voice an experience, opinion or perception (De Vos *et al*. 2005). Yet, even if all of the above are there, Salkind (2006) points out that the success of a focus group greatly depends on the facilitator's ability to keep the members focused on the research question.

A strong **disadvantage** to a focus group is that there may be participants in the group who feel unsafe about voicing their opinion on the research problem (Welman *et al.* 2005). This can be on account of individuals being biased towards either the research problem or other members of the group. If the researcher is unskilled, this could result in one or more participants taking part more actively while the remaining members became more passive. This may result in unheard voices or suppressed opinions. Some members might refrain from participating because they bow to polite social behaviour (Berg 2007; De Vos *et al.* 2005). This is why certain focus group techniques, as proposed by the IQA method, build in procedures for hearing the voice of each member of the group (Northcutt & McCoy 2004).

3.4.2 Selection process (sampling)

The first phase of my research began with a focus group comprised of BCom Accounting (Honours) students at the University of Pretoria with Taxation[16] as one of their major subjects. The focus group finally consisted of 10 participants[17] selected from 218 students officially enrolled for Taxation as part of their B Com Accounting (Honours) degree, attending lectures given by the Department of Taxation at the

[15] The facilitator of a focus group may be the researcher, a co-researcher or an independent person fulfilling this role. The researcher may thus have different positions and roles in a focus group, ranging from that of facilitator to being an active observer.
[16] Consult Chapter 1 for a discussion on why students enrolled for Taxation were chosen.
[17] Students repeating their B Com Accounting (Honours) degree will be excluded from this group, if chosen, on account of their previous exposure to open-book assessment.

University of Pretoria. These students were preparing themselves for the QE Part 1 in March of the following year.

The participants for the focus group were chosen by means of the complex probability sampling technique and then more specifically the systematic sampling type (Cooper & Schindler 2003). According to Northcutt and McCoy (2004), the number of participants required for an IQA focus group is between 10 and 12. Given that an average expected response rate is between 30%–40% (Cooper & Schindler 2003), I calculated that the sample size required was 30. The population size of students used for this sample was 218. They were sorted according to their student numbers. The population size (218) was therefore divided by the sample size (30) to determine the skip pattern that was applied to the population. This meant that every 7th student was chosen for the sample. The random start, between one and seven, was selected, and to ensure that the number was randomly selected, a pencil with its point downwards directed onto the list (one to seven) while the researcher's eyes were closed. The number selected using the above technique was number 3. The selection of the sample therefore started at number 3 and then every 7th item was selected (thus 3, 10, 17, 24). With simplicity and flexibility being the most important advantage of this sampling technique, I selected the students and they were sent a letter inviting them to take part in a focus group as part of my research (Cooper & Schindler 2003).

The letter of invitation (Appendix 1) each of the 30 students received, included also the purpose of the focus group, the date, time, duration and venue. These letters were handed to the students during a Taxation class. Ten students confirmed their attendance. This focus group was conducted before they wrote their first open-book assessment, so they had no prior experience of open-book assessment.

3.4.3 Data collection and analysis

I gained permission from the Dean[18] to use registered students as participants in my research and ethical clearance from the Ethics Committee. The focus group was conducted in the conference room at the Department of Taxation on the main

[18] The dean, students and committee referred to are all from the Faculty of Economic and Management Sciences at the University of Pretoria.

campus of the university. At the start of the focus group, all ten participants completed an informed consent form (Appendix 2) to confirm that they would take part in my research.

The data was generated via inductive (process of naming) and deductive (process of reorganising) reasoning, described by John Dewey as the 'double movement of reflective thought' (Cooper & Schindler 2003; Northcutt & McCoy 2004). This is typically done in the IQA process during which **data collection and analysis are part of the same process** and where participants have full participation in drawing out themes/affinities and creating theory associated with the phenomenon being researched. The different stages in the IQA process and the different types of coding to be used in the focus group are (Northcutt & McCoy 2004):

- The participants generate data via the IQA way of brainstorming;
- The participants sort the data into categories of meaning (*inductive coding*);
- The facilitator / researcher assists in expanding the clarification of meaning for the presented affinities *(axial coding)*;
- The participants indicate the influences among all affinities in the system, also indicating 'if/then' statements by completing a detailed ART *(individual theoretical coding)*;
- The researcher looks at group reality by compiling a group ART by using the Pareto protocol *(group theoretical coding)*; and finally
- The researcher represents the group reality through a process of rationalising the system by creating a group SID.[19]

The focus group was conducted according to the IQA method. The facilitator (independent facilitator) posed the following question to the participants: *Tell me about your personal perceptions on open-book assessment*. The researcher was the observer during this focus group. Before continuing to the next stage, the facilitator took time to do some warming-up exercises and gave the participants time for quiet reflection. When moving into the next stage, the participants were requested to write down their thoughts on flash cards. Each card should reflect only one perception or thought expressed in words, phrases or pictures. The flash cards were stuck to the

[19] Consult Appendix 7 for examples created to explain how a Pareto protocol can be compiled and used in the creation of the SID.

wall. This stage was completed in total silence. The participants then had the opportunity to sort the cards *(deductive coding).* They could use any criteria for sorting as long as they agreed afterwards that the groupings were representative of the group's perceptions on open-book assessment. This part of the process was also conducted in total silence. The participants then discussed the groupings and the facilitator requested clarification on each of the groupings (concepts) that the participants had arranged *(axial coding).*

The participants were thanked and the way forward was explained. The researcher used the grouped cards to compile a definition for each of the identified concepts. The IQA described these concepts as affinities. A document (Appendix 3) was compiled by the researcher containing the affinities and the participants' descriptions of the affinities. Each participant in the focus group received this document, either in hard copy or via email. The process continued via the document by requiring the participants to indicate whether there was a relationship between two affinities and to indicate the direction of the relationship. The IQA calls this the simple ART for each participant (Northcutt & McCoy 2004). In other words, the participant had to decide which affinity of every two was the most influential. The participants were also asked to include a brief explanation of the relationship, using their own experiences and perceptions, the so-called 'if/then' statements, to complete a more detailed ART *(individual theoretical coding).* The completed detailed ART-document was returned to the researcher, who used the information to compile a summarised ART for the focus group as a whole (Northcutt & McCoy 2004). The summarised ART was compiled to gain the focus group's mutual perception on the phenomenon.

The main purpose of the IQA is ultimately to draw a picture of the system, called the SID (Appendix 7), which symbolises the mind map of a group with respect to a specific phenomenon, in this case open-book assessment (Northcutt & McCoy 2004). The SID is a diagram drawn by using a group IRD with a set of prescribed rules. An IRD is the summary of all the theoretical codes in the system. Theoretical coding refers to all the possible influences or relationships amongst the affinities in a system, referring here to the affinities that evolved in the deductive and axial coding process that took place. The group IRD summarises the results of the group theoretical coding *(group theoretical coding)* (Northcutt & McCoy 2004).

Northcutt & McCoy (2004) suggest that the use of the Pareto principle[20] will yield an acceptable group composite for the focus group. This principle is frequently used by management and systems theorists, who refer to it as the 'trivial many and the significant few principle'. This is a specific reference to the idea that 20% of the variables in a system will account for 80% of the total variation in the outcomes of that system (Northcutt & McCoy 2004:156). Essentially, this means that the minority of relationships in any system will account for the majority of disparity in that system. It is accepted that in any group there will be some disagreement on possible relationships. The Pareto protocol used is a rigorous and commanding technique for attaining and documenting the degree of consensus in a focus group. IQA uses the Pareto[21] rule of thumb to reach consensus within the group and to indicate which of the affinity pairs should be included in the IRD. This IRD is a matrix containing the affinity pairs or relationships in the system. Through the process of indexing the degree of optimisation in the system, affinities are sorted as drivers[22] or outcomes[23] in order to draw the SID; first drawing a cluttered SID, then organising it and lastly uncluttering it (Northcutt & McCoy 2004). This uncluttered SID is created in the process of eliminating all the relationships that can possibly be substituted with another pathway on the diagram and presenting it visually.

3.5 Phase 2: Interviews

In this section I shall first provide a short general overview of what an interview entails, followed by the selection process used to select the participants and data collection procedures, finally explaining the data analysis process.

3.5.1 In general

An interview is an interactive conversation between individuals. The main **objective** of a qualitative interview is to draw the attention of the interviewer[24] (researcher) to

[20] The Pareto principle is named after the nineteenth century economist Wilfredo Pareto (1843-1913) and states that 'something like 20% of the variables in a system will account for 80% of the total variation in outcomes' (Northcutt & McCoy 2004:156).
[21] Appendix 7 provides examples created to explain how a Pareto protocol can be compiled and used in creating the SID.
[22] Primary drivers are elements that can be seen as the fundamental causes/ sources of influence on affinities in a system. Secondary drivers are elements that are influenced by the primary ones and referred to as relative causes.
[23] Primary outcomes are significant effects caused by many of the affinities and secondary outcomes revealing only relative effects.
[24] In this section of my research I shall refer to the researcher as the interviewer.

what the interviewee (participant)[25] thinks, feels, experiences and perceives about a specific phenomenon (Henning, Van Rensburg & Smit 2004), thereby understanding and acquiring a narrative of the lived world of the interviewee related or relating to contrasting and/or complementary descriptions of a specific phenomenon, in this case open-book assessment (Kvale 1996; Rapley 2004). This type of interview asks general and open-ended questions to solicit and record responses from the interviewee. According to Creswell (2005), open-ended questions allow interviewees to answer from their own experiences, perceptions, feelings or actions – suggesting that there is no correct or incorrect answer. It seems that interviews are put to best use when the interviewee is not hesitant about speaking and is articulate, as well as comfortable about sharing ideas (Creswell 2005).

The configuration of the interview may vary among different types of interviews. **Interview types** are broadly divided into structured, semi-structured and unstructured interviews. My research used the semi-structured interview with open-ended questions. The objectives mentioned in the previous paragraph resonate with what I intended in my research and comprise the rationale for my choice of semi-structured interviews.

A semi-structured interview is generally used when the interviewer requires a detailed picture of an individual's perception, belief or experience of a specific phenomenon. The interviewer has a predetermined list of open-ended questions, but will be flexible during the interview, ready to adapt the questions or include new ones according to the background of the interviewee (De Vos *et al*. 2005; Welman *et al.* 2005). In my research, this predetermined list was created from findings from the focus group session in Phase 1 of my research.

When **planning** a semi-structured interview, the interviewer should dedicate time to gaining insight into the research problem, looking for the necessary information and deciding who can provide it (Welman *et al.* 2005). When **executing** an interview, the interviewer should keep in mind the following guidelines / recommendations as laid

[25] In this section of my research I will refer to the participant as the interviewee.

out in Figure 3.3. I can confirm that I adhered to all these guidelines/ recommendations during the semi-structured interviews I conducted.

Figure 3.3: Guidelines/ recommendations for executing an interview (Compiled from: Creswell 2005; Henning *et al.* 2004; Leedy & Ormrod 2005; Salkind 2006; Welman *et al.* 2005).

Guidelines / Recommendations	Description
Dress appropriately	Adhere to social conventions on dress code. Dress discreetly, without any indication of affiliation. Take care that you do not create a deliberate impression for the interviewee.
Suitable location	Ensure that the location chosen is quiet, preferably with no distractions or interruptions. The venue should be available for the duration of the interview.
Formulate questions in advance	The tone and the type of questions to be asked must be thought through. Questions should be compiled in such a way that they lead to discussion rather than definite answers. Judgemental comment should be avoided. Avoid questions that lead to specific answers.
Time management	Time should be scheduled appropriately. The average concentration time for an individual is 90 minutes. The interviewer must ensure that all questions are answered in the time allocated for the interview.
Written permission	Explain the aim of the research to the interviewee. Ask the interviewee to sign an informed consent form before conducting the interview.
Warming up	An ice-breaker or a few general, everyday issues can be discussed to create a comfortable ambience.
Explain the importance of the interview and interviewee	Ensure that the interviewee understands the importance of the interview in relation to the research. Make sure that the interviewee feels appreciated and valued.
Be well prepared	Formulate a plan before the interview but be flexible while it is taking place. The interviewer should be familiar with the questions to avoid constant reference to the papers.
Collecting information	Keep in mind that the purpose of the interview is to gather information. Use the appropriate language and terminology. Focus on the questions that were prepared before the interview. Use the knowledge acquired during the interview to adapt the questions to be more relevant to the interviewee. Be courteous, respectful and compassionate at all times, without disclosing your own feelings or perceptions. The participants must feel free to express their own views and impressions. The key to a good interview is to be a good listener.
Authentic responses	Do not lead the interviewees' answers in a specific direction. Let them use their own ideas and words. The interviewer should keep his/her reactions to himself/herself in order to ensure that the interviewee is not influenced in any way.
Insist on satisfactory responses	If the interviewee does not provide a satisfactory answer, rephrase the question. Continue with the process until satisfied. The use of probing questions can also assist in gaining satisfactory responses.
Record the interview	Recordings can be made by writing responses down *verbatim*. Digital or video recordings are advised for detailed referencing but brief notes during the interview can assist in clarification

	afterwards. Ensure that the equipment works properly before the interview and that the interviewee gives permission for using the equipment.
Practice	A researcher becomes a good interviewer after a lot of practice; the interviewer should therefore have had practice beforehand.
Conclude the interview	Thank the interviewee for the time and effort. Enquire whether the interviewee wants to ask any questions. Offer to provide a summary of the results of the research.

The **advantage** of a qualitative interview, specifically a semi-structured one, is that it is an adaptable form of research in which the interviewer may change the formulation of the question or the question itself, and may ask probing questions if the interviewee's answer seems unclear (De Vos *et al*. 2005; Welman *et al.* 2005), in this way gaining a better understanding of responses given by the interviewee (Salkind 2006). This provides a specific depth to the data collection process, ultimately enriching the data analysis and findings (De Vos *et al.* 2005). The interviewer is not merely an observer but interacts with the interviewee, not only keeping better control over the information provided by the interviewee but also enhancing the 'richness' of information (Creswell 2005). The IQA interview has an extra flair to it in that it gives the opportunity for collaborative theoretical coding. It is therefore not only a data-gathering session but also part of the data analysis process (Northcutt & McCoy 2004).

A major **disadvantage** of an interview is that it tends to be time-consuming and expensive. Compromises to honesty and possible bias may also be a hindrance. Because the interviewee is known to the interviewer, the interviewee might be reluctant to be completely honest in responding to the questions. The interviewer may be biased towards the interviewee and the lack of a standard set of questions can be problematic (Creswell 2005; Salkind 2006). As a result of the personal nature of the interview, the potential exists for the interviewee to develop trust in the interviewer and consequently disclose sensitive information. This may lead to a counselling situation rather than an interview (De Vos *et al*. 2005). I tried to overcome this by adhering to the semi-structured nature of the IQA proposed interview and intentionally followed the recommendations mentioned in Figure 3.3. The participants knew exactly what was expected of them and for what purpose they were being interviewed.

3.5.2 Selection process (sampling)

The second phase of my study included five interviews. Interviewees were selected from among students who were enrolled for the MCom (Taxation) degree[26] at UP and who had already completed the QE Part 1 (when they were exposed to an open-book assessment situation). These students were invited to take part in my research via email (Appendix 4). The five students who responded conformed with the requirements and all five consented to a personal structured interview (Appendix 6). This non-probability convenience-type sampling to select interviewees, was chosen in order to gain specific information about perceptions on open-book assessment from an accessible group who have experienced this phenomenon and have something to say about it (Cooper & Schindler 2003).

3.5.3 Data collection

The overall data was obtained using two data-collection instruments (focus group and interviews) during two consecutive phases. The idea was to explore the themes emerging from the focus group in Phase 1 and use them as guidelines for the semi-structured interviews in Phase 2. Be reminded that the IQA design was chosen because it focused on exploring, identifying and enriching themes/affinities pertaining to a specific phenomenon, in this case open-book assessment (Northcutt & McCoy, 2004).

An appointment was made with every willing participant for an interview of one hour. Before the commencement of the interview, the interviewee had to sign a consent form indicating the purpose of the interview, practical arrangements and the use of specific technology. The interview was recorded by dictaphone, while notes were also taken. An interview plan was decided on beforehand (Appendix 5), including closed clarifying questions, various open questions on the definitions of the affinities compiled by the focus group during Phase 1, and open questions on the relationships between specific affinities. After concluding the questions for clarification, the interviewee was asked to read through the definitions of the affinities. The interviewee responded by agreeing or disagreeing with the statements given, and provided information and descriptions from their own perceptions.

[26] Consult Chapter 1 for a discussion on why the group of students enrolled for MCom (Taxation) was chosen.

Flexibility was maintained and questions were reformulated to accommodate the background of the specific interviewee, when and if necessary. During the final stage of the interview, the interviewer asked the interviewee to comment on the possible relationships between the different affinities. Where applicable during the interview, probing questions were asked to make sure that the interviewer understood exactly what the interviewee was trying to communicate.

The interview was brought to a close by the interviewer thanking the interviewees for participating in the research study and giving them time to ask any questions they may have had.

3.5.4 Data analysis

The different stages in the IQA process and the different types of coding that I used to analyse the semi-structured interviews are (Northcutt & McCoy 2004):

- Identifying words, phrases or statements in the script of an interview that illustrate or explain an affinity *(axial coding).* Creating from this an interview ACT;
- Identifying relationship between two or more affinities, as mentioned and laid down by the interviewee (*theoretical coding*). Creating from this an interview theoretical code ART;
- The researcher looked at the individual interviewees' reality by compiling an individual IRD *(individual interview theoretical coding – interview map)*;
- The researcher represents the individual interviewee's reality through a process of rationalising the system by creating an individual interviewee's SID[27] (*interview map*); and
- Aggregating axial codes into a combined interview ACT.

The interview was transcribed and each line numbered.[28] The analysis of the interviews started with the *axial coding* of individual interviews. Axial coding identifies words, phrases or statements that illustrate or explain an affinity. I thus reviewed each line of the interviewees' commentary relating to a specific affinity for these

[27] Appendix 7 provides examples created to explain how a Pareto protocol can be compiled and used in the creation of the SID.
[28] The references used for interviews will be indicated as #1:1 (interview number one, line one).

words, phrases or statements. This gives an understanding of an interviewee's own experience or perception of a specific affinity. Once identified, the portion of text was highlighted and the number of the affinity involved, the line number (transcript line) and the text selected (axial quotation) were captured in an interview ACT. Figure 3.4 gives a visual presentation of the table headings used:

Figure 3.4: Example of the interview ACT headings

Interview Axial Code Table			
Affinity	***Transcript line***	***Axial quotation***	***Researcher notes***

On completion of the table, I started analysing the second part of the interview, in which I asked questions relating to the relationship between two or more affinities (*theoretical coding*). I compiled a second table called the individual interview theoretical code ART. Figure 3.5 gives a visual representation of the table headings used:

Figure 3.5: Example of the individual interview theoretical code ART headings

Individual Interview Theoretical Code Affinity Relationship Table			
Affinity pair relationship	***Line number***	***Theoretical quotation***	***Researcher notes***

During the interview, the relationships between affinities were discussed. The relationships were then recorded by placing the affinity pair in the first column and an arrow indicating the direction of the influence between them. The quotation was included in the theoretical quotation column. This table was used to create an IRD and then a SID (consult Appendix 7 and/or 11).

After I had finished compiling the ACT, the IRD and SID for each interview, the individual results were used to create combined results. All the individual ACTs were combined to create the combined interview ACT. The combined ACT is very similar to the individual ACT, except that the transcript and the transcript line must be referred to. The combined theoretical code ART was compiled in a similar way, using the individual theoretical code ART.

The combined interview theoretical code frequency table was then compiled using the combined theoretical code ART. The number of nominations was counted for each of the affinity relationships and included in the frequency table (please consult Appendix 7 and/or 11).

3.6 The research setting and the roles of those involved

3.6.1 The role of the researcher

Because I myself was registered as a Master's degree student at the University of Pretoria, I had to get permission from the university to conduct my research and involve students from the institution in it. I further had to adhere to the requirements of the ethical principles laid down by UP.

As an observer in the focus group, I had to ensure that the definitions of the affinities provided by the participants were recorded correctly and formulated accurately. My understanding of the participants' perceptions of open-book assessment forms the basis of my research. Using the IQA method of analysis, I compiled an SID where the interactions or relationships between the different affinities were indicated. After that, I conducted all the interviews at different locations. During the interviews I recorded the conversations by dictaphone and later transcribed the interviewees' responses in order to analyse the data. Throughout my research, I consulted with my supervisor on a continuous basis. I was guided through the complexities of the research process, which enhanced my own understanding of the students' perceptions and experiences of open-book assessment.

3.6.2 The role of the participants

During the focus group, the participants had to formulate their own perceptions. They were then free to organise their perceptions into categories called affinities. This process forms the first part of the data analysis in my research. When the focus group ended, the researcher asked the participants for their perceptions on the possible different relationships that might exist between or among the affinities.

The interviews were then conducted using the affinities formulated by the focus group. The interviewees had to read through the definitions of the affinities as provided. They had to comment on or criticise the definitions, as well as sharing their own experiences with the interviewer. Finally, the interviewee had to comment on the most important relationships identified by the participants in the focus group.

3.6.3 The role of independent researcher

The focus group was facilitated by an independent researcher, who confirmed and double-checked all the thematic and affinity allocations in the analysis I had done for Phases 1 and 2. This increased the rigour of my research by strengthening its confirmability and consistency.

3.7 Quality criteria

The most important way to demonstrate the reliability of the qualitative data in my research was to supply a context within which the data could be understood. In Chapter 5, the results and findings set out in Chapter 4 will be interpreted in conjunction with the literature review in Chapter 2.

The concept of triangulation suggests that the use of multiple collection instruments enhances the understanding of the research and the final interpretation (Berg 2007). By using two data-collection techniques in my research, an intersecting point could be established for confirmation of the results (Berg 2007). Analysing the intersection point, together with the systematic engagement with the students, created the potential for new knowledge to emerge in terms of understanding the perceptions of these students regarding open-book assessment.

All the interviews were recorded and the verbatim accounts of the interviews were transcribed. Direct quotations from the interviews were given in the documentation and interpretation phase of my research, which increased the credibility of my qualitative data. Finally, the interview technique used in formulating and planning the questions for the semi-structured interviews was sourced from IQA itself. By following the guidelines provided by IQA, the interviewer was able to extract the quality of data necessary to confirm the contents of the focus groups.
Rigour is important in procedures used for data collection and analysis. This also applies to strong research ethics. The data collection and analysis have to be public

and non-idiosyncratic, as well as replicable within reasonable bounds. They must not depend on the nature of the elements themselves (Northcutt & McCoy 2004).

In Phase 1 the overall truth value was strengthened by honesty, depth, richness and scope. It was further enhanced by the choice of appropriate participants (Cohen *et al.* 2000; Silverman 2000). As researcher, I validated continuously by checking for bias, neglect or lack of precision, questioning procedures and decisions critically; and theoretically interpreting the findings (Henning *et al*. 2004). More specifically, the following qualitative aspects of rigour will serve as background (consult Figure 3.2):

- **Confirmability** requirements are strongly adhered to in IQA. My biases, as researcher, were limited throughout the process because I acted mainly as facilitator of the process. Participants were part of the data collection and data generation. Member-checking was integral to this process. There were 10 participants in the focus group, the minimum required for the group to have a voice and limit the chances of the data being influenced by an individual. The silent processes in IQA also contributed to a stronger confirmability (Du Preez 2005; Northcutt & McCoy 2004). In the semi-structured interviews, I made use of an independent researcher to confirm and double-checked all my thematic and affinity allocations.
- **Credibility** is concerned with the compatibility between the constructed realities of the participants and what is attributed to them (Babbie & Mouton 2001; Cohen *et al.* 2002). In IQA this concept is related to the extent to which a mind-map of a constituency is consistent with the individual hypothesis of which it is comprised (Northcutt & McCoy 2004). All that has been said above with regards to confirmability will further strengthen the credibility. In addition, the credibility of IQA is ensured by its public, accessible and accountable procedures (Northcutt & McCoy 2004).
- **Transferability** is the extent of the similarity between the mind-maps constructed by independent samples of the same constituency on the same phenomenon. This is further ensured by the public, accessible and accountable procedures of IQA (Du Preez 2005; Northcutt & McCoy 2004).
- **Dependability** (referred to as consistency) is a prerequisite for credibility. An inquiry audit to establish dependability is recommended (Babbie & Mouton

2001; Cohen *et al.* 2002; Silverman 2000). Such an inquiry audit seems unnecessary for IQA focus groups, because the focus group participants check the procedures inherent in the process. The only aspect to consider is that each constituency is chosen with regard to a specific distance from and/or power over the phenomenon researched. The dependability of the IQA has been tested on groups of doctoral students over several years, and more similarities than differences were found in terms of the elements and relationships among the elements (Northcutt & McCoy 2004). Further, dependability is ensured with the public, accessible and accountable procedures of IQA (Northcutt & McCoy 2004).

3.8 Concluding remarks

In this chapter, I have discussed the research paradigm that supports my research and detailed my research methodology. I concluded with a discussion on the role of the researcher and participants. Finally I discussed the quality criteria to which I adhered in my research.

In the following chapter, I am going to outline and provide the data analysis with all the results and findings of my research.

Chapter 4: Data analysis and research findings

4.1 Introduction

In Chapter 3, the research design, process and data analysis strategies used in my research were discussed and justified. In this chapter, the data analysis and findings of my research will be discussed according to the phases in which the data was collected. The focus group was conducted during **Phase 1**. The affinities compiled by the participants during the focus group will be presented, along with the SID drawn from the participants' feedback. The SID and the findings on the relationships between the affinities will be discussed and presented. **Phase 2** consisted of semi-structured interviews. The interviewees were first requested to comment on the affinities compiled by the focus group. Quotations from the interviews, and comments made by the interviewees were used to compile a final and combined commentary on the original definitions of the affinities. The interviewees were then asked to indicate relationships between the affinities and an SID for each interview, and then a combined SID for all the interviews was created. Each SID (individual and combined) will be discussed.

4.2 Phase 1: Focus group

The participants in the focus group were asked to write down their thoughts on open-book assessment on flash cards, to be affixed to a wall, after which they had the opportunity of sorting the cards. They were allowed to use any criteria for sorting the cards as long as they agreed afterwards that the groupings were representative of the group's perceptions of open-book assessment. This part of the process was conducted in total silence. The participants then discussed the groupings. The facilitator asked for clarification on each of the groupings (concepts) that the participants had sorted, and eventually named them.

I used the grouped cards to compile a definition for each of the identified concepts, which the IQA described as affinities. I then compiled a document (Appendix 8) containing the affinities and the participants' descriptions of them. Each of the participants in the focus group received a document (Appendix 3) afterwards and had to comment on whether they agreed with the definition or not. The participants were further asked to indicate relationships between the different affinities. When the participants had completed the documents they returned them to me. The definition for each affinity was finalised and a SID was compiled for the relationships indicated by the participants in the focus group (Appendix 9).

In the following two subsections, I give the descriptions of the affinities according to the focus group, followed by my findings on the relationships between the different affinities, as indicated by the focus group participants.

4.2.1 Description of affinities[29]

4.2.1.1 Good preparation (Affinity 1)

For this affinity, the focus group emphasised the importance of knowledge gained prior to attempting the open-book examination. They were of the opinion that highlighting the principles rather than the theory was one of the most important aspects of preparation. They noted the idea of familiarising themselves with the layout of the textbook as a necessary tool in an open-book assessment, and felt that concentrating on forming a referencing habit would assist them further to be well-prepared for the examination.

4.2.1.2 Back-up (Affinity 2)

The focus group described this affinity positively as a last resort in an examination. They thought textbooks could be used as a mode of reference to help eliminate various options and find the correct wording. They concluded that access to additional detail in the textbook might lead to extra marks being awarded.

4.2.1.3 Encourage (Affinity 3)

With this affinity, the focus group indicated that open-book assessment could have an optimistic effect on students writing it. They also felt that students might feel more motivated when confronted with an open-book situation.

[29] Appendix 8 lists the affinities with their specific descriptions, as arranged by the focus group.

4.2.1.4 General advantages (Affinity 4)

The focus group described the textbook used in open-book assessment as a visual tool for accessing memorised detail. They emphasised that the problem of frequently-changing taxation laws could be overcome by changing information in the textbooks and making sure it was available. They felt that textbooks could remove the burden of having to memorise the technical information overload in taxation, such as definitions, rules, sections and formulae in the Income Tax Act, as well as lists of exemptions in other Acts.

4.2.1.5 Improve quality of answers (Affinity 5)

With this affinity, the focus group described available textbooks as providing more detail than could be memorised. They maintained that students' answers would be more reliable and better expressed because of the detailed information in the tools available during examination.

4.2.1.6 Negative symptoms of open-book assessment (Affinity 6)

With this affinity the focus group focused on the time-consuming process of preparing the textbook knowledge for the examination, as well as the intellectual preparation of the students themselves. They pointed out that allowing students to take information into the examination with them could encourage laziness.

4.2.1.7 Negative environment (Affinity 7)

The focus group described this affinity as the situation inside the examination hall. They were of the opinion that, during an open-book assessment, students tended to page through the textbooks, creating chaos and disruption.

4.2.1.8 Personal experience and hindrance (Affinity 8)

The focus group associated this affinity strongly with the feeling that open-book assessment adds no value to the learning process and it could even result in lower self-esteem. They pointed out that this assessment technique could actually be perceived as more difficult and demanding, saying that the availability of textbooks might lead to excessive checking of answers, and was consequently an unnecessary waste of time. However, they observed that when it came to the Act it could help, as the text is looked upon as difficult to read and the expression is difficult to understand.

4.2.1.9 Different approach (Affinity 9)

The focus group described this affinity as the mental and emotional change in preparation necessitating adjustment when preparing for open-book assessment in comparison with closed-book assessment. They pointed out that a proper open-book preparation and examination technique must be developed and that study techniques had to be adjusted according to the type of assessment used.

4.2.1.10 Time management (Affinity 10)

With this affinity, the focus group indicated that the solution to writing a successful open-book examination lies in effective time management and proper study and examination technique, as well as accepting that the tools available should be used only when absolutely necessary.

4.2.2 Describing the relationships between the affinities

4.2.2.1 Drawing the SID

In subsection 3.4.3, the process of drawing a SID, together with all its different protocols, was described. Detailed documentation created during this process can be found in Appendix 9.

After completion of the ART the IRD were drawn up, then a cluttered SID[30] and, finally, the uncluttered SID. In this section, I will present the Tabular IRD (Table 4.1), an interrelationship diagram in which the relationships between the different affinities are indicated, and the final SID (Diagram 4.1).

In the Tabular IRD (Table 4.1) below, the arrows show which affinity is influenced by which, e.g. Affinity 5 is influenced (←) by Affinity 3, and Affinity 5 influences (↑) Affinities 1, 4, 6 and 10. Thus, Affinity 5 operated 4 times as a driver (as shown in the 'out' column) and was once an outcome (as shown in the 'in' column). Delta (Δ) is

30 Consult Appendix 9 for this table if necessary

the difference between the ‘out’ and ‘in’ totals in their respective rows. For Affinity 5, the delta is 3.

Table 4.1: Tabular IRD for the focus group: Sorted in descending order of ∆

*	1	2	3	4	5	6	7	8	9	10	Out	In	∆
1		↑	↑	↑	←	↑	↑	↑	↑	↑	8	1	7
5	↑		←	↑		↑				↑	4	1	3
2	←			↑					↑	↑	3	1	2
3	←			↑	↑	↑					3	1	2
7	←							↑	↑	↑	3	1	2
8	←						←		↑	↑	2	2	0
4	←	←	←		←	↑					1	4	-3
6	←		←	←	←						0	4	-4
9	←	←					←	←			0	4	-4
10	←	←			←		←	←			0	5	-5

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

All the affinities with positive delta numbers (Affinities 1, 5, 2, 3 and 7) are seen as **drivers**[31] and all the affinities with negative delta numbers (Affinities 4, 6, 9 and 10) are seen as **outcomes.**[32] An affinity where the ‘out’ and ‘in’ columns are equal, yielding a zero delta, are seen as a circular or **pivot** (Affinity 8). A further refining of the affinities can be found when looking at the ‘out’ or ‘in’ column with a zero value. An affinity containing a zero value in the ‘out’ column is classified as a primary outcome, and an affinity with the ‘in’ column containing a zero value is classified as a primary driver. The classification of the affinities is summarised as tentative SID assignments in Figure 4.1.

Figure 4.1: Tentative SID assignments: Focus group

*Affinity	Assignment
1	Secondary driver
5	Secondary driver
2	Secondary driver
3	Secondary driver
7	Secondary driver
8	Circulator/ pivot
4	Secondary outcome
6	Primary outcome

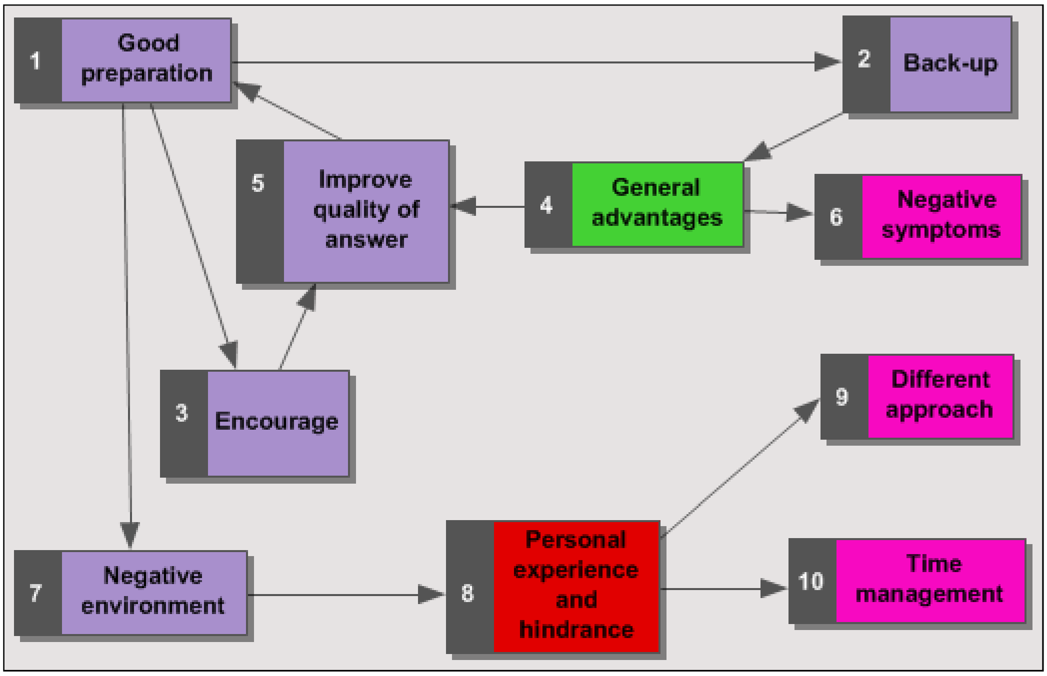
[31] Be reminded that drivers are elements that can be seen as the causes/ sources of influence on affinities in a system.
[32] Be reminded that outcomes are effects caused by many of the affinities.

9	Primary outcome
10	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.1 illustrates a representation of the focus group's perceptions (described and understood as affinities) on open-book assessment through the Final SID.

Diagram 4.1: Final SID for the focus group



4.2.2.2 Discussing the SID

The relationships between the various affinities generated by the focus group were provided. The SID is comprised of ten interacting affinities. Although it shows that there is no primary driver,[33] the affinity with the highest positive delta is **good preparation,** which functions as a secondary driver. The primary outcomes[34] identified by the focus group were **time management, negative symptoms of open-book assessment** and **different approach,** as these have no impact on the other affinities. Two feedback loops are present in this system and they revolve

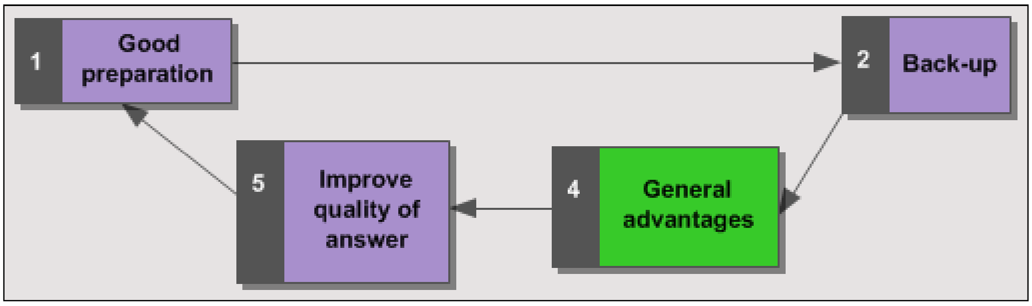
[33] Be reminded that primary drivers are elements that can be seen as the fundamental causes/sources of influence on affinities in a system. Secondary drivers are elements that are influenced by the primary ones and are referred to as relative causes.

[34] Be reminded that primary outcomes are significant effects caused by many of the affinities and secondary outcomes only revealing relative effects.

around **good preparation**. These feedback loops are interactive and in turn influence each other.

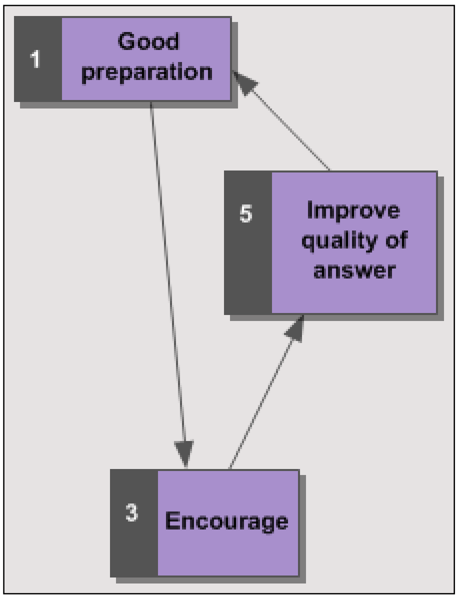
I chose to define the first feedback loop (Diagram 4.2) as **more successful answering**. In this feedback loop, **good preparation** is seen to be the strongest driver. There was a perception that a student who is well prepared for an open-book assessment has more effective access to the resources allowed into the assessment venue. If these resources were prepared before the assessment, they could be used during the assessment as a **back-up.** The focus group were of the opinion that this could lead to **general advantages,** for example, that the need to memorise technical detail would now be curtailed, because students would have access to textbooks containing the relevant information. They indicated that increased accessibility to detail may **improve the quality of answers,** and students could expand their answers to include forgotten facts, formulae and complex definitions.

Diagram 4.2: Focus group – Feedback loop 1: More successful answering



I called the second feedback loop (Diagram 4.3) **Creating self confidence**. This loop also starts with **good preparation.** The focus group believed that open-book assessment could create a feeling of **encouragement** to boost their confidence in their own abilities, brought about by the accessibility of resources. The focus group also indicated that open-book assessment appeared to have a motivational effect when the assessment was attempted. They said this resulted in an **improvement in the quality of answers**. The participants believed that the more success students had in open-book assessment, the more **encouraged** they would feel about preparing for the assessment, after which the feedback loop would start again from the beginning.

Diagram 4.3: Focus group – Feedback loop 2: Creating self confidence



Apart from the two feedback loops, other affinities also influenced each other. The focus group felt that having a **back-up** available during the assessment required more controlled **time management** before and during the assessment. They also maintained that the availability of a **back-up** called for a **different approach** to the mental and emotional preparation for the assessment, as well as an adjustment to the examination technique.

According to the focus group, the **general advantage** of having access to resources might also lead to **negative symptoms in open-book assessment**. These symptoms related to the time-consuming nature of preparation for open-book assessment and reluctance on the part of the students to prepare thoroughly on account of the ready availability of answers in the resources taken into the assessment venue.

The focus group noted that **good preparation** could also lead to a **negative environment.** They indicated that preparing the resources for the open-book assessment may lead to excessive paging through textbooks during the assessment, leading in turn to disruption in the assessment venue. This could result in a negative **personal experience** and could even be described as a **personal hindrance**. They understood this **personal hindrance** to be either unnecessary checking of the textbooks and notes because of the **different approach**, or waste of time on account of unsatisfactory **time management**.

4.3 Phase 2: Interviews

During the interviews, I requested the interviewees' own thoughts on open-book assessment as well as on the definitions of the affinities created by the focus group. After the interviews had been conducted and recorded, the recordings were transcribed. Each line of every interview was numbered and then I analysed these transcriptions. This was done by identifying words, phrases or statements in the script of an interview that illustrate or explain an affinity, a process called axial coding (also see subsection 3.5.4). These words, phrases or statements explained the interviewee's own experience or perception of a specific affinity and were captured in an interview ACT. The specific affinity involved, the transcript line number of the quotation and the text were captured in a table (also see Figure 3.4). The allocation of quotations to a specific affinity was double-checked by another researcher to increase the confirmability and credibility.

For each affinity, I extracted quotations from the individual ACTs to help me compile a final commentary that summarised the perceptions by the interviewees about a specific affinity. In subsection 4.3.1, I extracted and linked to a specific affinity quotations from each of the five interviews. I used the same order sequence for the affinities as in section 4.2 with the focus group.

4.3.1 Describing the affinities

4.3.1.1 Good preparation (Affinity 1)

As described by interviewee #1

> *You need to understand the core principles (#1/120).*[35] *You then have to highlight and underline your book from the beginning – all the important bits, and the 'or' and 'and' aspects (#1/103). I don't think you must get into the 'habit of referencing' when you write an open-book assessment, there are just no time to search of find everything (#1:116).*

[35] I referenced selections from the interviews by indicating the interview number with '#', followed by the number of the interviewee and the transcript line with a '/' followed by the transcript line number. Thus '#1/1' means interview number one transcript line number one.

As described by interviewee #2

> *My usual way of studying is to read my notes, do my exercises and questions before I look at the solution, then I mark myself (#2/62). I mean referencing and familiarising yourself with the book. Knowing where to find what, where the tax tables are, where the definitions are, that means the general structure of the book (#2/121). I try to put the Act in my own simpler terms when I study. If in an exam I have to go to that section, I can just refer to what I wrote (#2/68). For the difficult sections, for example STC and dividends, I put some notes there to try and explain (#2/66). Another thing that I do is that I mark my books. I place markers on relevant pages, for example: section 18 is on this page, the section that deals with STC is on that page (#2/68). There are lots of markings in my books (#2/70). You need time to remember so you don't have time to look through the five big books that you have (#2/123).*

As described by interviewee #3

> *The reason I like it, is that I don't spend time to write all my notes in a book. (#3/65). I basically read through it and highlight. During my test I can search where the answers are because I have summaries (#3/67).*

As described by interviewee #4

> *I'm not going to learn everything by heart although I still go through the work to see how it works and what must be included (#4/33). You have to know how to make the books accessible for yourself (#4/54). How to immediately page to the place you need (#4/16). I prefer to write information in the side lines of the book. I rewrite the contents in my own words. I prefer working with colours (#4/54). You need to have the right mechanism, like 'flags' to get there quickly". You will then immediately know it is section 10, open it up and get the article (#4/103). Students must do it in a way that is easier for them to learn and interpret. (#4/54).*

As described by interviewee #5

> *While I am studying the work, they say you have to get to know your book, prepare your book, understand the work, and then the detail. I think the way you have to prepare for the exam is how to use the textbook. Still going through the work, familiarising yourself with it, understanding it (#5/45). I will transfer all of my mind maps that I have in my notes onto the blank pages of the book (#5/15).*

A final comment on 'Good preparation' (Affinity 1)

According to the interviewees, one of the key ingredients for success in open-book assessment is for students to familiarise themselves with the textbook by making notes in the open spaces or in the margin of the textbook, and marking the different pages with flags, using different colours for different ideas, sections and definitions. It is perceived as important to know the general layout of the textbook. However, they did not agree on whether the habit of referencing is a good thing. Some felt that there was too little time for referring to the textbook, while others felt that, because there was access to the textbook and thus their own summaries, this could help them formulate the final answer. However, most of them agreed that the study method followed is vitally important. In general, the implication was that students' study methods should include understanding core principles, practising questions and marking them, familiarising themselves with the textbook and preparing it for quick, emergency referencing only.

4.3.1.2 Back-up (Affinity 2)

As described by interviewee #1

> *You cannot physically sit there and write it all down, you may check a few things quickly, but that's it...(#1/74). Should you search for something quickly, you just briefly look at the article and the option, you don't read the whole article because you should already know what it's all about (#1/111). I know I'm not going to get a theoretical question. Yes, because I have my books with me and should I quickly forget something - if I hit a blank - I can check it quickly; but again I've used my books minimally during all my open-book exams (#1/78). So, this is a last resort. Just look quickly if you can't remember (#1/83). During the QE exams it was only for Taxation that I looked up - too many times - for Accountancy and Auditing I never looked up (#1/46). Yes, it's the back-up, the quick referencing, quick wording, elimination of options, if you have a multiple choice question (#1/83).*

As described by interviewee #2

> *Most of the time I think it's a disadvantage in the sense that you end up writing too much jargon, theory that's not really asked for (#2/72). You end up just going to the books trying to look for something that deals with STC. Then end up writing stuff that is not even relevant ...(#2/74). ... because you just want to copy and paste... (#2/82). I use the books as a last re sort if I am not sure of something (#2/92). You can just refer because you know where they are, even in the Tax Act (#2/11). I just know where to find the gross income definition or the deduction in section 11 for easy reference... (#2/62). ... or that section 10(1)(k) is for dividend exemption (#2/90). I don't have to crack my head trying to understand what that section means (#2/68). It prepares you for real life (#2/30).*

As described by interviewee #3

> *You should know there is always a chance that you can look it up (#3/24). This 'life line' is a very big advantage. You don't have to page around the whole time, you can trust yourself and the books are still there (#3/32). It is a backup system - but not an elimination of options, because it sometimes gives you 'more' options - but that is a last resort. If you don't know more, it gives*

you a bit of extra detail and it especially helps with the right wording (#3/37). Taxation normally takes the most time and it then helps to have your book with you (#3/85). I could have forgotten them at home, that would have been fine, because I knew the little bit of theory by heart. One or two smaller points, I now know if they ask it, I shall page to it and write it down, like with Disclosure. But they don't even ask so many of that lately, because they know that you can just copy it (#3/87).

As described by interviewee #4

It is a good back-up system, for example with financial instruments, like Disclosure, it is perfect. In the standards it says specifically what it must look like (#4/29). If you struck a 'blank', the back-up is there. It sometimes happens when a person stresses. (#4/93). I've made sure - it could happen - for example, when they ask for an article reference, and it's not a general one, you can quickly search for it (#4/103). You can look it up to be sure (#4/79).

As described by interviewee #5

I think I remember referring once or twice, to my books. The books are there for backup (#5/15). For example in court cases: I had the element and I listed all the court cases with the principle next to each one. If I got a theory question on court cases, I could easily refer to the court cases using that reference (#5/15). I think that information is helpful and because in the exam or test situation, you can go blank but not due to a lack of preparation. In those circumstances that you do go blank you know that you have your work there to help you (#5/17).

A final comment on 'Back-up' (Affinity 2)

According to the interviewees, having the textbooks provides the reassurance that, if details are forgotten, there is a way out. They agreed that this back-up should be kept for an emergency. They pointed out that when it comes to using the Tax Act, for instance, it can be problematic if the wording has not been interpreted and understood beforehand. The Act provides a great many alternatives, which are unnecessary when trying to arrive at a solution.

4.3.1.3 Encourage (Affinity 3)

As described by interviewee #1

The fussy feeling is a 'security blanket' (#1/93). I mean you don't sit and look up every little thing - on the other hand you still have to study it. I think it is more a 'security place' (#1/34). It lessens the stress a bit, because you have your books with you (#1/52). It's a false 'sense of security', because you can't really use it, but it's still comforting (#1/99). Yes, it makes you feel better (#1/97), but *... nothing really motivates me in an examination (#1/93).*

As described by interviewee #2

Sure, more motivated ... I thought that before I encountered an open-book exam. Now I feel more discouraged, from experience (#2/100). It will suppress fears if you know where to find the stuff (#2/127).

As described by interviewee #3

Open-book makes a person more relaxed because you know it's like a 'lifeline'... you have a 'lifeline' (#3/24). It encourages you. You just feel a bit more confident if you can take your books with you (#3/41).

As described by interviewee #4

I think it sometimes intimidates people. Especially in Honours, students ask where to start studying; Do they have to study from the books that you are taking with? Do they have to study from the notes? ... there are too many sources at their disposal. It's more about the preparation. I think anyone would feel apprehensive the first time, because it's something new (#4/45). I would say it actually increases a person's self-confidence (#4/93).

As described by interviewee #5

It was more of a comfort, like psychologically because I think stress is psychological (#5/15). For me it's perfectly conveniently psychological (#5/17),... the psychology to reduce my stress (#5/30). It's not so daunting, you know (#5/41). It makes it easier. More positive ... it takes the fear off (#5/41). I think it just calm those nerves down a bit (#5/19). The preparation took extra time and I never ever used it, but it made me feel better (#5/15).

A final comment on 'Encourage' (Affinity 3)

According to the interviewees the presence of a back-up could provide a feeling of security, a psychological support during a stressful experience. They also felt that although one does not often use the textbooks during an assessment, it is there as an aid. They experienced knowing that there was a back-up as a boost to their self-confidence.

4.3.1.4 General advantages (Affinity 4)

As described by interviewee #1

The exam does not focus on detailed theory, but on the implementation thereof, which is more relevant out there (#1/24). You don't have to remember the facts. You only need to know where to find the facts to implement it (#1/22). For Taxation you can just quickly check whether it's the bigger of or the smaller of, or whether it's an either/or (#1/48). You don't have to remember the 5 or 20 points at the tip of your fingers (#1/89). I think you use a bit less time if it's an open-book because you don't have to sit and remember *the facts for each term. It takes time if you have to sit and study by heart (#1/58). If you forget something ... you can just look it up quickly. (#1/34). You can analyse the scenario and see what must happen and then you can perhaps just check again if you right? (#1/120). With open-book exams you're only allowed to take the latest versions with you. (#1/105). I don't think I would have wanted to do it closed-book (#1/28).*

As described by interviewee #2

Open-book prevents excessive memorising of detail, unnecessary stuff, for example definitions and section numbers (#2/109). On the positive side, open-book exams have an advantage because if you know where to find the information, you don't have to keep everything in your memory. For example when you're doing your CTA exams you have all your definitions for an asset (#2/11). It overcomes the problem that the Tax laws change every day, every year (#2/111). I am not from a law background. I read the legal jargon in the Act and I don't even understand what they're saying (#2/66).

As described by interviewee #3

Open-book exam is especially great in Taxation. You don't have to memorise everything, you actually only have to get a balance. You mustn't memorise nothing, for example, you mustn't page for the abbreviations... you must know them (#3/45). Taxation has lots of little rules that you can look up (#3/14). It does help a person a bit, but sometimes you could just as well have learnt it by heart. (#3/12). You can spend more time to study calculations, rather than have to know the theory by heart.] (#3/24).

As described by interviewee #4

If you've forgotten a finer detail, you can look it up quickly You can pay more attention to the technicalities. (#4/13). It doesn't help if you know it's exempt but you don't know it stands in article 10 (#4/60). The Tax Act. You don't always realise it's better to learn from the original source. In Honours, if you can take it in you realise everything is still in the original words. It's better to learn from the Act *(#4/43). The Laws change so often you have to add information in any case. (#4/53).* It just lessens the burden for me because I now know that if I had studied the old Act and the Act changes next week, I don't have to study it again *(#4/85).* There are lately so many standards and acts. I would have thought twice about this field of study if everything had to be learnt by heart *(#4/56).*

As described by interviewee #5

I think that's right because sometimes especially with tax or even in accounting you have to meet certain requirements sometimes it's "and" and sometimes it's "or". When you are so stressed you can't remember if it's "and" or "or". It can stuff up your entire question completely so it's helpful to look that up (#5/35). I think you can focus more on understanding the work and not memorising the work (#5/39). An example would be the list of exemptions, *you just list all the exemptions and then the detail you should have in your head. If you forget a specific detail you can go back and just check. It just gives you an overall picture (#5/43). Referencing is very helpful especially with Tax because you can't study all the section numbers (#5/37). I think what I have used in my books was the mind map, a visual picture (#5/43).*

A final comment on 'General advantages' (Affinity 4)

According to the interviewees, the most important advantage of open-book assessment is the accessibility of information, so students can use their textbooks for detail or forgotten facts during the assessment. They were convinced that this reduced the time spent on memorising facts during preparation and that more time was consequently available for understanding the contents and practising questions. They noted that the problem of regular changes in the Income Tax Act is solved by the availability of the Act during assessments. Access to the Act during the assessment helps with the correct wording of the different sections. Two of the interviewees commented on the possibility that they would have studied differently if the QE Part 1 examination had not been open-book, specifically when it came to the enormous amount of theory they had to study.

4.3.1.5 Improve quality of answers (Affinity 5)

As described by interviewee #1

I think Honours is way too much work to remember. You have to understand the corporates *and be able to do* it*. All the nitty gritty detail is too much; the volumes are just too much. I don't have such a good memory. This is especially if you're trying to study short-term.* Two *days before the time* assessment*, then you might not be able to do it (#1/124). If you just vaguely know what's going on and you can implement it, in other words, you know what has to happen, then you can* provide *a good answer to any question (#1/128).*

As described by interviewee #2

I don't agree that the answers would be more reliable and of a higher quality. If you know where to find the definition of an asset and it's needed in that question you can express it better because you have all the wording there (#2/127). That doesn't necessarily mean that your answer is of better or of higher quality. The wording might be perfect but if that's not what the question asked, then you're totally out (#2/129). If you don't know that, you may have your Act there, but you will never find the answers in there (#2/142). Referencing will assist you to produce a higher quality answer (#2/136). To be able to produce a higher quality answer you will have to know that there is case law that relates to, for example, the gross income definition (#2/142). So *the quality of the answer still goes back to what you know, because it's a result of your preparation (#2/144).*

As described by interviewee #3

It doesn't help you to give a better answer. It actually helps you in giving a poorer *answer because you are copying from the* textbook *(#3/51). You are then going to write down six different things (#3/37). I also don't think it will help you in gaining extra marks because you don't have the time for it. You don't have the time to look for extra marks (#3/37).*

As described by interviewee #4

When we did Honours, they didn't give marks for the *theory that were copied. They give marks for the implementation. If you misinterpret something; the books are not going to help you (#4/69). If you don't answer what is* asked*, the books are also not going to help you (#4/69). On the other* hand*, it might per*haps help if you only remember *4 of the theory points, and you can look up the 5th one (#4/73). You may just know the basic facts en then you can look up the finer detail (#4/79).*

As described by interviewee #5

It helps if you have it in front of you. When you stress you try to remember but it's not clear, it's all haphazard and not constructed. If you have it in front of you, you construct it into something which flows (#5/59).

A final comment on 'Improves quality of answers' (Affinity 5)

According to the interviewees, open-book assessment could improve the quality of answers, as students would have access to the detailed information in the textbook. They also noted that the availability of the textbooks would assist when structuring answers. On the other hand, they thought that textbooks would not be of help in interpreting the contents, providing a complete solution or understanding the information in the text. It would therefore not necessarily help towards higher marks, as there is no time for searching through the textbook for additional information.

4.3.1.6 Negative symptoms of open-book assessment (Affinity 6)

As described by interviewee #1

It's a problem. Students try to write down and underline absolutely everything. Codes are used to get the stuff (#1/70). You are still apprehensive and must ensure you know how to get it quickly (#1/146). It takes more time to look it up than to eventually implement it. I think students focus too much on it and not enough on the implementation (#1/72). You've got to have your post-it notes in your textbook, underlined, etc. (#1/146). The detail that you highlighted the first time (in the original act) you must highlight again because the act has *changed (new act) and you have to go through the effort again to put the flags in (#1/103).*

As described by interviewee #2

It is time consuming to prepare for an open-book exam because you read and then you must make notes in that book. That takes a lot of my time (#2/153). Open-book exams promote laziness to theory, to learn theory (#2/152). Another disadvantage that the open-book exam has is to make you dependant on the book, for example when I was doing my undergrad I used to know the sections in the text especially all the important ones, but now when I'm reading I never really concentrate cause I know the book will always be there, I can always refer. I just know that in section 7 you will find donations, I can't remember section 7 subsections 3 or 5. Those things I knew when I was doing my undergrad but now because I know that I'll just get the book, open it and find it (#2/9). You'll find a student even struggling to find the gross income definition (#2/113). I think the dependency on the book, the dependency on the fact that what happens tomorrow at work when I'm called somewhere and I have to present something and I don't even have a book. Pardon me, I'm just forgetting stuff (#2/56). You can find the answer but I think there are lots of generic answers. For example if you look at the IFRS handbook, there are lots of examples at the back of each chapter. So you read your question on the exam paper and you think the question says something, because you want to write what you have seen in one of those examples that are in the IFRS handbook (#2/80). Therefore students don't study so hard anymore. They think the answers are there (#2/113).

As described by interviewee #3

The fact that you sometimes say: I'm not going to study *that because I have my books with me, I will look it up if they ask that (#3/26). When they do ask* it I am *in trouble, because I really just copied it (#3/79). I wrote everything in my books. It took a lot of my time, which was actually unnecessary (#3/39).*

As described by interviewee #4

I think open-book assessment *is very nice, but I think it makes people lazy (#4/56). People think they can get away with it by not studying as much as they always do (#4/18). It takes time to study contents. It does make a person lazy. Not study-lazy, if you don't have to remember something, why should you (#4/79).*

As described by interviewee #5

A lot of people misunderstand that. They take open-book as don't study so hard before and leave it all for the exams, and then just look it up (#5/19). Everyone must make the connection that writing all the notes actually just waste the time that you could have spent becoming familiar with it (#5/22). Those students have a misconception about what open-book examination is and how you should prepare for one. They waste valuable time. Time they could spend actually studying the stuff. By just transferring notes that has actually add absolutely no value for any knowledge to anything (#5/24). That's *why I have so little time for everything else (#5/45). I will study everything and I will prepare my textbook. Doing this will need double time for studies in comparison with just normal closed-book assessment (#5/64).*

A final comment on 'Negative symptoms of open-book assessment' (Affinity 6)

According to the interviewees, students tend to be over-dependent on the textbooks, which might lead to laziness and less thorough preparation. They maintained that students spent a lot of time going through the textbook, affixing flags and highlighting sections instead of understanding and interpreting the Act. They thought the students may find generic answers to similar questions in certain textbooks, instead of trying to find their own solution to the question. The interviewees pointed out that students might use the generic answers at the end of specific chapters, which could prove incorrect or even of poor quality.

4.3.1.7 Negative environment (Affinity 7)

As described by interviewee #1

> *There will always be something. The problem with the venue where* QE *exams are* written *at the show grounds is the birds flying around in the hall (#1/68). The students throw their books on the floor if they can't find something. I don't even know who's around me. It doesn't bother me at all (#1/140).*

As described by interviewee #2

> *I have not personally experienced this. I don't think that it is chaotic. Most students are mature students. So you would not really find somebody frantically searching through or paging through the books (#2/146).*

As described by interviewee #3

> *It's really not that bad. You can 'switch off'. There are a few people paging, but you soon know who they are. You never sit next to them again (#3/53).*

As described by interviewee #4

> *It's never bothered me personally. It's more disturbing when people eat, but one gets used to it (#4/77).*

As described by interviewee #5

> *It didn't bother me. I think it will differ from person to person. Some people are funny about it, they get distracted easily: The swinging of the chairs, people eating and the paging of books. A lot of my friends didn't like that (#5/61).*

A final comment on 'Negative environment' (Affinity 7)

According to the interviewees, they were not distracted by the environment. They did mention that some of the other students felt that certain distractions in the venue were disturbing, for example, students scraping chairs, eating, paging through textbooks and dropping books on the floor. All the interviewees agreed that it was possible to choose not to be distracted by these things.

4.3.1.8 Personal experience and hindrance (Affinity 8)

As described by interviewee #1

> *They don't ask you the theory question; they ask you the more difficult question which you can't even find in the textbook. You have to analyse* it *and try to find the answer yourself (#1/156). Financial management in Honours was like that. You can take your books in with Financial management, but there is no way you can use your books. The lecturer* prepares *some or other scenario and you just have to apply* your knowledge*. The books are of absolutely no help. I won't say that it makes you stress, but it also doesn't make you feel better. It's neutral. Whether you take your books with you or not, it doesn't make a difference. (#1/162). How is it different from a closed-book* assessment*? It's not really different (#1/166). On the other hand you can find someone that would sit with his* textbook *and copy everything from his book onto the paper, what type of answers would you get? (#1/130). You should not make the mistake of thinking that with an open-book everything can just be copied. The implementation is still the most important (#1/134). You still have to know all the theory. You can't just sit and read through everything. I don't think it is an advantage; it is not easier (#1/54). No, it's not a quick-fix; I really don't think so (#1/148). With our 2^{nd} year audit, when they tried open-book, it was a total failure (#1/14). You sit there with a heap of books. If you want to look up something quickly, you can't find it, you feel under pressure and you start to stress (#1/156).*

As described by interviewee #2

> *I think for me personally open-book exams are more difficult, more challenging because they expect you to think or apply yourself more than what I used to do when I was doing my undergrad (#2/9). I feel more discouraged because I know that this will definitely be a tough exam. Just by knowing its open-book, I know it's not easy (#2/102). In my experience we always had application questions, but not as demanding as those for open-book exams (#2/23). I think the open-book exams, for example in the QE exams they expect you to be able to apply whatever knowledge you have gained to every or any situation that they bring up. In the exam they will bring up something that you have never seen and then expect you to apply your knowledge because you have been studying and reading (#2/25). Still the quantity, there are so many books. Its only 5 hours, you can never have enough time to refer to all the books (#2/13). You actually panic. You trying to look for something, you read it somewhere, but you can't remember in which*

> *book or which notes, and then you panic (#2/21). I'm just sort of dependant on the open-book, which is a disadvantage in many terms because during the exams I didn't have the time to go through and read (#2/9).*

As described by interviewee #3

> *Open-book* assessment *only helps with theory, but we* get *so little theory questions (#3/16). Since you have the book with you, the theory may only counts half a point or maybe none at all. Lecturers still tell you to answer: theory, implementation, conclusion. The theory now doesn't count any marks and it takes the longest to write down. You write for 10 minutes for no marks at all. That is because it is an open-book (#3/57). Sometimes you can actually argue about something but you then think, let me first go and see where it is. I must first go and see how it works. Then we go back the whole time. If you had only thought about it a bit and if you didn't have the books, you would have the answer (#3/28). It's probably not that bad, but you end up not trusting yourself anymore. You have to check whether it is like that (#3/49). During the exam I would think: What is it? I then check it first. Instead of just trusting myself. One checks* more *often than is necessary. You actually waste a lot of time (#3/26).*

As described by interviewee #4

> *You don't always realise it's better to learn from the original source. In Honours you realise everything is still in original words (#4/43). It's* more *difficult to study the* Act*. My personal preference is that I'd much rather study from the* act than *from the* text*book. I like law, I also liked commercial law (#4/95). The others don't like it at all and I think it is a problem because they don't want to go through the* act*. It's an extra effort* for *them to highlight and prepare the* act*. (#4/79). The level of assessment depends on the university and on SAICA's requirements. The tests are not necessarily more difficult (#4/85). Post Graduate you will probably have to write more or implement it better to get marks, but I wouldn't say it makes it more difficult (#4/91).*

As described by interviewee #5

> *The availability of textbooks can also lead to excessive checking of answers and that can be a waste of time. I have to learn to trust myself, I just got to know I can't go back and check everything (#5/67). Open-book does not necessarily means it's easier, it's not (#5/22). It's more practical but it's more difficult. I think it's a good difficult (#5/70).*

A final comment on 'Personal experience and hindrance' (Affinity 8)

According to the interviewees, open-book assessment means that the theory still has to be learned, although it does not necessarily count for marks. It is essential for the practical application of the case study. They reiterated that the availability of the textbooks is not a quick fix and copying text from source is of no value. They also said there was no time to look for answers in the textbooks. The interviewees noted that the Act appeared to present an obstacle, as many students found it difficult to read and interpret. For some, open-book assessment could lead to discouragement, as there was so much information that had to be applied. They felt further that learning to trust oneself during the assessment was very important, as self-distrust could lead to excessive checking, which would be a waste of time.

4.3.1.9 Different approach (Affinity 9)

As described by interviewee #1

> *It's different; I agree (#1/89). The methods and techniques have to be different (#1/87). You only focus on "do you really understand what's going on". It's more a focus on the implementation thereof. Can you actually do it? (#1/152). You must insert your pasted notes in all your books so that you know where to look (#1/89).*

As described by interviewee #2

> *Different approach, I don't agree but a different adjusted approach is needed to the overall preparation (#2/88). What I am saying is your study technique is not really a different approach because you have to know this stuff, whether the book is there or not (#2/96). I personally study the same way that I used to study. I think, for me, the approach is the same; I still have to understand what the section is all about, be able to apply it, do the question and answer it properly (#2/88).*

As described by interviewee #3

> *Yes, it is actually necessary to have a different approach.* One *doesn't give* it *enough thought. I didn't think about using another study method. I still use the same study method (#3/39). I think they asked differently. They can obviously not ask anything that one can just copy (#3/61). I just copied everything. I literally sat there and copied everything. To this day I don't have an idea what Corporate rules are all about. I just know that I can identify what a problem is, because that's how I studied. I only said: if it looks like that, you take that one and copy it. If it looks like that, then copy* this. *I prefer the Honours method, where you can only take the act with you (#3/69).*

As described by interviewee #4

> *Students using open-book for the first time cannot plan their time. Students must establish a balance between where the book can and cannot be used (#4/20). Whether you write the exam with or without the books, you still have to understand the concepts (#4/39). I think it's all about study methods (#4/79). It takes you a bit longer to study, but in a way it's better because you'll then understand the* act *and won't just be studying other people's interpretations. You'll learn to think for yourself (#4/125)* and *to make it an integral part of your studies. I won't be extra effort and it won't take extra time (#4/79).*

As described by interviewee #5

> *I think you still need to study the work as if it's a closed-book (#5/17). Well I can see my fault in this because I did this as well. I will study and then I will spend additional time copying all of my notes into the book (#5/26). It tests more on a deeper level than superficial testing. I think it adds more value (#5/70). In an open-book assessment, the questions are different as to a closed-book. In the closed-book you can't test as intensely as you would like to (#5/68).*

A final comment on 'Different approach' (Affinity 9)

According to the interviewees this affinity aroused different opinions. Some felt that a different approach was necessary, while others thought study methods should remain the same. However, they all felt that the initial study method should commence with understanding the theory, practising use of it through answering mock questions and then being able to apply the knowledge. Students should take time to prepare their use of the textbooks. Although this might mean extra time, it is to the students' future advantage.

4.3.1.10 Time management (affinity 10)

As described by interviewee #1

> *I've never gone* into *an open-book exam without studying and* then *having to check everything. At least I knew that I had to study everything. I've never done excessive checking (#1/172). When you are writing, there is no time to read the Accounting standards again (#1/10).*

As described by interviewee #2

> *There's never enough time (#2/9). The preparation is different from an exam setting because in an exam setting everything is timed. There is 5 hours for the exam and you are limited to only a certain number of books (#2/33). Its only 5 hours, you can never have enough time to refer to all the books (#2/13). The fact that time is limited is a disadvantage also (#2/39). In an exam I try to avoid going to the book for every small thing, because there is no time for that (#2/96). Interviewee states that if the material is prepped before-hand, it safes time during the exam (#2/160).*

As described by interviewee #3

> *You have to know that you can't use the books all the time. You'll only realise that when, during your first tests, you're not able to finish. I haven't even been able to finish (#3/85). Some of my friends in Honours told me Tax caught them, because you think you can keep your book with you. It's actually unfortunate because the book helps the most with Tax but Tax is the one you*

> *should write the fastest because you have to get the most marks in Tax, for example* QE *Part 1 (#3/85).*

As described by interviewee #4

> *You have to start when you study and continue to apply time management while you write (#4/123). I think this depend on exam technique (#4/69).*

As described by interviewee #5

No comment.

A final comment on the affinity 'Time management' (Affinity 10)

According to the interviewees, time is always a problem. They felt that whether they were preparing for the assessment or writing it, the time constraint was still an obstacle. However, they noted that the better prepared one was for the assessment, the less of a problem time became.

4.3.2 Describing the relationships between the affinities

For each of the interviews I compiled an ACT. On completion of the ACT, I assembled a second table called the 'individual interview theoretical code ART' for each interview (consult Figure 3.5). The individual ARTs of all five interviews can be found in Appendices 10.1 – 10.5. During an interview, the relationships between affinities were discussed. They were recorded by placing the affinity pair in the first column and an arrow indicating the direction of the influence between them. A quotation was included in the theoretical quotation column. This table was used to create an IRD and then an SID (please refer to Appendix 7 and/or 11 for an explanation on the compilation of the IRD and SID). For enriching my discussion of each interview's SID, I extracted quotations from the individual ARTs[36].

4.3.2.1 Interview #1

Drawing the SID

On completion of the ACT, I compiled an Individual interview theoretical code ART (Appendix 10.1). The sorted IRD (Table 4.2) provided information on the SID assignments used for drawing the SID (Diagram 4.4). These assignments are summarised in Figure 4.2.

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[36] I referenced selections from the individual ARTs by indicating the interview number with '#', followed by the number of the interviewee and the transcript line in the table with a '/' followed by the transcript line number in the table. Thus 'ART#1/1' means the ART of interviewee number one, transcript line number one in the table.

Table 4.2: Tabular IRD for interview #1: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
8	↑				↑	↑					3	0	3
9	↑				↑	↑					3	0	3
4					↑					↑	2	0	2
2	←		↑		↑		↑			←	3	2	1
3	←	←			↑	↑				↑	3	2	1
7		←			↑	↑					2	1	1
1		↑	↑		↑	←		←	←		3	3	0
10		↑	←	←	↑						2	2	0
6	↑		←		↑		←	←	←		2	4	-2
5	←	←	←	←		←	←	←	←	←	0	9	-9

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Figure 4.2: Tentative SID assignments: Interview #1

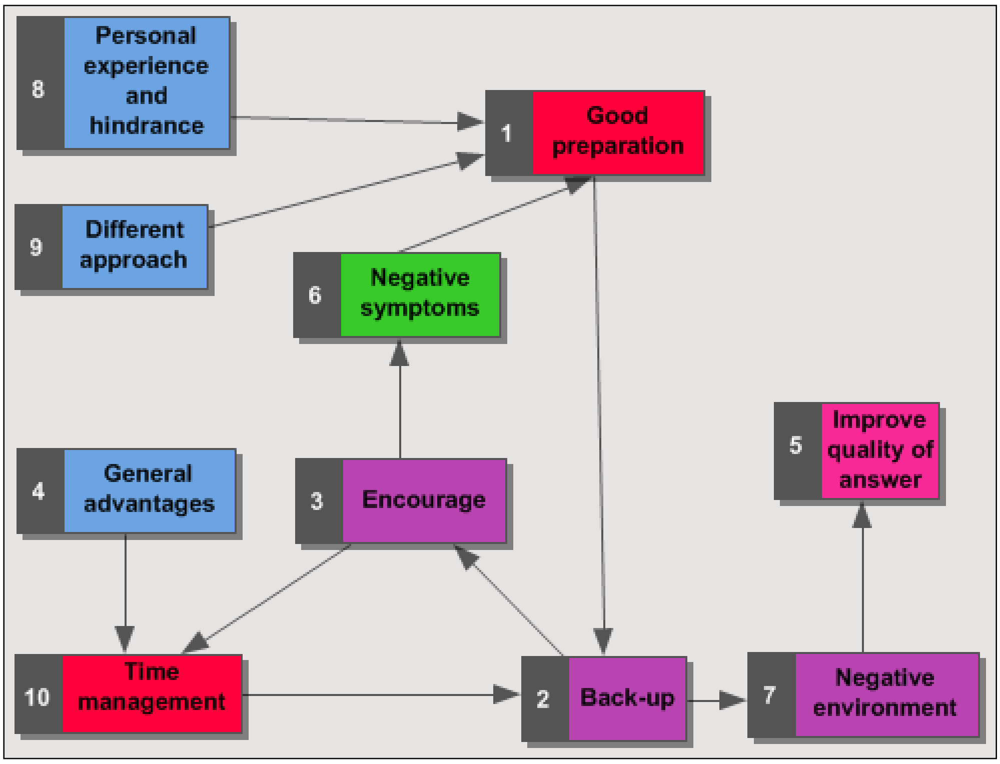
Affinity	Assignment
8	Primary driver
9	Primary driver
4	Primary driver
2	Secondary driver
7	Secondary driver
3	Secondary driver
10	Pivot
1	Pivot
6	Secondary outcomes
5	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrances, **9**-Different approach, **10**-Time management

Discussing the SID

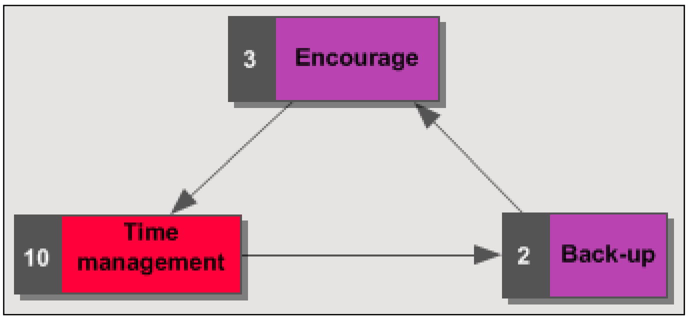
Diagram 4.4 illustrates the perceptions and experiences of interviewee #1 regarding open-book assessment. The ten affinities, as described by the focus group, were used. The interactive relationships between the different affinities provided by interviewee #1 are presented in the SID. Three primary drivers are identified in this SID. These primary drivers are **different approach**, **personal experience and hindrances** and **general advantages**. The primary outcome of this SID is **improving the quality of answer**. There are two feedback loops in this system. These feedback loops revolve around **back-up** and **encouragement** and are interactively, influencing each other.

Diagram 4.4: Final SID for interview #1



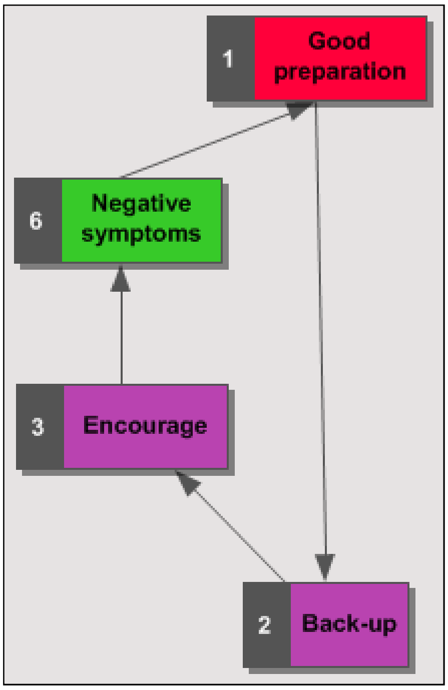
I named the first feedback loop (Diagram 4.5) **<u>Gives confidence</u>.** Open-book assessment creates the opportunity for material (textbooks and notes) to be taken into the assessment venue. Interviewee #1 realised that the presence of such a **back-up** would **encourage** students and enhance their confidence: "The back-up material at hand will be encouraging" (ART#1/10). In addition, it was suggested that if students felt more motivated, with increased confidence, they would be able to **manage their time** to the optimum. It was also realised that **time management** would then increase feelings of success: "If I feel more encouraged I will be able to manage my time better for each question, as I am more relaxed" (ART#1/24). Finally, this loop concludes that maximising the **time** available would lead to optimal use of the material as a **back-up**: "If time is managed effectively it will result in optimal use of the back-up material" (ART#1/17). According to interviewee #1, this completes the loop.

Diagram 4.5: Interview #1- Feedback loop 1: Gives confidence



I decided to call the second feedback loop (Diagram 4.6) **<u>Confidence in the back-up leads to poor preparation</u>**. This loop suggested that **good preparation** would

Diagram 4.6: Interview #1- Feedback loop 2: Confidence in the back-up leads to poor preparation



lead to the availability of a reliable **back-up** during an assessment: "If I prepared adequately by flagging and highlighting key reference points in the allowed material for the exam, it can easily be found and be used as back-up when I am unsure of certain facts" (ART#1/1). Interviewee #1 further suggested that **back-up** increases self-confidence, which **encourages** students to perform at their best. However, interviewee #1 felt that feelings of encouragement and self-confidence might also lead to **negative symptoms,** for example, laziness: "If I feel more encouraged I will be lazy in my preparation (i.e. prepare less)" (ART#1/20). The realisation is that the loop continues its circularity, as it shows that laziness would influence the students' preparation of both the material and the content itself.

Apart from the feedback loops, interviewee #1 suggested other influences. There was a perception that **time management** was influenced not only by **encouragement**, but also by **general advantages**. One of these **general advantages** was the idea that the access to material could create a visual tool for the student that increased information availability, thereby decreasing the time required to find the detail: "The visual tool will result in me spending less time on answering questions which will lead to effective time management" (ART#1/30).

It was also indicated that **good preparation** for an open-book assessment could be influenced by two primary drivers, namely **personal experience and hindrance,** and **different approach**: "My personal experience will demotivated me to prepare as well as I should, which will result in repeated checking of answers" (ART#1/7). The perception by interviewee #1 is that this **different approach** would have a negative effect on **preparation,** because students would have to memorise fewer facts and less theory and detail, seeing that they would be allowed to take the material into the assessment: "I will not prepare as much for an open-book exam as opposed to a closed-book exam due to the fact that I have the answers in the permitted material. This applies to theoretical work requiring the memorising of answers and not application type questions based on principles" (ART#1/8).

Interviewee #1 indicated that, for the **back-up** to be used efficiently during the assessment, the student would have to search through the material. This could create a **negative environment** in which there were a lot of distractions caused by students trying to find answers: "The back-up material affects the environment with students bringing allowed material into the exam venue (clutter feeling)" (ART#1/14). In addition it was pointed out that the **negative environment** had a direct influence on the **quality of the answers**. The **improvement in the quality of the answers** is a primary outcome of this SID and interviewee #1 felt this would be influenced by the **negative environment**: "The environment will affect my quality of answers negatively as I will feel uncomfortable in the chaos with all the allowed material' (ART#1/32).

4.3.2.2 Interview #2

Drawing the SID

On completion of the ACT, I compiled an Individual interview theoretical code ART (Appendix 10.2). The sorted IRD (Table 4.3) provides information on the SID assignments that will be used to draw the SID (Diagram 4.7). These assignments are summarised in Figure 4.3.

Table 4.3: Tabular IRD for interview #2: Sorted in descending order of ∆

	1	2	3	4	5	6	7	8	9	10	Out	In	∆
9	↑	↑	↑	↑	↑		↑	↑		↑	8	0	8
10	←	↑	↑	↑	↑	↑	↑		←		6	2	4
1		↑	↑	↑	↑	←			←	↑	5	2	3
6	↑	↑	↑							←	3	1	2
4	←	↑	↑		↑				←	←	3	3	0
8							↑		←		1	1	0
5	←	↑	↑	←					←	←	2	4	-2
7								←	←	←	0	3	-3
2	←		↑	←	←	←			←	←	1	6	-5
3	←	←		←	←	←			←	←	0	7	-7

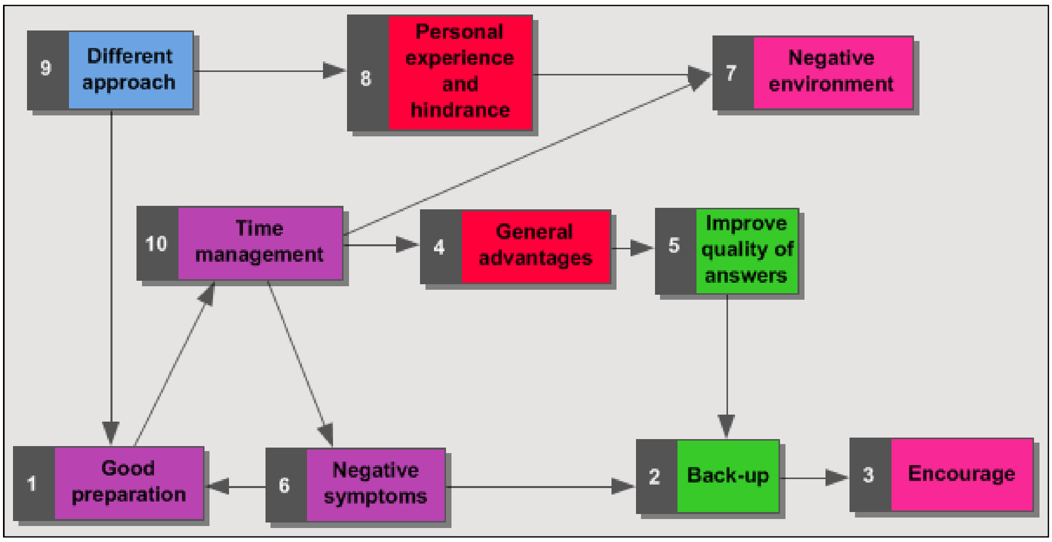
*****Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Figure 4.3: Tentative SID assignments: Interview #2

Affinity	Assignment
9	Primary driver
10	Secondary driver
1	Secondary driver
6	Secondary driver
4	Pivot
8	Pivot
5	Secondary outcomes
2	Secondary outcomes
7	Primary outcome
3	Primary outcome

*****Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.7: Final SID for interview #2



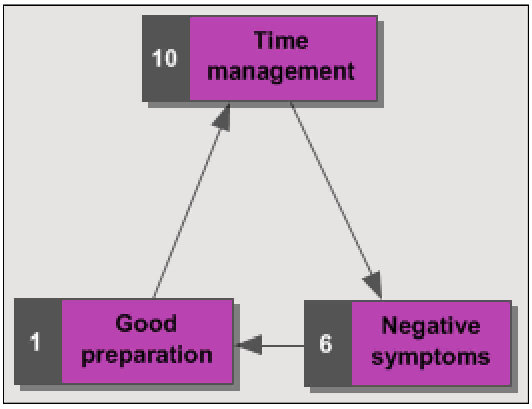
Discussing the SID

Diagram 4.7 illustrates the perceptions and experiences of interviewee #2 regarding open-book assessment. The ten affinities as described by the focus group were used. The interactive relationships between the different affinities, as provided by interviewee #2, are presented in this SID. The SID shows that there are one primary driver (**different approach**), two primary outcomes (**encouraged** and **negative environment**) and only one feedback loop in this system.

For interviewee #2 it was important to follow a **different approach** when confronted with open-book assessment. This affinity is also the starting point of the SID. In this system, a **different approach** influences the two affinities of **good preparation** and **personal experience and hindrance**. The influence of the **different approach** on **preparation** was described by interviewee #2 as: “A proper approach ensures good preparation” (ART#2/8).

I chose to describe the feedback loop (Diagram 4.8) present in this system as **Planning limits wasting time**. In this system **good preparation** is the starting point of the feedback loop. Interviewee #2 perceived that if a student was well **prepared**, it would be easier to **manage time**: “Effective time management is only achieved if one prepares well” (ART#2/9). The interviewee pointed out that **time management** could prevent unnecessary time-consuming practices during the period of study. One of the **negative symptoms of open-book assessment** was described as the time-consuming nature of preparing the textbooks: “Proper time management will guard against the negative symptoms of time management” (ART#2/39). On the other hand, interviewee #2 admitted that: “Good preparation is a time-consuming process” (ART#2/5) that leads back to the idea of **good preparation** being influenced by **time**.

Diagram 4.8: Interview #2 – Feedback loop: Planning limits wasting time



On the topic of **time management**, interviewee #2 felt that “without proper time management one will not be able to take advantage of open-book assessment” (ART#2/30). This comment drew attention to the effect of **time management** on the **general advantages** of open-book assessment. According to interviewee #2, one of the **general advantages** was the fact that the material used during an assessment could be expressed as a visual tool. It also showed that the availability of the material might **improve the quality of answers** written during an assessment: “The quality of answers is improved if the books are used as a visual tool” (ART#2/25). Interviewee #2 perceived that the **quality of answers would improve** through the use of material and therefore the **back-up** would increase in value. The SID shows that **back-up** could also be influenced by the **negative symptoms of open-book assessment**, reflected in the student being lazy and wanting to use the **back-up** as the first line of information. Evidently, in this case, it seemed to decrease the usefulness of the **back-up,** as it is supposed to be available for checking only. In general it is shown that the **back-up** would create a positive feeling of being **encouraged** during the study and assessment period. **Encouragement** is identified by interviewee #2 as one of the primary outcomes of the SID.

Another affinity shown to influence **different approach** was **personal experience and hindrance.** This was described by interviewee #2 as: “A proper approach helps the student appreciate the value add of an open-book exam” (ART#2/43). The students’ **experience** of open-book assessment appeared to play a vital role at this point: “If the student feels that the open-book exam adds no value then they will be chaotic in the exam hall” (ART#2/40). In other words, according to interviewee #2, open-book assessment might create a **negative environment** because of the availability of material. However, it is noted that **time management** may salvage the situation: “Proper time management helps one to manage the situation inside the exam room” (ART#2/42). Both **personal experience and hindrance** and **time management** are shown to influence the **negative environment**, which is the final primary outcome of the SID.

4.3.2.3 Interview #3

Drawing the SID

On completion of the ACT, I compiled an individual interview theoretical code ART (Appendix 10.3). The sorted IRD (Table 4.4) provides information on the SID assignments that will be used to draw the SID (Diagram 4.9). These assignments are summarised in Figure 4.4.

Table 4.4: Tabular IRD for interview #3: Sorted in descending order of ∆

	1	2	3	4	5	6	7	8	9	10	Out	In	∆
9	↑	↑	↑	↑	↑	↑		↑		↑	8	0	8
1		↑	↑	↑	↑			↑	←	↑	6	1	5
10	←	↑	↑	↑	↑	↑		↑	←		6	2	4
7								↑			1	0	1
2	←		↑	↑	↑				←	←	3	3	0
6								↑	←	←	1	2	-1
4	←	←	↑		↑				←	←	2	4	-2
3	←	←		←	↑			↑	←	←	2	5	-3
5	←	←	←	←				↑	←	←	1	6	-5
8	←		←		←	←	←		←	←	0	7	-7

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

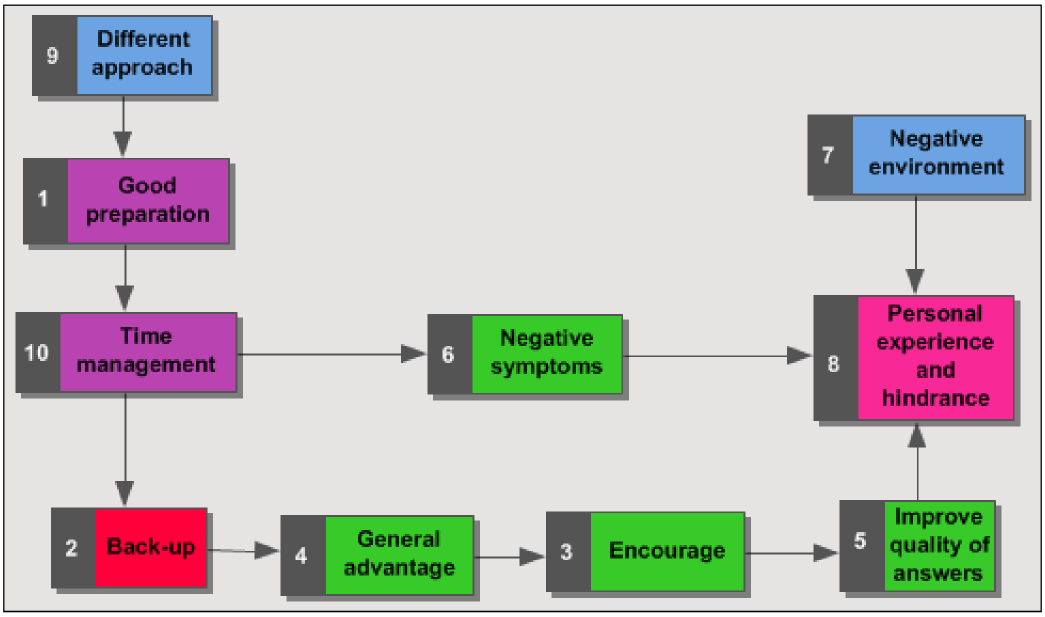
Figure 4.4: Tentative SID assignments: Interview #3

Affinity	Assignment
9	Primary driver
7	Primary driver

10	Secondary driver
1	Secondary driver
2	Pivot
6	Secondary outcomes
4	Secondary outcomes
3	Secondary outcomes
5	Secondary outcomes
8	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.9: Final SID for interview #3



Discussing the SID

Diagram 4.9 illustrates the perceptions and experiences of interviewee #3 on open-book assessment. The ten affinities described by the focus group are used. The interactive relationships between the different affinities provided by the interviewee are presented in this SID. There are two primary drivers (**different approach** and **negative environment**) in this SID, one primary outcome (**personal experience and hindrance**), and no feedback loop.

The first primary driver is **different approach**. Interviewee #3 thought that an alternative methodology was essential when preparing and writing an open-book assessment, which was the starting point for this SID.

It was perceived that a **different approach** would influence **preparation**: “You should follow the different approach to ensure that you are well prepared” (ART#3/8). **Good preparation** appeared to ensure that the material available could be accessed quickly for optimal use during the assessment. According to interviewee #3, this process would, to an extent, guarantee better **time management**: “If you are well prepared, your time will be managed effectively” (ART#3/9).

The SID shows that **time management** influences two affinities. The first is **negative symptoms**. The perception was that **time management** might partly eliminate the **negative symptoms** of open-book assessment. An example of a **negative symptom** that could be partly eliminated is the time-consuming nature of preparing the material: “By taking the correct approach and managing time effectively the negative symptoms will be minimised” (ART#3/38 and 39). It was thought that, if the **negative symptoms** were not addressed, this might aggravate the negative perception of open-book assessment, which could lead to **negative personal experience and hindrance**: “The negative symptoms could intensify a negative personal experience” (ART#3/37). The SID shows that interviewee #3’s negative **personal experience** could be increased by a **negative environment**: “The environment definitely impacts your personal experience” (ART#3/40).

The second affinity influenced by **time management** is **back-up**. The **back-up** must be approached and managed correctly for optimal use. Managing the material would include proper **time management**: “If you don’t manage your time correctly, the positive use of the **back-up** will become negative” (ART#3/17). According to interviewee #3 one of the most important characteristics of an open-book assessment is the availability of a **back-up,** which is an important **advantage**: “I think the fact that you have a back-up is one of the most important general advantages” (ART#3/11). **General advantages** may lead to a sense of **encouragement**, and a generally positive feeling about the assessment: “I definitely felt more encouraged because of the fact that I knew I didn’t have to memorise everything” (ART#3/18). When feeling more **encouraged**, this student would appear to be more motivated to **improve the quality of answers**: “I knew that I could improve the quality of my answers because of that ‘fussy feeling” (ART#3/19). The perception of interviewee #3 is that the final result of an assessment is seen as more positive **(personal experience)** because of the feeling that one could **improve the quality of the answer**: "The fact that the quality of your answers improves should impact your experience positively" (ART#3/33).

4.3.2.4 Interview #4

Drawing the SID

On completing the ACT, I compiled an individual interview theoretical code ART (Appendix 10.4). The sorted IRD (Table 4.5) provides information on the SID assignments that will be used to draw the SID (Diagram 4.10). These assignments are summarised in Figure 4.5.

Table 4.5: Tabular IRD for interview #4: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
8	←			↑	↑					↑	3	1	2
9	←			↑	↑	↑					3	1	2
10	↑		↑	↑	↑	←		←			4	2	2
4	↑	↑	↑		↑			←	←	←	4	3	1
6	↑								←	↑	2	1	1
7	↑	←	↑								2	1	1
2	←		↑	←			↑				2	2	0
1		↑	←	←	↑	←	←	↑	↑	←	4	5	-1
3	↑	←		←			←			←	1	4	-3
5	←			←				←	←	←	0	5	-5

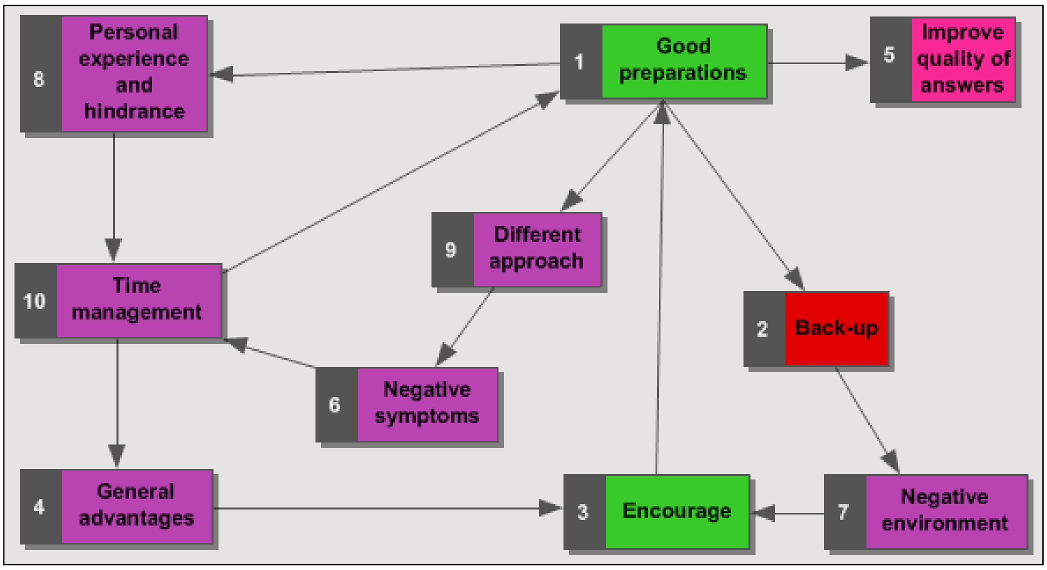
***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Figure 4.5: Tentative SID assignments: Interview #4

Affinity	Assignment
8	Secondary driver
9	Secondary driver
10	Secondary driver
4	Secondary driver
6	Secondary driver
7	Secondary driver
2	Pivot
1	Secondary outcomes
3	Secondary outcomes
5	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.10: Final SID for interview #4



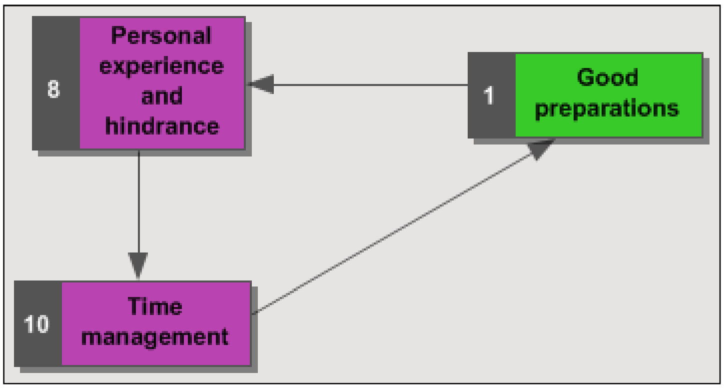
Discussing the SID

Diagram 4.10 illustrates the perceptions and experiences of interviewee #4 on open-book assessment. The ten affinities as described by the focus group are used. The interactive relationships among the different affinities provided by interviewee #4 are presented in the SID. No primary driver was identified in this SID, but the three strongest secondary drivers are **different approach**, **time management** and **personal experience and hindrance**. There was one primary outcome (**improve the quality of answers**) in this SID. There were four feedback loops in this system, which interacted with one another.

All the feedback loops have one common affinity - **good preparation**. Although good preparation was a secondary outcome, it seemed to actively influence all the sub-systems in the SID. By means of **good preparation,** the system of relationships ultimately influenced the **improvement in the quality of answers** as the primary outcome. Interviewee #4 stated: "I found that if one does not prepare well, incorrect references can be provided as the issue is misunderstood" (ART#4/4).

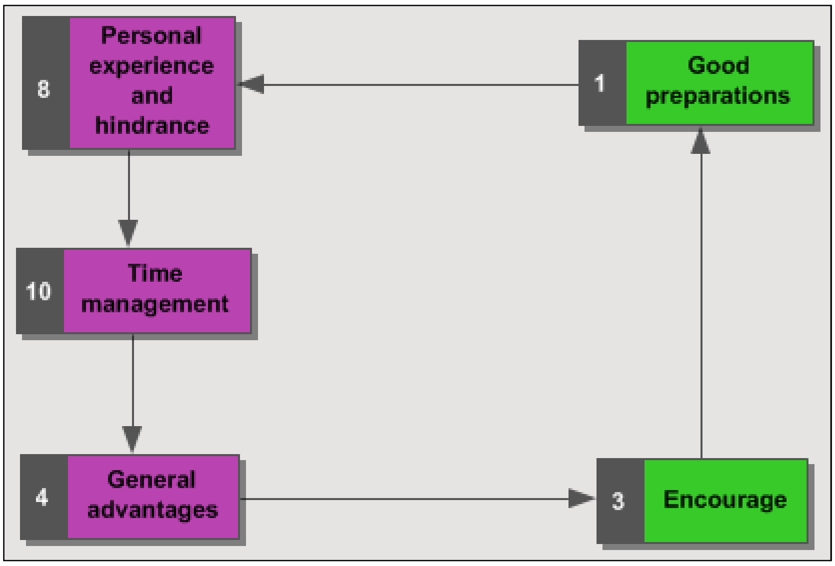
I called the first feedback loop (Diagram 4.11) **<u>Personal experiences impact on methods used</u>**. The perception is that **preparing** the material thoroughly would be of vital importance in answering questions. Interviewee #4 said that the accessibility of the material would have a positive effect on students' **personal experience** of using the material: “The use of the Act has assisted me immensely regarding how to commence answering questions” (ART#4/7). **Time management** addresses study and exam techniques, which might be directly influenced by the students’ **personal experiences**: “If you perceive open-book negatively, it may distract you from proper study techniques” (ART#4/44). An elaboration on this comment can be found in the following: “Exam technique is essential. No textbook or preparation can compensate for poor exam technique” (ART#4/9). With this remark, interviewee #4 drew the connection between **time management** and **good preparation**.

Diagram 4.11: Interview #4 – Feedback loop 1: Personal experiences impact on methods used



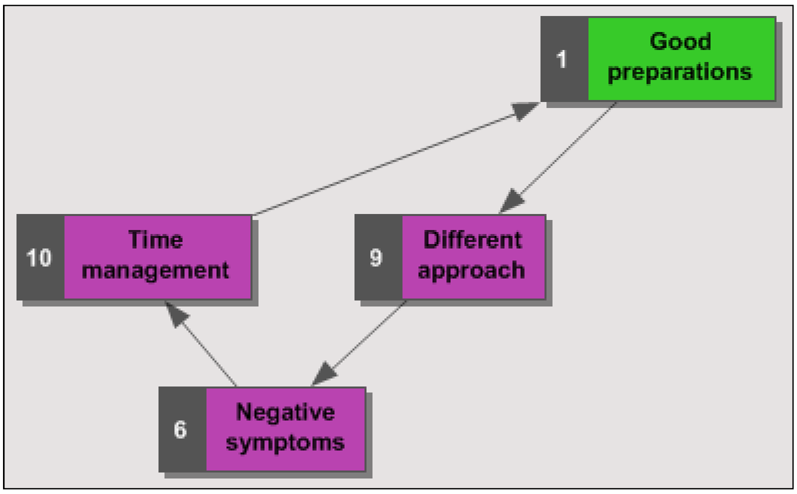
I called the second feedback loop (Diagram 4.12) **<u>Prepare to understand and not to repeat.</u>** The flow of relationships between **good preparation** and **personal experiences and hindrances** and then between **personal experiences and hindrances** and **time management** was discussed in feedback loop 1. **Time management** had an interactive relationship with the **general advantages** of open-book assessment. According to interviewee #4 the use of the material during the assessment would be optimal if the students could manage time properly: “If you understand the textbook, then you can manage time more effectively” (ART#4/30). The **general advantage** of having the material to hand during an assessment might create a feeling of **encouragement**: “If one can refer to textbooks, one usually feels more positive” (ART#4/18). The feeling of **encouragement** due to the fact that one does not need to commit everything to memory would increase the motivation to **prepare** in order to understand rather than to repeat: “More time can be spent on understanding whilst studying opposed to memorising facts” (ART#4/2). The subsystem is completed and could start again at **good preparation**.

Diagram 4.12: Interview #4 – Feedback loop 2: Prepare to understand and not to repeat



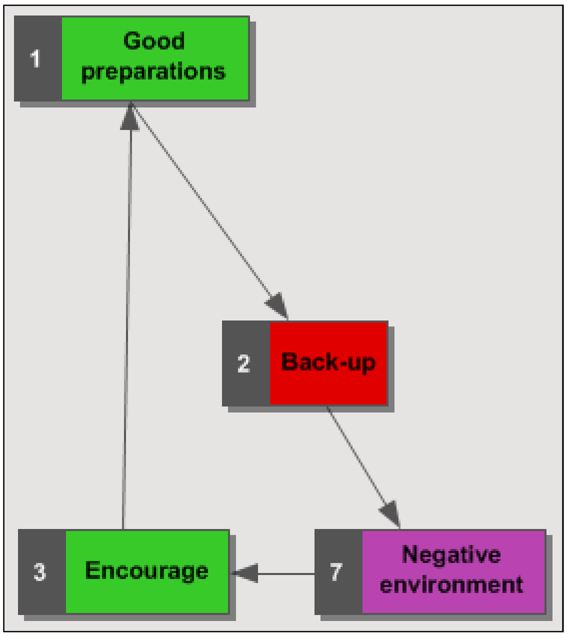
Feedback loop 3 can be found in Diagram 4.13, which I summarised as **<u>Open-book assessment could lead to poor performance</u>**. According to this SID, the **preparation** before writing an open-book assessment focused on the material and understanding the contents rather than on committing the facts to memory. Interviewee #4 felt that this was a **different approach** from the more traditional closed-book assessment: "The only change I have experienced was positive, i.e. you can spend more time understanding than memorising" (ART#4/8). This **different approach** introduced new methods and techniques. Students often resist change and may experience this approach as foreign and intrusive. According to interviewee #4 this could create a negative attitude towards open-book assessment and laziness (**negative symptom**) when it comes to preparing well: "If you perceive open-book negatively, then you would go to less trouble to prepare the textbook" (ART#4/38). Interviewee #4 also noted that **negative symptoms** could result in time-consuming activities during the assessment and that **time would not be managed** appropriately: "If open-book promotes laziness then time will be poorly managed (requiring excessive reference to books)" (ART#4/39). This loop indicates that poor **time management** and a negative attitude to open-book assessment would lead to poor **preparation**, thus completing the loop.

Diagram 4.13: Interview #4 – Feedback loop 3: Open-book assessment could lead to poor performance



I called feedback loop 4 (Diagram 4.14) **Back-up can motivate students**. This loop in the SID begins with **good preparation.** Interviewee #4 mentioned that: "If you prepare well, confidence in the open-book tool will increase" (ART#4/1). This indicated that **good preparation** increases the possibility of accessing the **back-up** material during an assessment. The **back-up** might help to focus the student on the subject matter, which could eliminate the distraction in the venue itself (**negative environment**): "If allowed to use textbooks, then it assists in overcoming a lack of concentration caused by the environment" (ART#4/14). While the **back-up** might help some students to focus, others could be distracted (**negative environment** and **encouragement**): "If students do not consider others then the open-book material can become disturbing" (ART#4/21). However, in general, interviewee #4 felt more **encouraged**: "It was comforting to know that a back-up was available" (ART#4/10). If students are feeling more motivated (**encouraged**), they may be more focused on **preparing** well for the assessment.

Diagram 4.14: Interview 4 – Feedback loop 4: Back-up can motivate students



4.3.2.5 Interview #5

Drawing the SID

When I had completed the ACT, I compiled an individual interview theoretical code ART (Appendix 10.5). The sorted IRD (Table 4.6) provides information on the SID assignments that will be used to draw the SID (Diagram 4.15). These assignments are summarised in Figure 4.6.

Table 4.6: Tabular IRD for interview #5: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
1		↑	↑	↑	↑	←	↑	↑		↑	7	1	6
2	←		↑	↑	↑	↑		↑	↑	↑	7	1	6
9		←	↑	↑	←	↑	↑	↑		↑	6	2	4
4	←	←	↑		↑	↑	↑	↑	←	↑	6	3	3
3	←	←		←	↑	↑			←	↑	4	3	1
5	←	←	←	←			↑		↑	↑	3	4	-1
6	↑	←	←	←			↑	↑	←	←	3	5	-2
10	←	←	←	←	←	↑	↑	↑	←		3	6	-3
8	←	←		←		←	↑		←	←	1	6	-5
7	←			←	←	←		←	←	←	0	7	-7

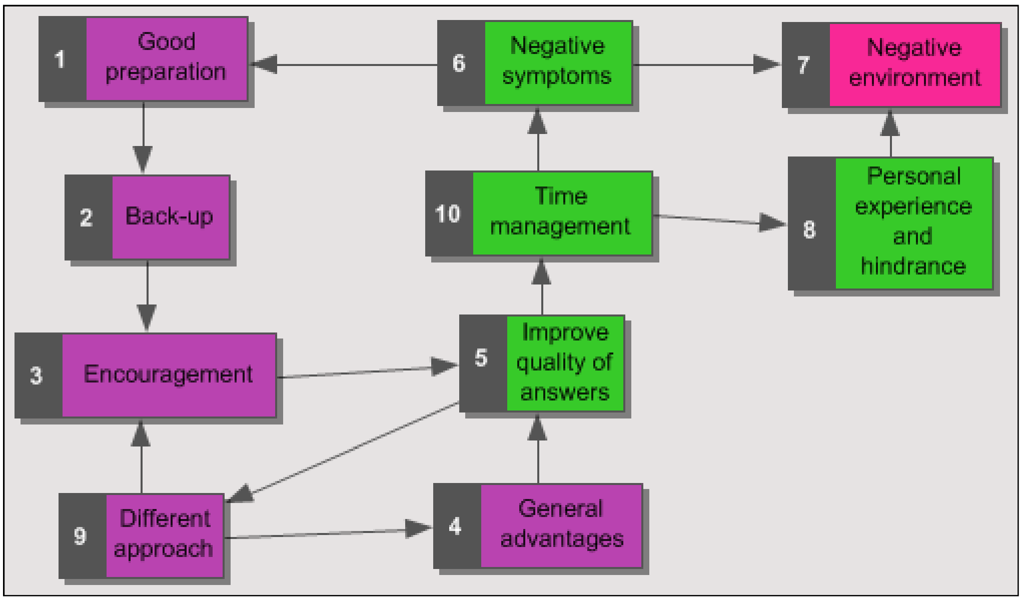
***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Figure 4.6: Tentative SID assignments: Interview #5

Affinity	Assignment
1	Secondary driver
2	Secondary driver
9	Secondary driver
3	Secondary driver
4	Secondary driver
5	Secondary outcomes
6	Secondary outcomes
10	Secondary outcomes
8	Secondary outcomes
7	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.15: Final SID for interview #5



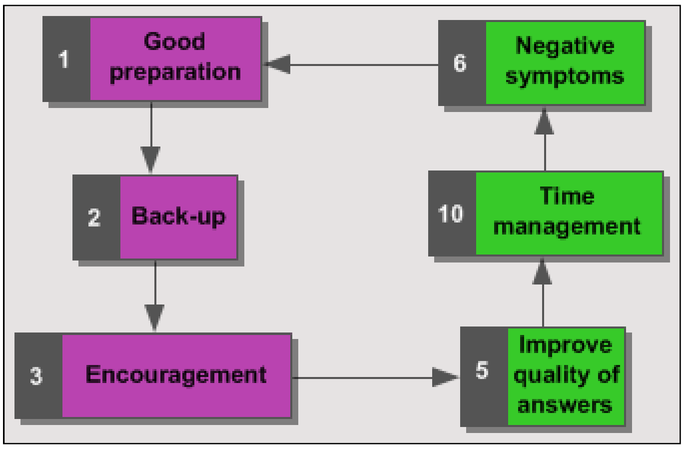
Discussing the SID

Diagram 4.15 illustrates the perceptions and experiences of interviewee #5 on open-book assessment. The ten affinities described by the focus group were used. The interactive relationships between the different affinities provided by interviewee #5 are presented in the SID. No primary driver has been identified in this SID, but the two strongest secondary drivers are **good preparation** and **back-up**. There is one primary outcome in this SID: **negative environment**. There are three feedback loops in this system, which interact with one another.

Although **good preparation** and **back-up** are seen as the two secondary drivers with the strongest influence, they are both influenced in turn by the affinity **negative symptoms** of open-book assessment.

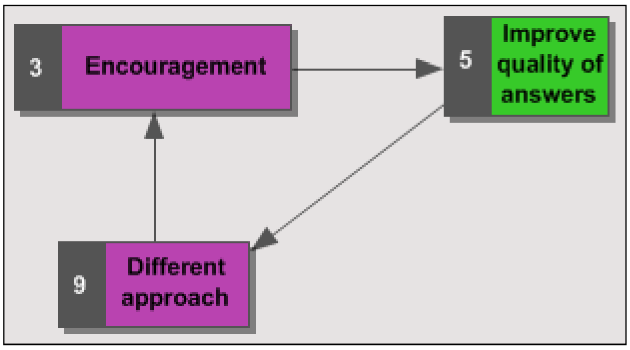
I summarised the first feedback loop (Diagram 4.16) as **<u>Open-book assessment could improve answers but promote laziness</u>**. This loop starts with **good preparation**: “If I prepare properly, then it does make me more confident to know that there is a back-up if something goes wrong. If I have a back-up, then I have two things to help me: my knowledge that I studied **<u>and</u>** my books” (ART#5/1). The **back-up** created by **good preparation** will lead to a more confident student (**encouraged**) because there will always be a safety net: “If I have a backup, I will automatically feel more confident should the worst case scenario arise and I go completely blank” (ART#5/10). Interviewee #5 thinks the **quality of answers will improve** when students feel more **encouraged**: “If I am faced with an open-book exam, then I am immediately less stressed, which has an effect on the quality of the answers that I give” (ART#5/19). The **quality of answers would improve** with the material available during the assessment, which could lead to better **time management**: “If the student has the technical detail in front of him, then they won’t need to spend so much time memorising work, but can focus more on understanding and application” (ART#5/35). Interviewee #5 noted that the correct study technique (**time management**) during the **preparation for the open-book assessment** optimises the **management of time**: “If I spend my studying time on the right things and in the right way, then in the exam I won’t need to refer to my books for everything, and if I do need to look something up, I will know where to find it” (ART#5/39). The **negative symptoms** of open-book assessment would be limited, although knowing that the material would be available during the assessment might lead to laziness on the part of the students: “If I know that the book will be there, then I might feel tempted to not study a section as well as I would have if the exam was not open-book” (ART#5/5). This would complete the loop and it could start again with **good preparation**.

Diagram 4.16: Interview #5 – Feedback loop 1: Open-book assessment could improve answers but promote laziness



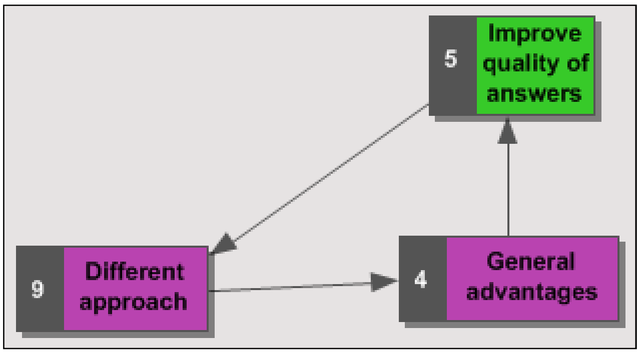
I described feedback loop 2 (Diagram 4.17) as **<u>Optimistic about answering application questions</u>.** It is the perception of interviewee #5 that the students who prepared for the assessment by studying and using their **back-up** material (thus, **different approach**) would feel more **encouraged** during the assessment: "If a student studies in the right way and does not substitute the use of the books for learning and understanding the work, then it can make a student feel optimistic and encouraged about the exam" (ART#5/23). Interviewee #5 also believed that the **different approach** that led to students feeling **encouraged** would motivate them and relieve their stress. Such students would be **encouraged** to **improve the quality of their answers.** The **improved answers** would not be in response to traditional, fact-based questions, as these would change to conform with **a different approach**: "If an open-book assessment is used to help improve the quality of a student's answers, then this will change the approach to studying and mental preparation, as it will be pointless for an examiner to ask straightforward questions. Questions will centre more on application than regurgitation of data" (ART#5/34).

Diagram 4.17: Interview #5 – Feedback loop 2: Optimistic about answering application questions"



Feedback loop 3 (diagram 4.18) is entitled **Studying differently for assessment.** For students to maximise this form of assessment, interviewee #5 felt that they would have to apply a **different approach** to their studies. This would involve understanding the content rather than memorising it: "If students prepare in the right way (more understanding than memorising), then the use of books during the exam can be an advantage, as it gives the student more time to really grasp concepts, as opposed to having to memorise long lists of things as well" (ART#5/29). According to interviewee #5, this system would provide **general advantage** in that the students would have a visual tool when answering rote memory questions. The visual tool (**general advantage**) might increase the access to detail in the material and thus increase the **quality of the students' answers**: "If I have the very technical detail in front of me, then the quality of answers will most certainly improve" (ART#5/25). Implying that students should understand that changing to open-book assessment would also require a **different approach** to their studies.

Diagram 4.18: Interview #5 – Feedback loop 3: Studying differently for assessment



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4.3.2.6 Composite SID for all 5 interviews

Drawing the SID

After I had completed the interviewees' separate SIDs, I used all the information from all five interviews and combined it into a composite sorted IRD (Table 4.7). This IRD provided information on the SID assignments (Figure 4.7) that were used to draw up a final composite SID for all the interviews (Diagram 4.19). During the Pareto protocol and the power analysis, three contradictory relationships were identified. In all the cases, the highest frequency was used in the IRD according to the IQA methodology. All three contradictory relationships were resolved after the SID had been drawn and analysed.

Table 4.7: Tabular sorted composite IRD for all the interviews: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
9	↑	↑	↑	↑	↑	↑	↑	↑		↑	9	0	9
1		↑	↑	↑	↑	←		↑	←	↑	6	2	4
10	←	↑	↑	↑	↑	↑	↑		←		6	2	4
2	←		↑	↑	↑		↑		←	←	4	3	1
6	↑		←					↑	←	←	2	3	-1
8	←				↑	←	↑		←		2	3	-1
4	←	←	↑		↑				←	←	2	4	-2
3	←	←		←	↑	↑			←	←	2	5	-3
7		←						←	←	←	0	4	-4
5	←	←	←	←				←	←	←	0	7	-7

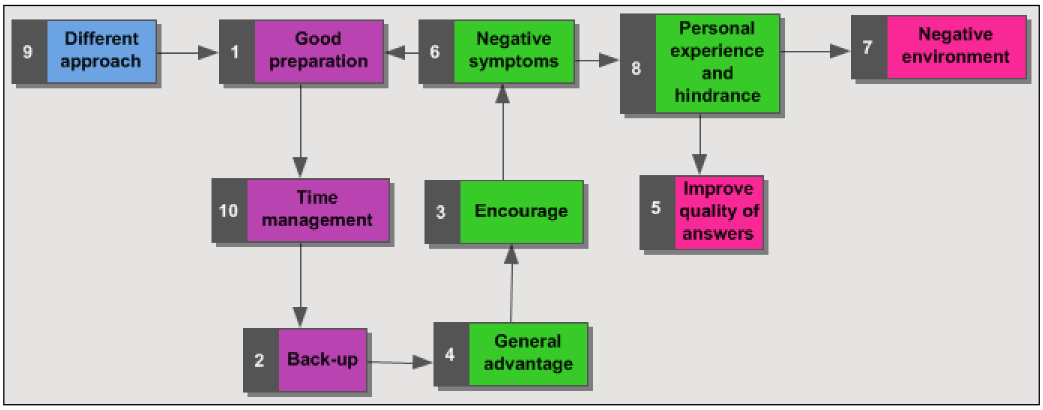
***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Figure 4.7: Tentative composite SID assignments for all the interviews

Affinity	Assignment
9	Primary driver
1	Secondary driver
10	Secondary driver
2	Secondary driver
6	Secondary outcome
8	Secondary outcome
4	Secondary outcome
3	Secondary outcome
7	Primary outcome
5	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

Diagram 4.19: Final composite SID for all the interviews



Discussing the composite SID

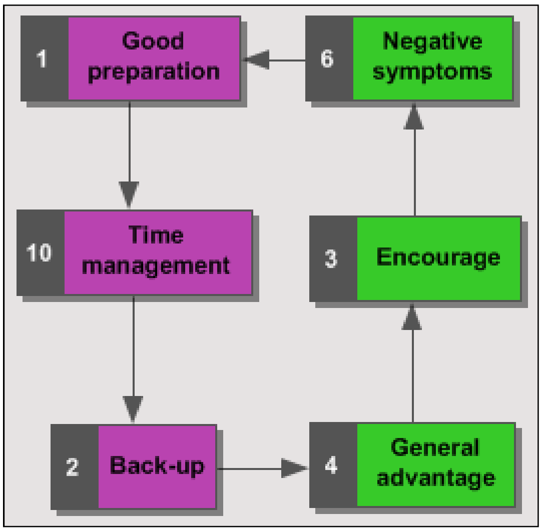
Diagram 4.19 illustrates the summarised perceptions by interviewees and their experiences of the open-book assessment. The ten affinities described by the focus group were used. The interactive relationships between the different affinities provided by the interviewees are presented in this SID.

The primary driver identified by all the interviewees was **different approach**. There were two primary outcomes in this SID: **negative environment** and **improvement in quality of answers;** one feedback loop was identified in the system.

The discussion of the composite SID will commence with the primary driver (**different approach**). The **different approach** affinity influenced the system through **good preparation**. This indicated the beginning of the feedback loop.

I called this feedback loop (Diagram 4.20) **<u>Laziness could eliminate the positive effect of open-book assessment</u>**. It shows that **good preparation** for an open-book assessment included going through the material that could be taken into the assessment and getting it ready, as well as studying the material for hands-on knowledge during the assessment. According to all interviewees this would help the student with better **time management** before and during the assessment. They believed that good **time management** during the study-period would ensure that adequate time was spent on preparing the **back-up**. The materials available as a **back-up** during the assessment lead to **general advantages** for open-book assessment. The interviewees perceived that a **general advantage** could be the fact that the **back-up** is a visual tool for accessing detail or checking changes in laws. Having access to detail (**general advantage**) might create a feeling of optimism and **encouragement.** It could give the student motivation (**encouragement**) during the assessment, but it could become a security blanket leading to a laid-back attitude/ laziness (**negative symptom**) when preparing for open-book assessment. Laziness (**negative symptom**) would influence the students' **preparation** for the assessment.

Diagram 4.20: For all 5 Interviews – Feedback loop: Laziness could eliminate the positive effect of open-book assessment



In Diagram 4.20, the item **negative symptoms** is shown to influence **good preparation** (discussed as part of the feedback loop) as well as **personal experience and hindrance**. If there was excessive checking of answers in the available material (**personal experience and hindrance**) there would be a sense of disruption in the examination venue that could create a **negative environment**. Although the availability of material (**personal experience and hindrance**) could lead to a feeling of chaos, it could also **improve the quality of answers,** as checking material might bring to mind details forgotten or not memorised.

4.4 Concluding remarks

In this chapter, I consolidated the descriptions of all the affinities provided by the focus group and elaborated on by the interviewees. I continued and presented all possible relationships (in SIDs) between the affinities, for both constituencies. The chapter concluded by drawing up and discussing a combined SID for all the interviews.

In the next and final chapter, a summary of the findings of this chapter will be presented in conjunction with my research question and relevant literature. The implications of my study together with the views presented during the literature review will be considered and integrated into my findings. My final personal interpretation on the research question will conclude this chapter.

Chapter 5: Interpretation and Conclusion

5.1 Introduction

In this chapter I intend revisiting the research question, which was posed at the beginning of my research report. The research question is formulated as follows:

What are students' perceptions of open-book assessment?

This research question is divided into the following sub-questions:

- What perceptions of open-book assessment emerge from taxation students' responses?
- How do these emerging perceptions of open-book assessment relate to one another?

I will integrate the research question with the findings described in Chapter 4, and the literature compiled and reviewed in Chapter 2. This will be followed by a discussion of the contributions made by my research, together with recommendations for future research. Finally I will present some of the limitations of my research and offer a final conclusion.

5.2 Discussion of findings

I will use the findings of my study to answer the above-mentioned research questions.

5.2.1 What perceptions of open-book assessment emerge from taxation students' responses?

The different perceptions (also referred to as affinities) identified during my research will now be discussed. I will draw a comparison between the affinities initially identified by the focus group (students with no exposure to open-book assessment) and the comments on those affinities made by the interviewees (students who had experienced open-book assessment).

5.2.1.1 Good preparation (Affinity 1)

According to the focus group, this affinity emphasised the importance of knowledge acquired before attempting the open-book examination. They considered the principles rather than the theory to be one of the most important aspects of preparation. They thought familiarising themselves with the layout of the textbook was a necessary tool in open-book assessment, while forming a constant referencing habit would also help them to be well-prepared for the examination.

According to the interviewees, one of the keys to success in open-book assessment is for students to familiarise themselves with the textbook by making notes in the empty spaces or in the margin of the textbook, marking the different pages with flags and using different colours for different ideas, sections and definitions. It was important to know the general layout of the textbook. However, they did not reach consensus on whether or not the habit of referencing was good. Some felt there was no time to refer to the textbook, while others thought that, with access to the textbook and thus their own summaries, this would be enough to help them answer the questions. However, most of them agreed that the study method followed by students was of vital importance. In general, they maintained that methods should include understanding core principles, practice in writing answers and marking them, becoming very familiar with the textbook and preparing it for quick, emergency referencing or consultation only.

A final integrated comment on the affinity 'Good preparation'

The focus group identified the importance of knowledge when preparing for open-book assessment, but more specifically principles rather than theory. Various researchers confirm that a strong focus on principles tends to nurture a better understanding (Killen & Hattingh 2004; Theophilides & Koutselini-Ioannidou 2000). This aspect of open-book assessment set the stage for students to move from surface learning to deep learning (Brightwell *et al.* 2004; Feldhusen 1961; Gray 1993; Heijne-Pennings *et al.* 2006). Apart from this, the interviewees agreed that the study method followed during preparation is important, but the textbooks should be used only for emergencies. Broyles *et al.* (2005) concur, advising against the use of available materials to confirm every answer, and cautioning that they should be used only when necessary. Both constituencies (focus group and interviewees) agreed that, in preparation for open-book assessment, the layout of the textbook should be studied and arranged by using markers, flags and highlights. The importance of preparing the material in this way is confirmed by findings by Broyles *et al.* (2005) and *eHow* Education (2009). When it came to the positive effects of the referencing habit, the interviewees disagreed. Some felt that referencing was a waste of time, while others said it could result in better-formulated answers. Research has shown that maintaining a referencing habit while preparing for an open-book assessment is essential, but during an open-book assessment it should be used sparingly, and only as a back-up. This research found that the time spent on referencing material during the open-book assessment correlated negatively with the students' final marks. In fact, it demonstrated a tendency to produce incomplete answers (Boniface 1985; Jacobs 1990). *eHow Education* (2009) provides advice specifically on methods that enhance quick referencing when it becomes necessary during open-book assessment with the use of index cards, brief notes and the layout of the textbook. The availability of such resources resonates with Lancaster's (2006) idea that the knowledge and skills acquired during studies, along with resources, must be available to students during assessment to help unravel problems.

5.2.1.2 Back-up (Affinity 2)

According to the focus group, this affinity describes the positive feeling that there is a last resort in an examination. They felt that textbooks could be used as reference to help eliminate different options and find the correct wording. They concluded that access to additional detail in the textbook could even lead to extra marks being awarded.

According to the interviewees, having the textbooks provided the reassurance that, if one forgot detail, there was a way out. They agreed that this back-up should be used only in an emergency. They mentioned that, for instance in the case of the Tax Act, it could be problematic if the content had not been interpreted and understood beforehand. The Act offers numerous options leading sometimes to students including irrelevant information in their solutions.

A final integrated comment on the affinity 'Back-up'

The focus group referred to the availability of resources as a last resort. The interviewees agreed, adding that it was reassuring that one is not alone. This seemed to resonate with March's (1980) argument that open-book assessment allowed students access to resources that would help them present evidence of their ability. However, the interviewees noted that, even if the correct wording was available in text of the Tax Act, this should still be interpreted before the assessment. Broyles *et al.* (2005) confirmed this in their research, pointing out the importance of internalising the integrated content before an assessment. The focus group maintained that, unless this happened, a student who had access to information could score extra marks, but, on the other hand, could also include irrelevant information in the solution. Boniface (1985) and Jacobs (1990) confirmed the interviewees' perception by stating that if this back-up was used too extensively a student's answer could be incomplete and weak in structure. Both constituencies believed that the back-up should be used only in emergencies. Broyles *et al.* (2005) concurred when they advised against the use of available materials to confirm every answer, which should be done only when necessary.

5.2.1.3 Encourage (Affinity 3)

According to the focus group, this affinity indicates that open-book assessment can have an optimistic effect on students writing it. They also felt that students may feel more motivated when confronted with an open-book situation.

According to the interviewees, having a back-up gives a feeling of security, a sense that there is psychological support during a stressful experience. They also felt that, although they did not use the textbooks often during an assessment, the material was there as an aid. Knowing that they had a back-up gave them self-confidence.

A final integrated comment on the affinity 'Encourage'

The focus group described the open-book assessment as making the students feel optimistic. A multitude of studies give evidence that students appear to have an optimistic orientation towards open-book assessment (Brightwell *et al.* 2004; Feldhusen 1961; Feller 1994; Gray 1993; Theophilides & Koutselini-Ioannidou 2000).

Theophilides and Dionysiou (1996) found that students perceived open-book assessment as more positive than closed-book assessment. When referring to optimistic orientations and positive perceptions, I felt that it was worth mentioning the vast number of studies finding that open-book assessment is associated with lower student anxiety levels in comparison with closed-book assessment (Feller 1994; Jacobs 1990; Theophilides & Dionysiou 1996). More specifically, the work of Theophilides and Koutselini-Ioannidou (2000) found that examination anxiety and feelings of pressure seemed to decrease during open-book assessment. The interviewees added to this by stating that the textbooks with them gave a feeling of security and psychological support.

The interviewees maintained that knowing they had a back-up gave them self-confidence. Although not referring to self-confidence specifically, Koutselini-Ioannidou (1997) concluded that open-book assessment tended to induce a higher level of student motivation. Again, one could reason that the research mentioned earlier on optimistic orientation, positive perceptions and lowered anxiety levels in students attempting open-book assessment may contribute to the confidence levels the interviewees perceived I found no literature that referred specifically to self-confidence.

5.2.1.4 General advantage (Affinity 4)

According to the focus group, the textbooks used in open-book assessment are a visual tool for accessing detail. They pointed out that the problem of the frequently-changing taxation laws could be surmounted if the changed information were available in textbooks. This could help avoid their having to memorise the technical information overload in taxation relating to definitions, rules, sections and formulae in the Income Tax Act, as well as lists of exemptions in other Acts.

According to the interviewees, the most important advantage of open-book assessment was the accessibility of information, so that students could use their textbooks for detail or forgotten facts during the assessment. They believed that this reduced the time spent on memorising facts during preparation, leaving more time for understanding the content and practising questions. They noted that the problem of the continually-changing Income Tax Act can be surmounted by having the Act available during assessments. Ready access to the Act during the assessment helps towards the correct wording for the different sections. Two of the interviewees commented on the possibility that they might have studied differently if the QE Part 1 examination had not been an open-book assessment, specifically when it came to the prodigious amount of theory that had to be learned.

A final integrated comment on the affinity 'General advantage'

The focus group compared the availability of the textbook to a visual tool for accessing memorised detail. Further, they felt that with the textbooks available they could bypass having to memorise the technical information overload in taxation studies. This is confirmed and reiterated by various research studies (Boniface 1985; Broyles *et al.* 2005; Feldhusen 1961; Jacobs 1990). The interviewees agreed, saying that more time could be spent on understanding and practising than on memorising facts and details. From the didactic perspective, numerous researchers have concluded that, when students understand the content, proficiency and professional skills are more easily attained (Brightwell *et al.* 2004; Feldhusen 1961; Gray 1993; Jacobs 1990). This aspect of open-book assessment also sets the stage for students to progress from surface learning to deep learning (Botha *et al.* 2005; Feldhusen 1961; Gray 1993; Heijne-Pennings *et al.* 2006). The problem of the continually-changing Tax Act could be overcome by allowing access to the Act itself during an assessment. The interviewees commented that the wording in the different sections could now be correctly expressed in the solution. Taking the textbooks in with them and having access to the most recent Income Tax Act had already been advised by Bowman in 1994. However, the interviewees did not agreed that students necessarily should study differently for an open-book assessment. Killen and Hattingh (2004) contend that transformation and adjustments seem to be necessary if students are to enhance the quality of their learning when attempting an open-book assessment.

5.2.1.5 Improve quality of answers (Affinity 5)

According to the focus group, this affinity suggests that having textbooks available allows for more detail than could be memorised. They considered that answers given by students would be more reliable and better expressed on account of the detail in the tools available during the examination.

According to the interviewees, open-book assessment could improve the quality of answers, as students would have access to the detailed information in the textbooks. They also noted that being able to refer to the textbooks would improve the structuring of students' answers. On the other hand, the interviewees agreed that textbooks would not assist a student in interpreting content, completing the solution or understanding the information in the text. Having recourse to textbooks would therefore not necessarily result in extra marks, as there is no time for searching through the textbook for additional information.

A final integrated comment on the affinity 'Improve quality of answers'

The focus group stated that the textbooks offered more detail than the amount of information that could be memorised. The interviewees felt that access to the detail in the textbook was an advantage because the information in the textbook was too much to be memorised. Their point was that reference to the textbooks results in more reliable and better-expressed answers.[37] A great deal of research does conclude that open-book assessment seems to improve the quality of students' answers (Botha *et al.* 2005; Mohanan 1997; Struyven *et al.* 2002; Weber *et al.* 1983). On the other hand, some research emphasises that, if the resources are used too extensively during the assessment, answers are often incomplete and poorly structured (Boniface 1985; Jacobs 1990). The interviewees did note that textbooks assisted in structuring answers, but they also held that textbooks could not help with interpretation, completeness and understanding. Be reminded that Broyles *et al.* (2005) confirmed this in their research and pointed out the importance of internalising and integrating content before an assessment. Research by Francis (1982) confirmed that the availability of information does create a better structure and more acceptable solutions to the problems posed during the assessment. However, time is a constraint when searching the textbooks for appropriate answers. Boniface (1985), and later Jacobs (1990), found that time constraints in referring to the textbooks in an open-book assessment may lead to weaker solutions. The interviewees confirmed this by pointing out that there was no time to search the textbooks hoping for extra marks.

[37] Students who have access to information may (according to the focus group on the affinity Back-up) get extra marks, but as the interviewees (on the affinity Back-up) noted, this may also lead to unwanted and excess information in the solution.

5.2.1.6 Negative symptoms of open-book assessment (Affinity 6)

According to the focus group, this affinity emphasises the time-consuming nature of preparing the textbooks for the examination, as well as the intellectual preparation of the students themselves. They pointed out that allowing students to take information into the examination could encourage students to become lazy.

According to the interviewees, students tend to depend excessively on the textbooks, which encourages a lazy attitude, and results in less-thorough preparation. They said students spend a lot of time going through the textbook, adding flags and highlighting sections instead of understanding and interpreting the Act. Sometimes students may find generic answers to similar questions in various textbooks, instead of trying to work out their own solution to the question. They might then use the generic answer at the end of a specific chapter, which might be incorrect or even of lesser quality.

A final integrated comment on the affinity 'Negative symptoms of open-book assessment'

The focus group were of the opinion that preparing textbooks was time-consuming. The interviewees agreed and mentioned that flagging, highlighting and marking the textbooks was a waste of time. Boniface (1985) found the same, especially in relation to the preparation phase for an open-book assessment, together with deciding what to study and what to take into the assessment, which may also waste valuable time. Students appear to believe that, because textbooks are available during the assessment, they do not need to study so intensely (Feller 1994). The interviewees pointed out that some students depend on the textbooks for generic answers, which may not be the actual solution to the question asked. Some research shows that certain students prefer to copy answers directly from the textbooks, confirming their dependency on the textbooks (Clift & Imrie 1981; Koutselini-Ioannidou 1997). Both constituencies went further and believed that students were liable to become lazy while preparing for an open-book assessment. Koutselini-Ioannidou (1997) and Lancaster (2006) pointed out that open-book assessment encourages laziness, especially when students see that they can copy answers directly from the resources. Apart from research noting the possible waste of time, dependency on textbooks and nurturing laziness that may occur in an open-book assessment, many research studies report that students tend to study less for such a test. This has been shown to be accurate, especially when less time is spent on preparation, in comparison with a closed-book assessment (Boniface 1985; Fellar 1994; Jacobs 1990; Theophilides & Koutselini-Ioannidou 2000). Theophilides and Koutselini-Ioannidou (2000) found that, overall, students tend to underestimate the course of an open-book assessment. They study less, either because they think open-book assessment is easier (Clift & Imrie 1981) or because they believe that it is easy to find the answer in the available resources (Koutselini-Ioannidou 1997).

5.2.1.7 Negative environment (Affinity 7)

According to the focus group, this affinity relates to the situation in the examination hall. They maintained that during an open-book assessment students tend to page through the textbooks, causing chaos and disruption.

According to the interviewees, they were not distracted by the environment. They did mention that some of the other students experienced certain distractions in the venue as disturbing; for example, scraping or tilting chairs, eating, paging through textbooks and dropping books on the floor. All the interviewees agreed, though, that one could choose not to be affected by the distractions.

A final integrated comment on the affinity 'Negative environment'

There are distractions inside the examination hall, such as students paging through books and dropping them on the floor. The focus group felt that this may promote chaos and disruption. However, the interviewees maintained that the distractions did not affect them and that they could choose to ignore the environment; however, they mentioned that other students were disturbed by the distractions. No literature could be found to confirm that distractions are disruptive or have a negative effect on students attempting an open-book assessment.

5.2.1.8 Personal experience and hindrance (Affinity 8)

According to the focus group, this affinity relates to the feeling that open-book assessment adds no value to the learning process,[38] and that it can even result in lowered self-esteem. They mentioned that this assessment technique could be perceived as more difficult and demanding. They felt that the availability of textbooks could lead to excessive checking of answers and unnecessary wasting of time. However, they observed that, as far having the text of the Act available is concerned, it could be helpful, because the Act is not easy to read and the expression is rather tortuous.

According to the interviewees, open-book assessment still requires theory to be learned, although theory does not necessarily count for marks. They pointed out that it is required for the practical application of case studies. They reiterated that having the textbooks with them is not a quick fix and copying text from the source is of no value. They argued that there was no time to look for answers in the textbooks. The interviewees also said that the Act as text presents something of an obstacle, as many students find it difficult to read and interpret. Given this, open-book assessment could cause discouragement, as there was so much information to be applied. They also felt that learning to trust oneself during the assessment was very important, as self-distrust could cause excessive checking, which would be a waste of time.

A final integrated comment on the affinity 'Personal experience and hindrance'

The focus group felt that open-book assessment added no value to the learning process, but it could cause lowered self-esteem. This was partly confirmed by the interviewees, as they thought the questions in the assessment required application and the textbook contained only theory. They felt that this might cause discouragement. The focus group said that using the textbooks encouraged excessive checking, while the interviewees believed that this was caused by 'not trusting themselves'. Van Tonder (1988) believes that educating students on open-book assessment and the ability to use the material before and during an assessment saves time and increases confidence during the assessment.

[38] By 'learning process', the participants meant knowledge (both theoretical and applied).

Birenbaum and Feldman (1998) show that students' attitudes play a role in how they complete assignments and in the quality of learning exhibited, so engaging with students in this sense may be important. I would like to mention the studies done by Boniface (1985) and Jacobs (1990), who found that the more time was devoted to referencing and checking during an assessment the lower the final marks tended to be (negative correlation). The focus group perceived open-book assessment as more difficult and demanding than a closed-book assessment. Brightwell *et al.* (2004) found that students still preferred open-book to closed-book assessment, even though they knew that open-book assessment required them to demonstrate higher-order thinking skills. The interviewees noted that the availability of textbooks did not seem to be a quick fix.

5.2.1.9 Different approach (Affinity 9)

According to the focus group, this affinity can be described as the mental and emotional change that follows when preparing for open-book assessment in comparison with closed-book assessment. They did point out that a proper open-book assessment preparation and examination technique must be developed and that study techniques had to be adjusted accordingly.

The interviewees had a different view **of** this affinity, and did not agree among themselves. Some felt that a different approach was necessary, while others thought study methods should remain the same. However, they all felt that the initial study method must commence with understanding the theory, practising writing answers to 'mock' questions and then being able to apply the knowledge. Time must be set aside for preparing the textbooks. Although this might take extra time, they thought of it as beneficial and as a future advantage.

A final integrated comment on the affinity 'Different approach'

The focus group expressed the view that a different study and examination technique was required when preparing for and writing an open-book assessment. Both Theophilides and Koutselini-Ioannidou (2000) and Chalmers and Fuller (1996) confirm that different assessment techniques require different study behaviour and examination technique. Killen and Hattingh (2004) believe that a mind-shift is needed when changing to an open-book assessment, in which understanding, creativity, diversity and challenging the norm are emphasised. The interviewees had different opinions. Some felt that the students should use the traditional study technique, while the others thought a different approach was necessary. They did agree that understanding the theory, practising ‘mock’ questions and applying knowledge was vitally important. This position shows an inclination towards changing to open-book assessment by moving from surface learning to deep learning (Botha *et al.* 2005; Feldhusen 1961; Gray 1993; Heijne-Pennings *et al.* 2006). They all felt it was just as important that textbooks were prepared for use during the assessment. This confirms exactly what *eHow Education* (2009) proposed.

5.2.1.10 Time management (Affinity 10)

According to the focus group, this affinity indicates that the essence of writing a successful open-book examination is dependent on effective time planning, proper study and examination technique and the realisation that the tools available should be used only if absolutely necessary.

According to the interviewees, time is always a problem. They felt that whether students were preparing for or writing the assessment, the time constraint still posed an obstacle. However, they noted that the better prepared one was for the assessment, the less of a problem time seem to be.

A final integrated comment on the affinity ‘Time management’

The focus group and the interviewees agreed that time management was the essential factor in writing a successful open-book assessment. Broyles *et al.* (2005) state that being aware of the time is vitally important. Time plays a role during preparation, while writing the assessment and when using the textbooks (tools) available during the assessment. Time management during the assessment is crucial to success (Boniface 1985; Jacobs 1990). The interviewees believed that the better prepared the student, the less of a problem time would be.

5.2.2 How do these emerging perceptions of open-book assessment relate to one another?

In this subsection I shall consolidate how the affinities relate to one another as perceived by the two different constituencies. The SID in Diagram 5.1 shows how it is perceived by the focus group, and the SID in Diagram 5.2 for the interviewees. These SIDs are in essence theory-generating tools that assist my understanding of the phenomenon open-book assessment (Northcutt & McCoy 2004).

Diagram 5.1: Final SID for the focus group

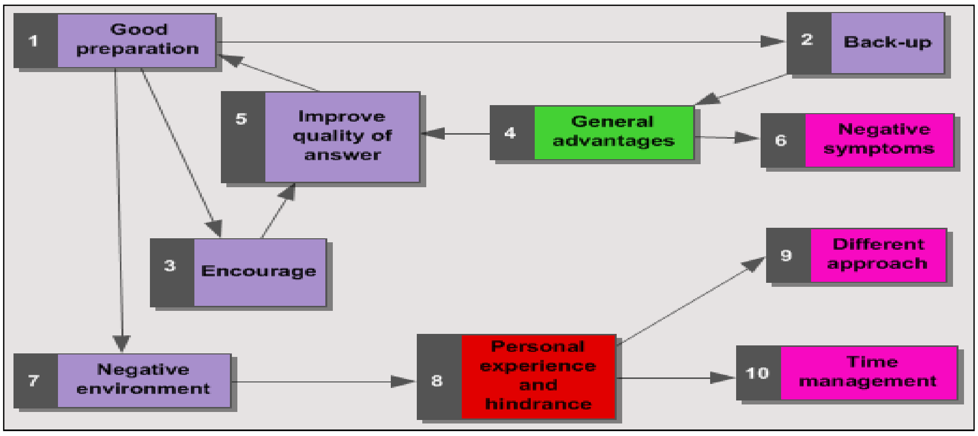


Diagram 5.2: Final composite SID for interviews

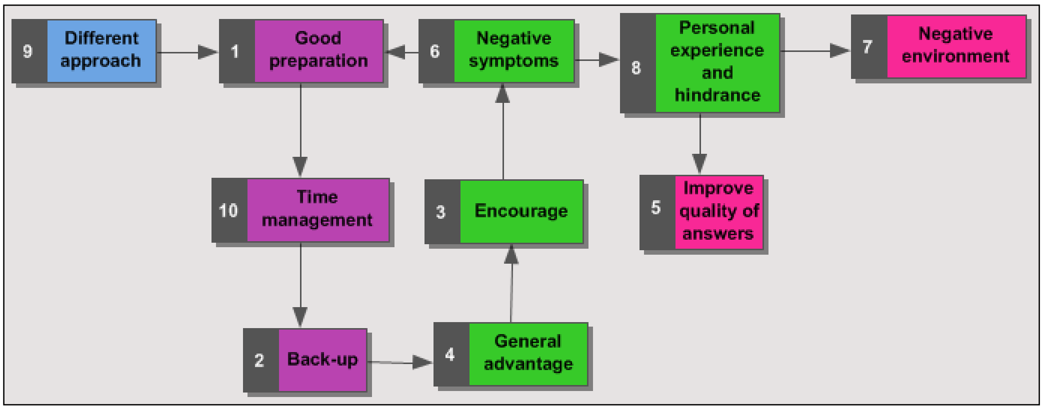


Figure 5.1 below provides a summarised comparison of the focus group and interviewees' representations (Diagram 5.1 and 5.2) in terms of the affinities' placement, relative impact and role in each of their representations.

Figure 5.1: Summarised comparison of the focus group and interviewees' representations

Constituency	**Focus group**	**Interviewees**
Affinity 1:	**Good preparation**	
Placement in SID	Secondary driver	Secondary driver
Direct Impact	Negative environment Encouragement Back-up	Time management
Direct influence	Improve quality of answers	Different approach Negative symptoms
Emerging perceptions on open-book assessment	Good preparation is a **driver** for **both** the focus group and the interviewees' systems. The **focus group** perceived **good preparation** as an **encouragement** for students because, when they **prepare well**, they feel **encouraged** to write the assessment. This leads to an **improvement in the quality of answers** and then the student prepares with more enthusiasm. This starts the process from the beginning. Students paging though books, etc. in the assessment venue results in a **negative environment**. Lastly, **good preparation** influences the availability of the resources (back-up) during an assessment. The better the preparation of the resources, the better use is made of them. The **interviewees** agreed that a **different approach** is necessary in order to be well **prepared** for the open-book assessment. Owing to the availability of the material during the open-book assessment, students may decide that thorough **preparation** is not necessary. This could lead to the **negative symptoms** of open-book assessment, for example, lazy, unprepared students. **Good preparation** ensures that the **time** available during the assessment is optimally used.	
Affinity 2:	**Back-up**	
Placement in SID	Secondary driver	Secondary driver
Direct Impact	General advantage	General advantage
Direct influence	Good preparation	Time management
Emerging perceptions on open-book assessment	Back-up is perceived by **both** the constituencies as a **driver**. For the **focus group**, use of the **back-up** depends on how well the student has prepared the material. The better prepared the student, the more efficient the use of the **back-up** during an assessment. Using the **back-up** will result in **general advantages,** for example, memorising will be unnecessary and ever-changing Tax Act problem can be avoided. The **interviewees** said that **time management** would be the driving force behind the use of the **back-up.** The accessibility of a **back-up** during the assessment will lead to **general advantages** for the student.	
Affinity 3:	**Encourage**	
Placement in SID	Secondary driver	Secondary outcome
Direct Impact	Improve quality of answer	Negative symptoms
Direct influence	Good preparation	General advantage
Emerging perceptions on open-book assessment	The focus group perceived **encouragement** as a **driver** while the interviewees tend to hold **encouragement** as an **outcome**. The **focus group** recognised the fact that **good preparation** generates a feeling of optimism **(encouragement)** in the student that will result in an **improvement in the quality of answers.** This feedback loop leads to positive processes that result in more motivated students. For the **interviewees**, **encouragement** is influenced by **general advantages**. One of these **advantages** is the fact that memorising every detail is reduced. Although an **advantage**, it may lead to a false sense of security **(encouragement)** and give rise to laziness **(negative symptoms).**	

Affinity 4:	**General advantage**	
Placement in SID	Secondary outcome	Secondary outcome
Direct Impact	Negative symptoms Improve quality of answers	Encourage
Direct influence	Back-up	Back-up
Emerging perceptions on open-book assessment	For both constituencies **general advantages** are perceived as an **outcome**. The focus group and interviewees agreed that **back-up** leads to several **general advantages**. The **back-up** stimulated an optimistic feeling in the interviewees that it is not necessary to depend only on rote memory **(general advantages)**, but the material **(back-up)** will be at hand to assist. This perception will **encourage** students before and during an assessment. The same argument was applied by the focus group but instead of perceiving it positively, they responded by saying that removing the rote memorising of knowledge **(general advantage)** may lead to **negative symptoms** in the form of a laid-back laziness and an attitude of: 'I don't need to study'. Although the focus group had a negative perception on this, they did believe that the material available **(back-up)** to them would result in an **improvement in the quality of answers** presented.	
Affinity 5:	**Improve quality of answers**	
Placement in SID	Secondary driver	Primary outcome
Direct Impact	Good preparation	
Direct influence	Encourage General advantages	Personal experience and hindrance
Emerging perceptions on open-book assessment	The focus group perceived this affinity as a **driver** with a direct influence from the **general advantages** of open-book assessment. Because a student has access to the theory, an **improved and better-formulated answer** can be written. As time constraints are an important factor in the process of delivering **an improved answer**, the necessity for **good preparation** is emphasised. Students tend to feel more **encouraged** by good preparation and this positive attitude leads to an **improvement in the quality of answers**. In contrast with this perception of the affinity, the interviewees concluded that the **improvement in the quality of answers** was a final **outcome** of the system with its direct influence coming from **personal experience and hindrance.** Students perceived open-book assessment as difficult and demanding and tended to waste time searching through the material in an effort to **improve the quality of their answers**.	
Affinity 6:	**Negative symptoms of open-book assessment**	
Placement in SID	Primary outcome	Secondary outcome
Direct Impact		Good preparation Personal experience and hindrance
Direct influence	General advantages	Encourage
Emerging perceptions on open-book assessment	Both constituencies agreed that **negative symptoms of open-book assessment** were an **outcome** of their system. The focus group concluded that the **general advantages** of open-book assessment led to the **negative symptoms** of this assessment type. The availability of the material during the assessment and the decrease in the necessity for memorising the facts could make the students lazy and allow them to think they could look for the answer during the assessment. These **negative symptoms** appear to be the result of assumptions and uninformed perceptions. The interviewees perceived that the affinity described as **encouragement** led to **negative symptoms** of open-book assessment.	

	When students experienced less anxiety and stress **(encouragement),** they tended to decrease their preparation time and became lazy and laid-back **(negative symptoms).** This perception had a detrimental effect on **good preparation,** as students seemed to misunderstand the purpose of open-book assessment. They experienced the assessment as difficult and demanding and concluded that it added no value **(personal experience and hindrance).**	
Affinity 7:	**Negative environment**	
Placement in SID	Secondary driver	Primary outcome
Direct Impact	Personal experience and hindrance	
Direct influence	Good preparation	Personal experience and hindrance
Emerging perceptions on open-book assessment	The constituencies **disagree** on the placement of the affinity within the system. The focus group perceived the **negative environment** as a **<u>driver</u>** while the interviewees concluded that the affinity represented an **<u>outcome</u>**. For the **focus group**, **negative environment** was influenced by **good preparation**. The fact that it was advisable for the students to prepare the material to be taken into the assessment by flagging, highlighting and marking **(good preparation)** the sections for quick referencing during the assessment could lead to a **negative environment** where unnecessary use of the material could be a distraction. Paging through the material wastes time and creates the feeling that the assessment type adds no value **(personal experience and hindrance).** For the **interviewees** the affinity **personal experience and hindrance** had a direct influence on the **negative environment**. As a result of students not trusting themselves, they tended to check all their answers. The consequence was excessive checking which caused distractions in the venue **(negative environment).**	
Affinity 8:	**Personal experience and hindrance**	
Placement in SID	Pivot	Secondary outcome
Direct Impact	Time management Different approach	Improve quality of answers Negative environment
Direct influence	Negative environment	Negative symptoms
Emerging perceptions on open-book assessment	The focus group perceived this affinity as being influenced **<u>equally</u>** by other affinities and impacting in turn on other affinities. The interviewees observed that **personal experience and hindrances** is an **<u>outcome</u>** of the system. According to the **focus group** **negative environment** influences the student's **personal experience**. This will impact on the **approach** followed before and during the assessment. A **different approach** is necessary because of access to supporting material during the assessment. **Personal experiences and hindrances** focus the student's attention on the necessity for **time management** and influence it directly. A student needs to practise **time management** before and during an assessment. The **interviewees** recognised the **negative symptoms** of open-book assessment as the main influence on students' **personal experiences**. The knowledge that the supporting material is available may make the students lazy. This will impact on their **personal experience**. A student's **personal experience** influences the **environment negatively** during the assessment as the lazy student will page more often through the supporting material in an attempt to locate the correct answer. Through this **personal experience**, the **quality of answers** may decrease, as students attempt to find a generic answer instead of developing their own.	

Affinity 9:	**Different approach**	
Placement in SID	Primary outcome	Primary driver
Direct Impact		Good preparation
Direct influence	Personal experience and hindrance	
Emerging perceptions on open-book assessment	The constituencies perceived the affinity **different approach** in **contradiction** to each other. For the interviewees, the affinity is the **<u>driver</u>** of the whole system. On the other hand, the focus group concluded that the **different approach** is the final **<u>outcome</u>** (result) of the system. The **interviewees** argued that a **different approach** is necessary when confronted with open-book assessment and the first area for change will be the student's attitude towards **preparation**. **Good preparation** will therefore be vital for success during an open-book assessment. The **focus group** thought that an open-book assessment was more demanding and difficult **(personal experience and hindrance)** and led to a **different approach** when preparing for the assessment type.	
Affinity 10:	**Time management**	
Placement in SID	Primary outcome	Secondary driver
Direct Impact		Back-up
Direct influence	Personal experience and hindrance	Good preparation
Emerging perceptions on open-book assessment	The focus group saw **time management** as an **<u>outcome</u>** of the system, while the interviewees identified the affinity as a **<u>driver</u>**. According to the **focus group**, students tend to waste time when checking answers because they do not trust in their own ability **(personal experience and hindrance).** The student's self esteem impacts directly on **time management**. The **interviewees** perceived that **good preparation** directly influenced **time management**. If the student is thoroughly **prepared**, then **time management** will be optimal during the assessment. When the student is completely **prepared** and the **time is managed** correctly, then the **back-up** can be employed to its full potential.	

5.3 The contribution of my research

In this section I will set out the possible contributions of my research, and the generation of my own ideas on the implications and future research possibilities in the open-book assessment phenomenon (specifically relating to Taxation students training to become chartered accountants).

5.3.1 Recommendations for assessment and learning

Eilertsen and Valdermo (2000) found that students need guidance when they are expected to change certain study habits. The introduction of open-book assessment poses such a change. I am convinced that help could be given via workshops, discussion groups, multimedia programs, mentorship programs, debriefing, consultation, focused social networking, simulated and 'real-life' assessments, awareness programs and/or could even be built into their curriculum. These proposed methods of assistance could be applied to any of the recommendations put forward later in this section. I generated the specific categories of assistance from my findings and integration of literature and these are the possible pointers for my recommendations. I will now outline these recommendation categories by relating them specifically to students, lecturers and professional bodies.

Specifically relating to students

- Students have definite **attitudes to and expectations of** open-book assessment that may influence their proficiency when writing the examination. These attitudes and expectations have to be deconstructed and challenged so that any gaps and misunderstandings can be clarified;
- Students need to be guided in their **preparation of the resource** material that is allowed into the venue. There are various guidelines and structures available on this topic;
- Students should be made aware of **alternative study methodology,** a process that may contribute to their success in open-book assessment. I am not referring to the different learning styles students choose to follow, but to methods and procedures that would nurture deeper, higher-order learning. This means turning from memorising to understanding, from reproduction to creativity, from conformity to diversity, from compliance to initiative, and from blind acceptance to challenging the norm (Killen & Hattingh 2004). In essence, students have to be mobilised and empowered to reflect on their own learning;
- Students have to be guided on how they **answer and physically write** an open-book assessment;
- Students have to be made aware of **effective ways in which to access** the prepared resource materials during the open-book assessment; and
- Students should be facilitated in effective ways to **manage time** before and during an open-book assessment.

Specifically relating to lecturers

- According to Fischer, McDonald and Ritchie (2005), the **expectation gap** between students and lecturers could create unique problems and they propose that lecturers should be aware of their own attitudes and expectations about open-book assessment. These attitudes and expectations should be deconstructed and challenged, so that any gaps and misunderstandings can be clarified (Shepard 2000).

- Lecturers should be trained in the **appropriateness, relevance and purpose** of open-book assessment (Reynolds & Trehan 2000), with a focus on their specific didactic subject area (in my case taxation). This is not only for the preparation of students for a professional examination, but for the sake of effective learning and the best educational practices; and
- Lecturers should have **knowledge and understanding** of how to design an open-book assessment, including the preparation and learning process before an open-book assessment, and the writing and access process during the open-book assessment. They should be aware of the importance of the feedback process after an open-book assessment. It is important to note that when open-book assessments are employed without changing the assessment designs, the result is achievement levels that are significantly higher on open-book examination for knowledge items, comprehension items and total test scores (Michaels & Kieren, 1973).

Specifically relating to professional bodies

- I would argue that **all the above-mentioned** recommendations for students and lecturers should be taken into consideration by professional bodies; and
- I believe that professional boards should frequently **reflect, rethink and research** their assessment practices, especially if they are interested in simulating real-life situations during assessment.

5.3.2 Recommendations for future research

As already stated, the findings of my research represent the meaning constructions of a small group of specifically-selected students. Future research could focus on enlarging the group to include more students by means of a questionnaire with questions specifically converging on the affinities as discussed by the focus group and interviewees in my research. As the SIDs contain a theory-generating component, these can be tested by means of a modernist quantitative methodology. Such research could contribute by bringing a new dimension to an understanding of the students' perceptions before attempting open-book assessments, but also after exposure to such an assessment. This would create ample opportunity for applying a mixed-methods methodology.

An idea worth considering could be that of following one group of students from the point in time when they had had no experience of open-book assessment to a time when they were exposed to it. A focus group could be conducted, followed by individual interviews, in order to understand their perceptions of open-book assessment. The same students could be tracked until they were finally exposed to open-book assessment. The focus group and individual interviews would be repeated. This would be interesting data on how and whether their perceptions and understanding of open-book assessment had changed.

I would recommend that not only students' perceptions must be explored but also those of lecturers. This could also be done via a focus group and interviews, using the IQA method. We ought to close the expectation gap between perceptions by learners and students on open-book assessment (Fischer, McDonald & Ritchie 2005).

A further possible research opportunity is the implementation of my research at different universities. The comparison of perceptions and experiences of students from different universities may be valuable as a discussion tool among the universities. For SAICA, this research could create the opportunity to compare the perceptions and experiences of students from different universities, relating to the lecturing techniques and assessment preparation of students with reference to open-book assessment. This would be relevant to SAICA, seeing that QE Part 1 is presented as an open-book assessment, and that SAICA is interested in an assessment that is as close as possible to a real-life situation. This in itself would prepare students better for the workplace (SAICA n.d.; SAICA 2009).

In reflecting on my literature review, I found that many of the constructs and concepts mentioned in the research on open-book assessment could be connected to some extent with my research. However, I would recommend exploration and further research on certain findings that did not emerge from my research, but did appear elsewhere. First, many studies show that open-book assessment nurtures more creative answers and problem-solving in students (Jackson *et al.* 2006; Soh Loi & Yaun 1998; Theophilides & Koutselini-Ioannidou 2000). Secondly, open-book assessment appears to simulate real-life assessment options (Boniface 1985; Broyles, Cyr & Korsen 2005; Feller 1994; Francis 1982; Heijne-Pennings *et al.* 2006). Finally, there is evidence that open-book assessment enhances self-regulated learning (Brightwell *et al*. 2004; Theophilides & Dionysiou 1996) and self-monitoring on where and how to apply specific skills (Shepard 2000).

I have mentioned research pertaining largely to students' perceptions, but there is a vast field of didactic, methodological, subject-specific and test construction dimensions of open-book assessment, as well as the preparation involved, that could be included in future research.

5.4 Personal reflections on my research

In general, the findings in my research represent the perceptions of a focus group made up of a small number (10) of students who had had no experience of open-book assessment. Five interviewees commented on their perceptions based on their own experiences of open-book assessment. This said, I believe the findings of my research were not intended to represent the total population of taxation students, or to extrapolate the findings to the whole student accounting population. My intention was to gain an in-depth understanding from a group of students and their interaction with open-book assessment. It could be considered a possible limitation that I did not have at least 15 students in the focus group and 10 students for the interviews, but, looking at it from my constructivist position, I was fortunate that the students who consented to be part of the research were students who had something specific to say about the phenomenon.

The students who were invited to the interviews were from the M Com (Taxation) group, where they were also exposed to different aspect of open-book assessment besides that of the QE Part 1. I believe that this could have a dual effect. In the first place, it could have broadened their experience of open-book assessment, which in turn could influence their perceptions. In the second place, it might have affected negatively their perceptions of open-book assessment as presented in QE Part 1. Personally I believe that the more experiences one has of a phenomenon, the richer one's understanding. I mention this as a limitation, but from my constructivist position it might even be seen as advantageous.

I was an observer during the focus group. On the one hand, I would rather be the facilitator if I ever did such a focus group again - believing that I would like to position myself as close as possible to the phenomenon in question. On the other hand, as observer I experienced a different, refreshing standpoint– that of being part, being quiet, observing and having the facilitator as a sounding board and a double-check.

There was other information and various themes that emerged from the interviews that did not directly apply to the research question. I decided not to include these in my research. In making this decision, I did limit myself and the research to an extent. Nevertheless, I could revisit and analyse that material, perhaps to answer another research question, and with another purpose.

My research was carried out at only one university. Although it was not intended for extrapolation to the wider population of students training as chartered accountants, I do see this as a limitation to the depth and wider understanding of the phenomenon. However I chose to conduct the research at a single institution, because that is where I work and I am interested in the viewpoints of the students I lecture – so, yes, 'starting at home' was a strong driver for me as novice researcher.

In considering the limitations of the research methodology itself, the following deliberations are offered:

- The IQA methodology is a relatively new development in research and is therefore as yet unknown and untested over a prolonged period of time (Northcutt & McCoy 2004).
- The focus group used in my research was not automatically selected to be interviewed as an option suggested by the IQA methodology. One could reason that the interviewees should have been part of a focus group as well. The reason for this modification can be found in the goal of my research itself.

The purpose of my research was to extract perceptions by inexperienced students on open-book assessment and to evaluate these perceptions against the experience of students who had previously participated in open-book assessments. The interviewees were therefore selected from among students with experience of open-book assessment. I also made the decision to focus my search, as novice researcher. I wanted to experience a wide range of methodologies to different populations, but to remain within the requirements of the University of Pretoria for a Master's dissertation.

Although my research has a number of limitations, the contributions of it as discussed earlier in this chapter are of value to me and my research questions, and surely offer extended research opportunities.

5.5 Final remarks

I decided not to repeat myself simply to make a final comment. This research has given me the opportunity of exposure to qualitative methodology and has forced me to position myself paradigmatically. I believe that, in essence, the contribution of my research lies in becoming more and more aware of the importance of open-book assessment as being essentially part of the process of a student's learning. I am more aware of the diversity of students' perceptions and how these impact on their learning. And I can see how students demonstrate their need for assistance, not only in the subject content but also in the different processes before, during and after an open-book assessment.

Doing and being part of this research was a wonderful adventure!

> Going into the unknown is invariably frightening, but we learn what is significantly new only through adventures.
>
> *Scott Peck (Peck 1986:107)*

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APPENDICES

Appendix 1	Invitation to students for taking part in the focus group
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Appendix 1 : Invitation to students for taking part in focus group

University of Pretoria

5 February 2007

Dear BCom (Hons) student

You have been randomly selected to be invited to join a focus group. The purpose of this focus group is to participate in research of open-book assessment with regards to the Chartered Accountants' qualifying examination in South Africa. Your participation in this focus group is voluntary and confidential. You will not be asked to reveal any information that will allow your identity to be determined. By participating in this focus group you will assist the researcher in understanding general perceptions on open book assessment specifically relating to the Chartered Accountant qualifying examination with emphasis on Taxation.

This session will take place on **13 February 2007 at 12:15 in EMB 4-49.** A light lunch will be served and the session will commence immediately. The duration of the focus group will be approximately 1.5 – 2 hours.

I shall appreciate your participation in this regard as the focus group will provide valuable information for this research.

Please RSVP before 9 February 2007 to:
Telephone: 012 -420 4638 or
Cell phone: 082 879 7121 or
E-mail: hanneke.dupreez@up.ac.za

Thank you

____
Hanneke du Preez
Senior Lecturer
Department of Taxation

Appendix 2 : Consent form for the participants in the focus group

Consent for participation in a research study

Department of Taxation
University of Pretoria

On open book assessment in the Qualifying Examination of South African Chartered Accountants

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Research conducted by:
Hanneke du Preez
Telephone number: (012) 420 4638
E-mail: hanneke.dupreez@up.ac.za

Dear Participant

You are invited to participate in a research study conducted by Hanneke du Preez, lecturer from the Department of Taxation at the University of Pretoria.

The purpose of the study is to explore perceptions on open book assessment in the Chartered Accountant qualifying examination.

Please note the following:

- Your participation in this research project is voluntary and confidential. You will not be asked to reveal any information that will allow your identity to be determined. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- The results of the study will be used for academic purposes and may be published locally or internationally. The results of the study might also be considered for future research purposes. We will provide you with a summary of the findings on request.
- Please contact the study leader, Prof Madeleine Stiglingh, on tel. (012) 420 3346 or e-mail: ms@up.ac.za if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

Participant's signature .... : Date:..

Researcher's signature .... : Date: ....

Yours Sincerely
Hanneke du Preez (Department of Taxation)

Appendix 3 Document distributed to participants in the focus group

Department of Taxation

Main Campus Pretoria 0002
Tel (012) 420-4638
Faks 0866 358663

OPEN BOOK ASSESSMENT IN THE QUALIFYING EXAMINATION OF SOUTH AFRICAN CHARTERED ACCOUNTANTS

February 2007

Dear Participant

You are invited to participate in a research project aimed at exploring and understanding students' personal perceptions on open book assessment in the chartered accountant qualifying examination.

Your participation in this research project is voluntary and confidential. You will not be asked to reveal any information that will allow your identity to be determined.

Accompanying this letter is a document in which you are requested to indicate your perceptions on open book assessment. This will be guided by various aspects noted by students, in an open-ended questionnaire, relevant to their perception on open book assessment. By participating in this project you will assist the researcher in understanding the perception students have with regards to open book assessment and the preparation for such an examination.

If you are willing to participate in this study, please sign this letter as a declaration of your consent, i.e. that you participate in this project willingly and that you understand that you may withdraw from the research project at any time.

Participant's signature ....: Date:..

Researcher's signature ....: Date: ....

Yours Sincerely

Hanneke du Preez (Department of Taxation)

PARTICIPANTS' DESCRIPTIONS OF AFFINITIES	
1	**GOOD PREPARATION** This affinity emphasizes the importance of knowledge before attempting the open book examination. Highlighting the principles rather than the theory is one of the most important aspects of preparing. To familiarize oneself with the layout of the textbook is seen as a necessary tool in an open book assessment. Concentrating on forming a habit with regards to referencing will further assist one in being well prepared for the examination.
2	**BACK-UP** This affinity describes a positive feeling that one has a last resort in an examination. The textbooks can be used as a reference to assist in eliminating different option and finding the correct wording. The access to additional detail in the textbook can lead to extra marks being awarded.
3	**ENCOURAGE (FUZZY FEELING)** This affinity indicates that open book assessment can have an optimistic effect on students writing this examination. Students may feel more motivated when confronted with an open book situation.
4	**GENERAL ADVANTAGES** This affinity can describe the textbook used in open book assessment as a visual tool in a process to access memorized detail. The problem of frequently changing laws in Taxation can be overcome by the availability of the changed information in textbooks. Textbooks can remove the memorizing of the technical information overload in Taxation with regards to definitions, rules, sections and formulas in the Income Tax Act as well as lists of exemptions in the different Acts.
5	**IMPROVE QUALITY OF ANSWERS** This affinity can describe the availability of textbooks as providing more detail than what can be memorized. The answers given by students can be more reliable and better expressed due to the detail provided in the tools available during examination.
6	**NEGATIVE SYMPTOMS OF OPEN BOOK ASSESSMENT** This affinity emphasizes the time consuming process to prepare the textbooks for the examination as well as the intellectual preparation of the student him- or herself. The fact that open book assessment allows information to be taken into the examination can promote laziness in students.
7	**ENVIRONMENT** This affinity can be described as the situation inside the examination hall. During an open book assessment, students tend to page around in the allowed textbooks and in doing so promote chaos and a feeling of disruption and no peace in the room.
8	**PERSONAL EXPERIENCE AND HINDRANCE** This affinity is strongly associated with a feeling that open book assessment adds no value to the learning process and it can result in a lower self-esteem. This assessment technique can be perceived as more difficult and demanding. The availability of textbooks can lead to excessive checking of answers and an unnecessary waste of time. The Act is perceived as difficult to read and the wording difficult to understand.
9	**DIFFERENT APPROACH** This affinity can be described as the mental and emotional change in preparation one must adhere to when preparing for open book assessment in comparison to close book assessment. A proper open book preparation and examination technique must be developed. Study techniques must be adjusted according to the type of assessment used.
10	**TIME MANAGEMENT** This affinity indicates that the essence of writing a successful open book examination is situated in effective time planning, proper study- and examination technique and in the realisation that the tools available must only be used if absolutely necessary.

DETAILED AFFINITY RELATIONSHIP TABLE (DART)

Please complete the attached table below by indicating what you think the direction of the relationship between two affinities is. Use the affinity descriptions that are supplied with this table to help you with this task.

For example:

If you think that 1 influences 2, then indicate 1 → 2
If you think that 2 influences 1, then indicate 1← 2
If you think that there is no relationship between 1 and 2, then indicate 1 < > 2.

PLEASE NOTE: An arrow may only go in one direction. Although you may feel that the direction of the relationship can go both ways, you must indicate the direction you think illustrates the strongest or most important influence.

Example:

An example of an IF/THEN statement in the case where 1 → 2 may look as follows:
If I have a positive attitude going into a counseling session then it feels to me as if the session flows more comfortably.

PLEASE NOTE: Use a specific example from your own experience to illustrate your point rather than a vague statement.

Thank you for the time and effort that you are willing to put into this research project.

U			

PERSONAL INFORMATION

Please tick the appropriate box:

1 What is your gender? | Male | Female |

Below is a list of the affinities you are requested to consider. Please also refer to the list of affinity descriptions for completing the table below. Remember that an arrow can go either left or right, but not in both directions.

Affinities	Possible relationships
1. Good preparation 2. Back-up 3. Encourage 4. General advantages 5. Improve quality of answers 6. Negative symptoms of open book assessment 7. Environment 8. Personal experience and hindrance 9. Different approach 10. Time management	If Affinity 1 influences Affinity 2 then: 1 → 2 If Affinity 2 influences Affinity 1 then: 1 ← 2 If there is no relationship between affinities: 1 < > 2

Affinity pair			Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience
1		**2**	
1		**3**	
1		**4**	
1		**5**	
1		**6**	
1		**7**	
1		**8**	
1		**9**	
1		**10**	
2		**3**	
2		**4**	
2		**5**	
2		**6**	
2		**7**	
2		**8**	
2		**9**	
2		**10**	
3		**4**	
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7		**10**	
8		**9**	
8		**10**	
9		**10**	

Thank you for your participation!

If you are interested in participating in a follow – up interview based on the results of this phase of the study, please supply your contact details below. Follow-up interviews will be scheduled for During February to July 2006. Please take note that confidentiality will be guaranteed and under no circumstances will your identity be made known.

Name .... Student number ....

Telephone .... Email address ....

Appendix 4 : Invitation to students for taking part in the semi-structured interviews

From: Elme Janse
To: Hanneke du Preez
Date: 2007/03/05 01:31 PM
Subject: QE Exam

Dear student

You are invited to participate in a research project aimed at exploring and understanding students' personal perceptions on open book assessment in the chartered accountant qualifying examination in South Africa.

If you are interested to take part please send your contact details to hanneke.dupreez@up.ac.za if you are writing the QE Part 1 during March 2007.

Kind Regards
Elmé

Appendix 5 : Interview plan

Structure of semi-structured interview

1) Name and surname (not on dictaphone)
2) Date of interview
3) Qualifications
4) Current studies
5) When and where did you encounter open book assessment?
6) Describe your experience with regards to open book assessment.
7) According to you, what do you think is the advantages of writing an open book assessment in comparison to a closed book assessment?
8) What do you think is the biggest problems with regards to open book assessment?
9) If you have a choice, would you prefer open book assessment or closed book assessment? Why?
10) Discuss each of the 10 definitions.
11) In your opinion, what would be the most important / least important affinities?

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Appendix 6 : Consent form for the participants taking part in the semi-structured interviews

Consent for participation in a research study
Department of Taxation

University of Pretoria

Open book assessment in qualifying examination of South African chartered accountants

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Research conducted by:

Hanneke du Preez (student number: 8920656)
Telephone number: (012) 420 4638
E-mail: hanneke.dupreez@up.ac.za

Dear Respondant

You are invited to participate in a research study conducted by Hanneke du Preez, lecturer from the Department of Taxation at the University of Pretoria.

The purpose of the study is to explore perceptions on open book assessment in the Chartered Accountant qualifying examination with emphasis on Taxation.

Please note the following:

- This study involves an interview. Your name will not be used without consent and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions of the interview as thorough and honestly as possible. This should not take more than **60** minutes of your time
- The results of the study will be used for academic purposes and may be published locally or internationally. The results of the study might also be considered for future research purposes. We will provide you with a summary of the findings on request.
- Please contact the study leader, prof Madeleine Stiglingh, on tel. (012) 420 3346 (e-mail: ms@up.ac.za if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

Respondant's signature...: Date:

Researcher's signature...: Date: ....

Yours Sincerely

Hanneke du Preez (Department of Taxation)

Appendix 7: Examples created to explain how a Pareto protocol can be compiled and used in the creation of the SID

Example 1: *Example created to explain how a Pareto protocol can be compiled*

In compiling the Pareto protocol, the *first step* is to count the exact number of votes (frequency) each relationship or affinity pair has received in a summarised ART. This number is recorded in a 'Frequency in affinity pair order table'. The total number of votes (frequencies) is tallied and recorded at the bottom of the table. *Step 2* is to arrange the 'Affinities in descending order of frequency with the Pareto protocol and Power analysis table'. The researcher has to arrange the frequencies in descending order. In other words, the affinity pair with the most votes is listed first in the table and the remaining pairs are sorted accordingly. Now the researcher has to add four columns to this table. The headings for the table and an example of how the table functions are indicated below (Table 1)

Table 1: Affinities in descending order of frequency with the Pareto protocol and Power analysis table

Affinity Pair Relationship	Frequency sorted (descending)	Cumulative Frequency	Cumulative percent (relation)	Cumulative percent (frequency)	Power
2→4	12	12	20	40	20
1→5	**10**	**22**	**40**	**73**	**33**
3←6	5	27	60	83	23
5→3	3	30	80	100	20
1←3	0	30	100	100	0
Total frequency	**30**				

The cumulative frequency column records the running total or cumulative frequency. This is calculated by adding the frequency to the running total of the previous affinity pair. The cumulative percent (relation) represents each relationship as a percentage of the total possible number of affinities. The example above demonstrates that this means 20% (one out of a total of five). The cumulative percent (frequency) column is calculated using the cumulative frequency column. The corresponding number in the cumulative frequency column is used for each affinity pair. This is expressed as a percentage of the total frequencies (in this case 30) and the percentage is entered in the cumulative percent (frequency) column. The power column represents an index of the degree of optimisation of the system. This can be calculated by deducting the results in the cumulative percent (relation) column from the results in the cumulative percent (frequency) column.

The cumulative percent (relation) column and the cumulative percent (frequency) column are the keys to deciding which of the affinity pairs should be included in the Interrelationship Diagram (IRD). The question is where is the cut-off point when it comes to the inclusion and exclusion of the affinity pairs from the IRD? The two criteria to be considered are the maximum variance in the system (cumulative percent – frequency column) and then minimizing the number of affinity pairs (cumulative percent – relation column). The power column represents an index of the degree of optimisation of the system. In the above example, power reaches the maximum at 2. This indicates that two relationships account for 73% of the variation in the system. **The first two affinity pairs will thus be included in the group IRD** (Table 1)**.**

Example 2: *How a Pareto protocol can be used in the creation of the SID*

An IRD is a matrix containing the affinity pairs or relationships in a system. In the matrix, arrows indicate the type of relationship between the affinities. When an arrow points from affinity A to affinity B, it indicates that A influences B or B is influenced by A (Table 2). For every affinity pair, two arrows are used, one pointing upwards and the second pointing leftwards (Table 3).

Table 2: Affinity Pair Relationship

Affinity Pair Relationship
2→4
2→5
3←6
5→3
1←3
3<>4
1←6
1→2
4→5

Table 3: Tabular IRD

Tabular IRD										
	1	**2**	**3**	**4**	**5**	**6**		**Out**	**In**	**∆**
1		↑	←			←		1	2	-1
2	←			↑	↑			2	1	1
3	↑				←	←		1	2	-1
4		←			↑			1	1	0
5		←	↑	←				1	2	-1
6	↑		↑					2	0	2

In the table, '**out**' represents all the upwards arrows and '**in**' represents all the leftwards - arrows. In order to determine the deltas (∆), the '**ins**' have to be subtracted from the '**outs**'. Then the table is arranged in descending order according to the deltas (Table 4).

Table 4: Tabular IRD in descending order according to the deltas

Tabular IRD										
	1	**2**	**3**	**4**	**5**	**6**		**Out**	**In**	**∆**
6	↑		↑					2	0	2
2	←			↑	↑			2	1	1
4		←			↑			1	1	0
1		↑	←			←		1	2	-1
3	↑				←	←		1	2	-1
5		←	↑	←				1	2	-1

At this point, affinities are divided into drivers or outcomes in order to draw the SID. The affinities are categorised according to the values in the delta and the '**out**' and '**in**' columns of the IRD. All the positive delta numbers (Affinities 6 and 2 in Table 4) will be drivers, and all the negative delta numbers (Affinities 1, 3 and 5 in Table 4) are outcomes. An affinity where the '**out**' and '**in**' columns are equal, yielding a zero delta, is a circular or pivot (Affinity 4 in Table 4). Further refining of the affinities can be found in the '**out**' or '**in**' column with a zero value. An affinity containing a zero value in the '**out**'- column is classified as a primary driver. An affinity for which the '**in**'-column contains a zero value is classified as a primary outcome (Figure 1).

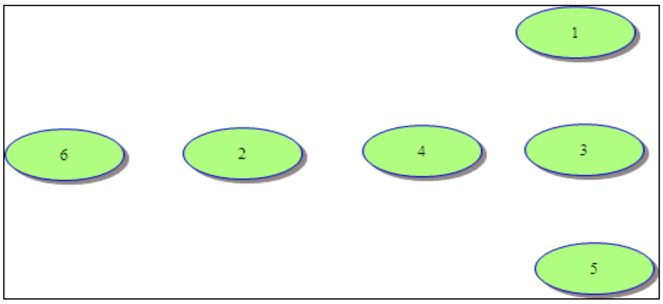
Figure 1: Tentative SID Assignments

Tentative SID Assignments	
6	Primary driver
2	Secondary driver
4	Circulator / pivot
1	Secondary outcome

3	Secondary outcome
5	Secondary outcome

At this stage of the analysis, the data is ready to be used in a SID. When drawing the SID, the drivers should be placed on the left-hand side and the outcomes on the right, with the primary drivers and primary outcomes furthest from one another. The secondary drivers and outcomes must be placed between the primary and secondary drivers with the circulator or pivot in the middle. Affinities with the same status must be arranged vertically (Diagram 1).

Diagram 1: SID with the affinities only



Using the above SID, all the relationships must now be included. The relationships are summarised on the IRD. For every relationship between two affinities, an arrow should be drawn indicating the relationship and the direction of influence.

Diagram 2: Cluttered SID

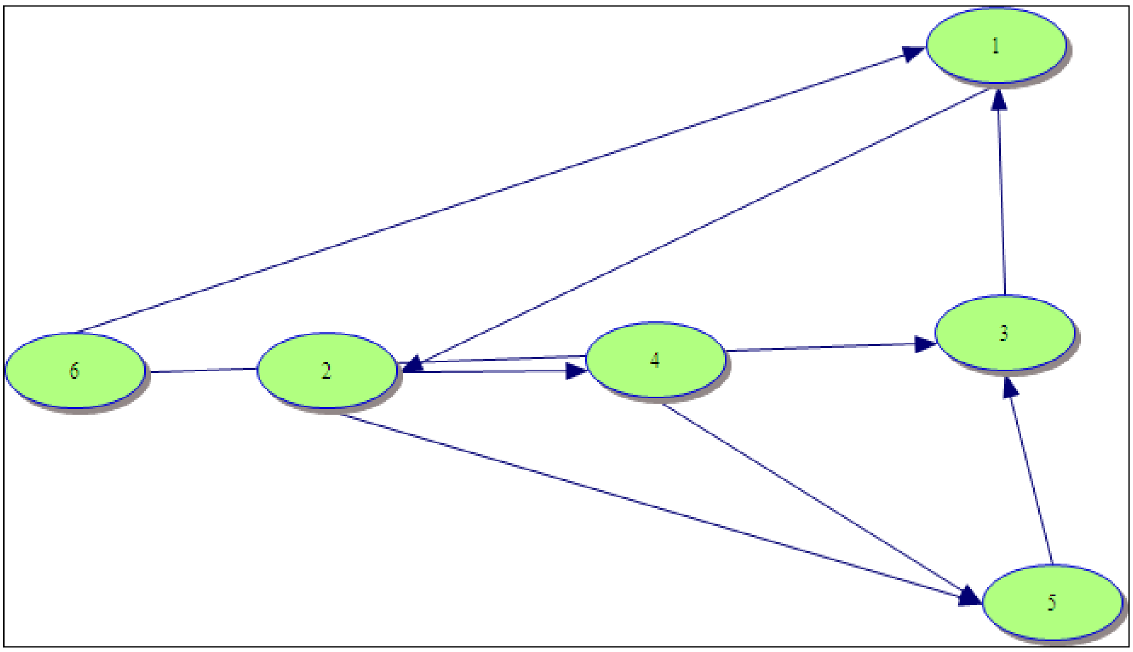
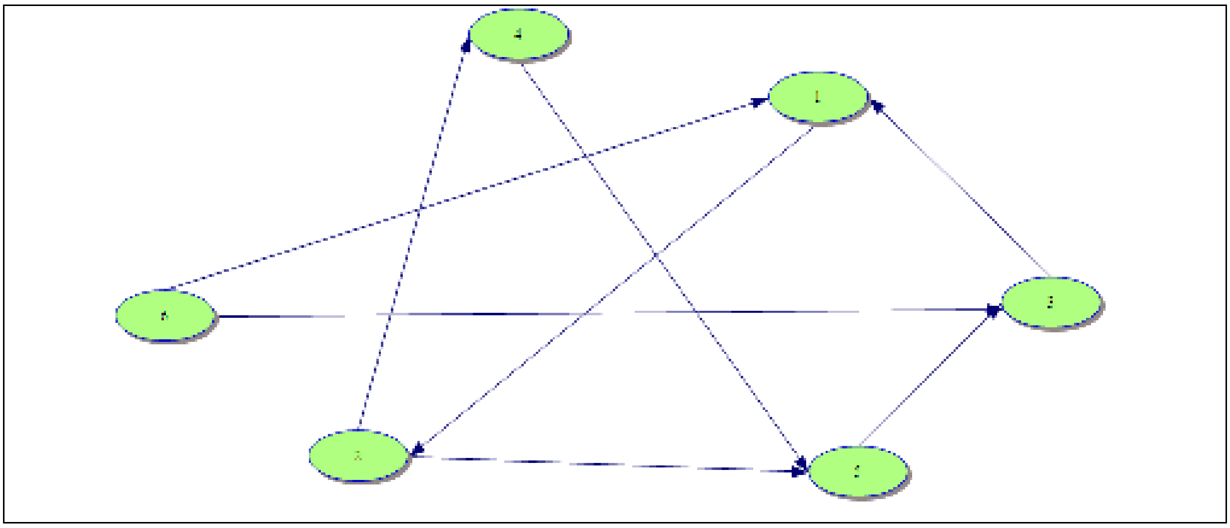
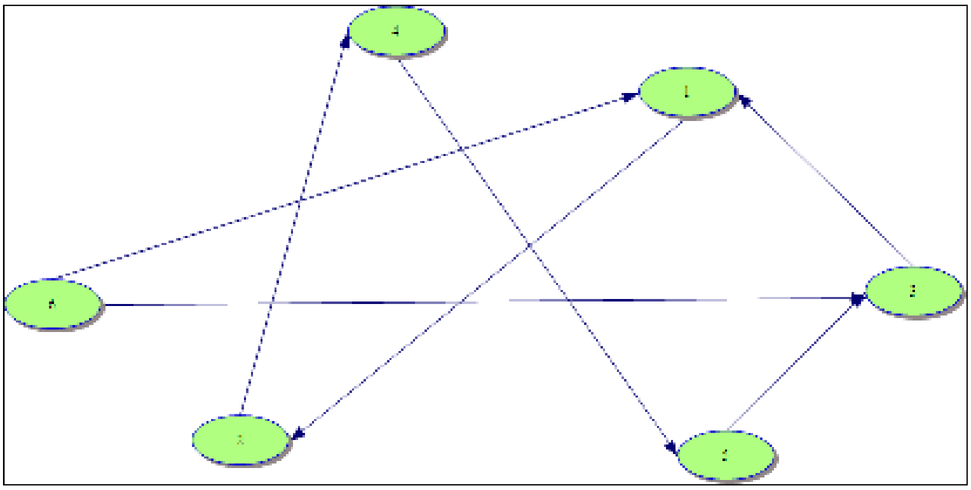


Diagram 3: Cluttered SID – Better organised



Diagrams 2 and 3 are both completed cluttered SID. The purpose at this stage is to deliver a diagram that represents all the relationships in the system. When there are more affinities that result in an increase in relationships, this SID would be of no real value, as it is too complex to allow for conclusions to be drawn from the diagram. It is therefore essential for the SID to be uncluttered. This is done by eliminating all the relationships that could possibly be substituted with another pathway on the diagram. In Diagram 3, there is a relationship between Affinities 2 and 5. There is also a relationship between Affinities 2 and 4 and then 4 and 5. The arrow between 2 and 5 is therefore redundant, as the relationship between 2 and 5 already exists through 4.

Diagram 4: Uncluttered SID



This process of uncluttering will continue until all redundant relationships have been deleted. **Appendix 8 :** List of the focus group participants' sorted affinities and descriptions

PARTICIPANTS' DESCRIPTIONS OF AFFINITIES

1	**GOOD PREPARATION** This affinity emphasizes the importance of knowledge before attempting the open book examination. Highlighting the principles rather than the theory is one of the most important aspects of preparing. To familiarize oneself with the layout of the textbook is seen as a necessary tool in an open book assessment. Concentrating on forming a habit with regards to referencing will further assist one in being well prepared for the examination.
2	**BACK-UP** This affinity describes a positive feeling that one has a last resort in an examination. The textbooks can be used as a reference to assist in eliminating different option and finding the correct wording. The access to additional detail in the textbook can lead to extra marks being awarded.
3	**ENCOURAGE (FUZZY FEELING)** This affinity indicates that open book assessment can have an optimistic effect on students writing this examination. Students may feel more motivated when confronted with an open book situation.
4	**GENERAL ADVANTAGES** This affinity can describe the textbook used in open book assessment as a visual tool in a process to access memorized detail. The problem of frequently changing laws in Taxation can be overcome by the availability of the changed information in textbooks. Textbooks can remove the memorizing of the technical information overload in Taxation with regards to definitions, rules, sections and formulas in the Income Tax Act as well as lists of exemptions in the different Acts.
5	**IMPROVE QUALITY OF ANSWERS** This affinity can describe the availability of textbooks as providing more detail than what can be memorized. The answers given by students can be more reliable and better expressed due to the detail provided in the tools available during examination.
6	**NEGATIVE SYMPTOMS OF OPEN BOOK ASSESSMENT** This affinity emphasizes the time consuming process to prepare the textbooks for the examination as well as the intellectual preparation of the student him- or herself. The fact that open book assessment allows information to be taken into the examination can promote laziness in students.
7	**ENVIRONMENT** This affinity can be described as the situation inside the examination hall. During an open book assessment, students tend to page around in the allowed textbooks and in doing so promote chaos and a feeling of disruption and no peace in the room.
8	**PERSONAL EXPERIENCE AND HINDRANCE** This affinity is strongly associated with a feeling that open book assessment adds no value to the learning process and it can result in a lower self-esteem. This assessment technique can be perceived as more difficult and demanding. The availability of textbooks can lead to excessive checking of answers and an unnecessary waist of time. The Act is perceived as difficult to read and the wording difficult to understand.
9	**DIFFERENT APPROACH** This affinity can be described as the mental and emotional change in preparation one must adhere to when preparing for open book assessment in comparison to close book assessment. A proper open book preparation and examination technique must be developed. Study techniques must be adjusted according to the type of assessment used.
10	**TIME MANAGEMENT** This affinity indicates that the essence of writing a successful open book examination is situated in effective time planning, proper study- and examination technique and in the realisation that the tools available must only be used if absolutely necessary.

Appendix 9: Detailed documentation used to compile the focus group's SID

In compiling the Pareto protocol, the *first step* is to count the exact number of votes (frequency) each relationship or affinity pair has received in a summarised ART. This number is recorded in a 'Frequency in affinity pair order table'. The total number of votes (frequencies) is tallied and recorded at the bottom of the table. *Step 2* is to arrange the 'Affinities in descending order of frequency with the Pareto protocol and Power analysis table' (Table 1). The researcher has to arrange the frequencies in descending order. In other words, the affinity pair with the most votes is listed first in the table and the remaining pairs are sorted accordingly. Now the researcher has to add four columns to this table.

Table 1: Affinities in Descending Order of Frequency with Pareto protocol and Power analysis Table

	Affinity pair relationship	Frequency sorted (descending)	Cumulative frequency	Cumulative percent (relation)	Cumulative percent (frequency)	Power
1	5 → 6	**6**	6	1.1	4.1	3.0
2	1 ←5	**5**	11	2.2	7.6	5.4
3	1 →6	**5**	16	3.3	11.0	7.7
4	1→10	**5**	21	4.4	14.5	10.0
5	2→10	**5**	26	5.6	17.9	12.4
6	3 →4	**5**	31	6.7	21.4	14.7
7	4 → 6	**5**	36	7.8	24.8	17.0
8	7 → 9	**5**	41	8.9	28.3	19.4
9	8 → 9	**5**	46	10.0	31.7	21.7
10	8→10	**5**	51	11.1	35.2	24.1
11	1 →3	**4**	55	12.2	37.9	25.7
12	1 →4	**4**	59	13.3	40.7	27.4
13	1 →7	**4**	63	14.4	43.4	29.0
14	1 →8	**4**	67	15.6	46.2	30.7
15	3 → 5	**4**	71	16.7	49.0	32.3
16	5→10	**4**	75	17.8	51.7	33.9
17	7→10	**4**	79	18.9	54.5	35.6
18	1 →2	**3**	82	20.0	56.6	36.6
19	1 →9	**3**	85	21.1	58.6	37.5
20	2 →4	**3**	88	22.2	60.7	38.5
21	2 →9	**3**	91	23.3	62.8	39.4
22	3 → 6	**3**	94	24.4	64.8	40.4
23	4 ← 5	**3**	97	25.6	66.9	41.3
24	2→ 3	**2**	99	26.7	68.3	41.6
25	2→ 5	**2**	101	27.8	69.7	41.9

26	2 →6	**2**	103	28.9	71.0	42.1
27	2 →7	**2**	105	30.0	72.4	42.4
28	2→ 8	**2**	107	31.1	73.8	42.7
29	3→10	**2**	109	32.2	75.2	43.0
30	4 → 5	**2**	111	33.3	76.6	43.2
31	4→10	**2**	113	34.4	77.9	43.5
32	6←10	**2**	115	35.6	79.3	43.8
33	7 → 8	**2**	117	36.7	80.7	44.0
34	7← 8	**2**	119	37.8	82.1	44.3
35	**9→10**	**2**	**121**	**38.9**	**83.4**	**44.6**
36	1 ←3	**1**	122	40.0	84.1	44.1
37	1 ←4	**1**	123	41.1	84.8	43.7
38	1 ←6	**1**	124	42.2	85.5	43.3
39	1←10	**1**	125	43.3	86.2	42.9
40	2← 5	**1**	126	44.4	86.9	42.5
41	3← 4	**1**	127	45.6	87.6	42.0
42	3← 5	**1**	128	46.7	88.3	41.6
43	3 → 7	**1**	129	47.8	89.0	41.2
44	3 ← 8	**1**	130	48.9	89.7	40.8
45	3 → 9	**1**	131	50.0	90.3	40.3
46	3 ← 9	**1**	132	51.1	91.0	39.9
47	3←10	**1**	133	52.2	91.7	39.5
48	4 ← 7	**1**	134	53.3	92.4	39.1
49	4← 8	**1**	135	54.4	93.1	38.7
50	5 →7	**1**	136	55.6	93.8	38.2
51	5 ← 8	**1**	137	56.7	94.5	37.8
52	5 ← 9	**1**	138	57.8	95.2	37.4
53	5←10	**1**	139	58.9	95.9	37.0
54	6 ← 7	**1**	140	60.0	96.6	36.6
55	6← 8	**1**	141	61.1	97.2	36.1
56	6 ← 9	**1**	142	62.2	97.9	35.7
57	6→10	**1**	143	63.3	98.6	35.3
58	7←10	**1**	144	64.4	99.3	34.9
59	9←10	**1**	145	65.6	100.0	34.4
60	1 ←2	**0**	145	66.7	100.0	33.3
61	1 →5	**0**	145	67.8	100.0	32.2
62	1 ←7	**0**	145	68.9	100.0	31.1
63	1 ←8	**0**	145	70.0	100.0	30.0
64	1 ←9	**0**	145	71.1	100.0	28.9
65	2 ←3	**0**	145	72.2	100.0	27.8
66	2← 4	**0**	145	73.3	100.0	26.7
67	2← 6	**0**	145	74.4	100.0	25.6
68	2← 7	**0**	145	75.6	100.0	24.4
69	2← 8	**0**	145	76.7	100.0	23.3

70	2← 9	**0**	145	77.8	100.0	22.2
71	2←10	**0**	145	78.9	100.0	21.1
72	3 ← 6	**0**	145	80.0	100.0	20.0
73	3 ← 7	**0**	145	81.1	100.0	18.9
74	3 → 8	**0**	145	82.2	100.0	17.8
75	4 ← 6	**0**	145	83.3	100.0	16.7
76	4 → 7	**0**	145	84.4	100.0	15.6
77	4 → 8	**0**	145	85.6	100.0	14.4
78	4 → 9	**0**	145	86.7	100.0	13.3
79	4 ← 9	**0**	145	87.8	100.0	12.2
80	4←10	**0**	145	88.9	100.0	11.1
81	5 ← 6	**0**	145	90.0	100.0	10.0
82	5← 7	**0**	145	91.1	100.0	8.9
83	5 →8	**0**	145	92.2	100.0	7.8
84	5 → 9	**0**	145	93.3	100.0	6.7
85	6 → 7	**0**	145	94.4	100.0	5.6
86	6 → 8	**0**	145	95.6	100.0	4.4
87	6 → 9	**0**	145	96.7	100.0	3.3
88	7 ← 9	**0**	145	97.8	100.0	2.2
89	8 ← 9	**0**	145	98.9	100.0	1.1
90	8←10	**0**	145	100.0	100.0	0.0
		145				

The cumulative frequency column records the running total or cumulative frequency. This is calculated by adding the frequency to the running total of the previous affinity pair. The cumulative percent (relation) represents each relationship as a percentage of the total possible number of affinities. In the current study the cumulative percent (relation) was 1.1% (one out of a total of ninety). The cumulative percent (frequency) column is calculated by utilising the cumulative frequency column. The corresponding number in the cumulative frequency column is used for each affinity pair. This is expressed as a percentage of the total frequencies (in this study, it was 145) and the percentage is entered in the cumulative percent (frequency) column. The power column represents an index of the degree of optimisation of the system. This can be calculated by deducting the results in the cumulative percent (relation) column from the results in the cumulative percent (frequency) column.

The cumulative percent (relation) column and the cumulative percent (frequency) column are the keys to deciding which of the affinity pairs should be included in the Interrelationship Diagram (IRD). The question is, where is the cut-off point when is to the inclusion and exclusion of the affinity pairs from the IRD. In the study the power reaches a maximum at affinity pair relationship 35. This indicates that 35 relationships accounts for 83.4% of the variation in the system. **The first 35 affinity pairs will thus be included in the group IRD.** The 35 affinities that were identified with the Pareto protocol were summarized for more convenient access to the data and used to create a tabular IRD (Table 2)**.**

Table 2: The 35 affinities to be utilised for the IRD

Number	Affinity pair	Frequency
1	5 → 6	6
2	1 ←5	5
3	1 →6	5
4	1→10	5
5	2→10	5
6	3 →4	5
7	4 → 6	5
8	7 → 9	5
9	8 → 9	5
10	8→10	5
11	1 →3	4
12	1 →4	4
13	1 →7	4
14	1 →8	4
15	3 → 5	4
16	5→10	4
17	7→10	4
18	1 →2	3
19	1 →9	3
20	2 →4	3
21	2 →9	3
22	3 → 6	3
23	4 ← 5	3
24	2 →6	2
25	2 →7	2
26	2 8	2
27	2→ 3	2
28	2→ 5	2
29	3→10	2
30	4 → 5	2
31	4→10	2
32	6←10	2
33	7 → 8	2

34	7← 8	**2**
35	9→10	**2**

An IRD is a matrix containing the affinity pairs or relationships in a system. In the matrix, arrows indicate the type of relationship between the affinities. When an arrow points from affinity A to affinity B, it indicates that A influences B or B is influenced by A. For every affinity pair, two arrows are used, one pointing upwards and the second pointing leftwards.

Table 3: Tabular IRD

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
1		↑	↑	↑	←	↑	↑	↑	↑	↑	8	1	7
2	←			↑					↑	↑	3	1	2
3	←			↑	↑	↑					3	1	2
4	←	←	←		←	↑					1	4	-3
5	↑		←	↑		↑				↑	4	1	3
6	←		←	←	←						0	4	-4
7	←							↑	↑	↑	3	1	2
8	←						←		↑	↑	2	2	0
9	←	←					←	←			0	4	-4
10	←	←			←		←	←			0	5	-5

Table 4: Tabular IRD: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
1		↑	↑	↑	←	↑	↑	↑	↑	↑	8	1	7
5	↑		←	↑		↑				↑	4	1	3
2	←			↑					↑	↑	3	1	2
3	←			↑	↑	↑					3	1	2
7	←							↑	↑	↑	3	1	2
8	←						←		↑	↑	2	2	0
4	←	←	←		←	↑					1	4	-3
6	←		←	←	←						0	4	-4
9	←	←					←	←			0	4	-4
10	←	←			←		←	←			0	5	-5

In the table, '**out'** represents all the upwards arrows and '**in'** represent all the leftwards - arrows. In order to determine the deltas (Δ), the '**ins'** have to be subtracted from the '**outs'** (Table 3). Then the table is arranged in a descending order according to the deltas (Table 4). At this point, affinities are divided into drivers or outcomes in order to draw the SID. The affinities are categorised according to the values in the delta and the '**out'** and '**in'** columns of the IRD. All the positive delta numbers (Affinities 1, 5, 2, 3 and 7) will be drivers, and all the negative delta numbers (Affinities 4, 6, 9 and 10) are outcomes. An affinity where the **out** and **in** columns are equal, yielding a zero delta, is a circular or pivot (Affinity 8). Further refining of the affinities can be found in the '**out'** or '**in'** column with a zero value. An affinity containing a zero value in the '**out'**- column is classified as a primary driver (none in the study). An affinity for which the '**in'**-column contains a zero value is classified as a primary outcome (Affinities 6, 9 and 10) (Figure 1).

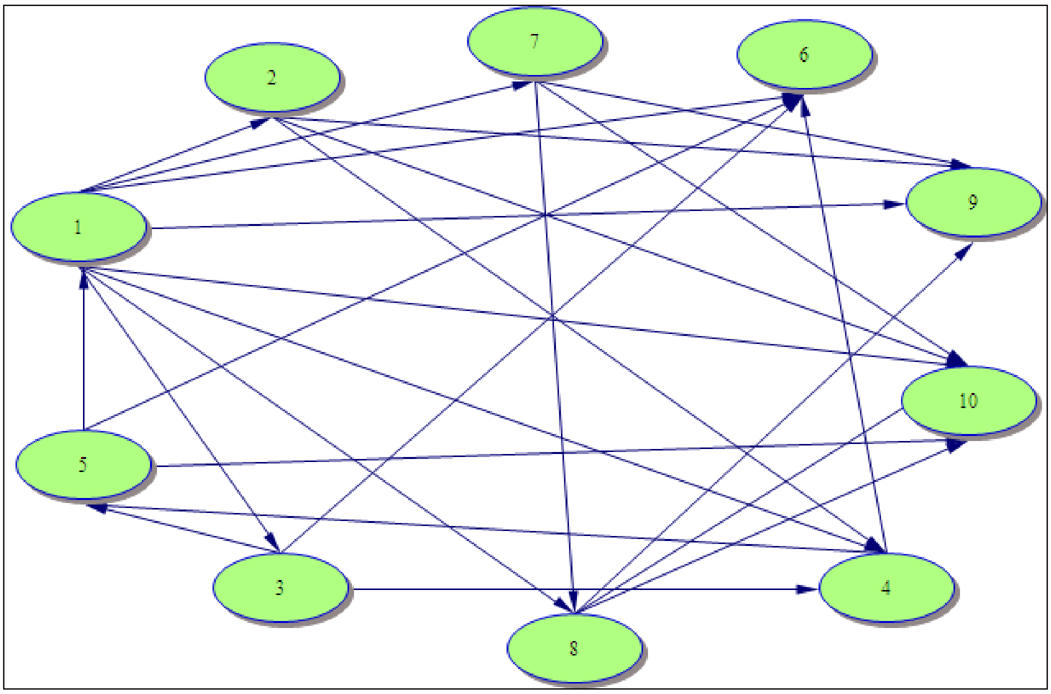
Figure 1: Tentative SID assignments: Focus group

*Affinity	Assignment
1	Secondary driver
5	Secondary driver
2	Secondary driver
3	Secondary driver
7	Secondary driver
8	Circulator/ pivot
4	Secondary outcome
6	Primary outcome
9	Primary outcome
10	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

At this stage in the analysis, the data is ready to be used in a SID. When drawing the SID, the drivers should be placed on the left-hand side and the outcomes on the right hand, with the primary drivers and primary outcomes furthest from one another. The secondary drivers and outcomes must be placed between the primary drivers and secondary drivers with the circulator or pivot in the middle. Affinities with the same status must be arranged vertically.

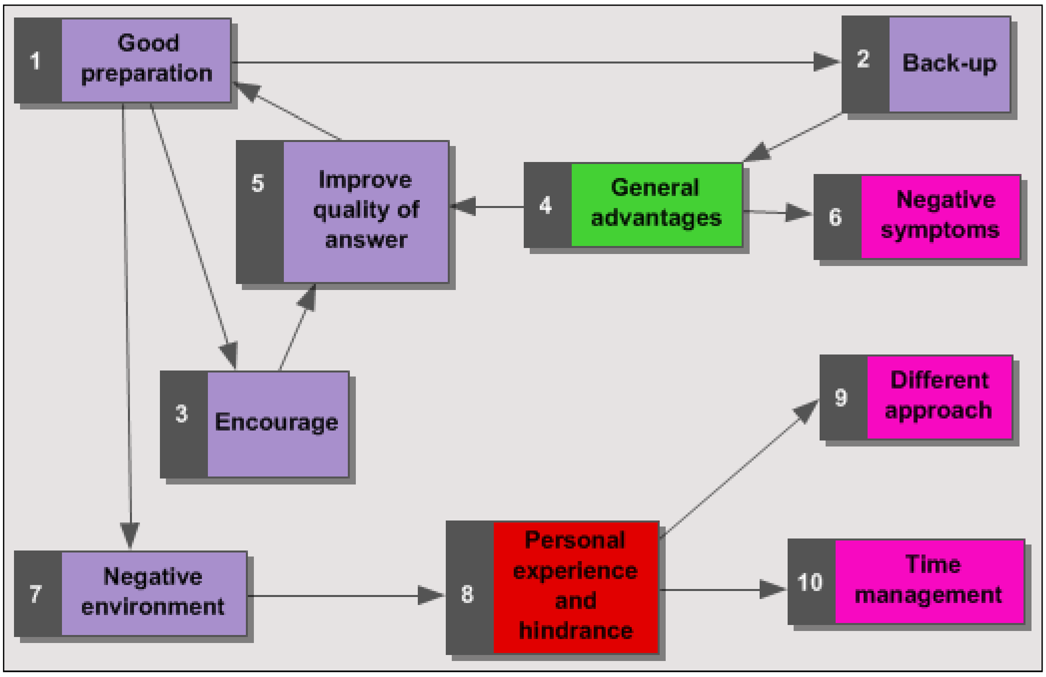
Diagram 1: Cluttered SID for the focus group



***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

A completed cluttered SID is drawn (Diagram 1) utilising the information from the IRD (Table 4). The purpose of this stage is to deliver a diagram that represents all the relationships in the system. When there are more affinities that result in an increase in relationships, this SID would be of no real value, as it is too complex to allow for conclusions to be drawn from the diagram. It is therefore essential for the SID to be uncluttered (Diagram 2). This is done by eliminating all possible relationships that can be substituted with another pathway on the diagram. This process of uncluttering will continue until all redundant relationships are deleted.

Diagram 2: Final uncluttered SID for the focus group


1
Good preparation
2
Back-up
5
Improve quality of answer
4
General advantages
6
Negative symptoms
3
Encourage
9
Different approach
7
Negative environment
8
Personal experience and hindrance
10
Time management

Appendix 10.1: Individual ART of interview #1

ART # 1				
Line no.	**Affinity pair**			**Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience**
1.	1	>	2	If I prepared adequately by flagging and highlighting key reference points in the allowed material for the exam, it can easily be found and be used as back-up when I am unsure of certain facts.
2.	1	>	3	The better I am prepared for an exam, the more positive I am.
3.	1	<>	4	No relationship
4.	1	>	5	The better prepared I am, the better quality answers I can provide.
5.	1	<	6	The negative symptoms will demotivate me to not prepare as well as I should as the answers can be found during the exam.
6.	1	<>	7	No relationship
7.	1	<	8	My personal experience will demotivate me to not prepare as well as I should, which will result in repeated checking of answers.
8.	1	<	9	I will not prepare as much for an open book exam as opposed to a closed book exam due to the fact that I have the answers in the permitted material. (applies to theoretical work requiring the memorizing of answers and not application type questions based on principles).
9.	1	<>	10	No relationship.
10.	2	>	3	The back-up material at hand will be encouraging.
11.	2	<>	4	No relationship
12.	2	>	5	Quality of answers will be improved in the case of theoretical questions requiring memorizing facts – not application type questions.
13.	2	<>	6	No relationship
14.	2	>	7	The back up material affects the environment with students bringing allowed material into the exam venue (clutter feeling)
15.	2	<>	8	No relationship
16.	2	<>	9	No relationship
17.	2	<	10	If time is managed effectively it will result in optimal use of the back up material.
18.	3	<>	4	No relationship
19.	3	>	5	If I feel more encouraged I will provide better quality answers.
20.	3	>	6	If I feel more encouraged I will be lazy in my preparation. (ie prepare less)
21.	3	<>	7	No relationship
22.	3	<>	8	No relationship
23.	3	<>	9	No relationship
24.	3	>	10	If I feel more encouraged I will be able to better manage my time for each question as I am more relaxed.
25.	4	>	5	The visual tool will jog my memory and allow me to recall more detail which will lead to improved quality answers.

26.	4	<>	6	No relationship
27.	4	<>	7	No relationship
28.	4	<>	8	No relationship
29.	4	<>	9	No relationship
30.	4	>	10	The visual tool will result in me spending less time on answering questions which will lead to effective time management.
31.	5	<	6	Negative symptoms will decrease quality of answers as I will be distracted and will make stupid mistakes in answers.
32.	5	<	7	The environment will affect my quality of answers negatively as I will feel uncomfortable in the chaos with all the allowed material.
33.	5	<	8	If I feel negative the quality of my answers will decrease.
34.	5	<	9	A different study approach will affect the quality of my answers (positively or negatively)
35.	5	<	10	Better time management will result in better quality answers as I will be calm and be able to think clearly – not be rushed by the clock.
36.	6	<	7	The environment (clutter) will raise negative sentiments about the exam in my mind.
37.	6	<	8	My personal experience (if bad) will fuel my negative sentiments and vice versa.
38.	6	<	9	A different approach will fuel my negative sentiment as I am resistant to change.
39.	6	<>	10	No relationship
40.	7	<>	8	No relationship
41.	7	<>	9	No relationship
42.	7	<>	10	No relationship
43.	8	<>	9	No relationship
44.	8	<>	10	No relationship
45.	9	<>	10	No relationship

Appendix 10.2: Individual ART of interview #2

Appendix 10.2: Individual ART of interview #2

ART #2

U			

PERSONAL INFORMATION

Please tick the appropriate box:

1 What is your gender? | Male | Female |

Below is a list of the affinities you are requested to consider. Please also refer to the list of affinity descriptions for completing the table below. Remember that an arrow can go either left or right, but not in both directions.

Affinities	**Possible relationships**
1. Good preparation 2. Back-up 3. Encourage 4. General advantages 5. Improve quality of answers 6. Negative symptoms of open book assessment 7. Environment 8. Personal experience and hindrance 9. Different approach 10. Time management	If Affinity 1 influences Affinity 2 then: 1 → 2 If Affinity 2 influences Affinity 1 then: 1 ← 2 If there is no relationship between affinities: 1 < > 2

	Affinity pair			Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience
1.	**1**	→	**2**	If one familiarises themselves with the layout of the textbook then this serves as a back-up in case they forget stuff committed to memory
	1	→	**3**	If one is well prepared only then can they be optimistic about the exam.
3.	**1**	→	**4**	The textbooks can only be an advantage if one is well prepared
4.	**1**	→	**5**	Quality of answers can only be ~~pe~~ improved if one is well prepared
5.	**1**	←	**6**	Good preparation is a time consuming process
6.	**1**	< >	**7**	
7.	**1**	< >	**8**	
8.	**1**	←	**9**	A proper approach ensures that one has good preparation
9.	**1**	→	**10**	Effective time management is only achieved if one prepares well.
10.	**2**	→	**3**	
11.	**2**	←	**4**	The textbooks are a sure back up for frequently changing laws

12.	2	←	5	
13.	2	←	6	
14.	2	< >	7	
15.	2	< >	8	
16.	2	←	9	
17.	2	←	10	
18.	3	←	4	If the student uses the open book assessment as a visual tool then he/she will feel more motivated about the exam.
19.	3	←	5	The availability of textbooks in the exam rooms results in the optimism and motivation in the students.
20.	3	←	6	If the student takes time to repare the textbooks for the exams only then will he/she be motivated
21.	3	< >	7	
22.	3	< >	8	If open book is properly used then it adds value to the learning process making the student motivated & preparing them for the real life situations where they will use book
23.	3	←	9	Proper study approach then results in a motivated student
24.	3	←	10	Optimistic effect on the student is only possible if there was proper time management
25.	4	→	5	The quality of the answers is improved if the books are use as a visual tool
26.	4	< >	6	Even the not so lazy students would struggle to keep up with Tarx changes if there was no open book
27.	4	< >	7	
28.	4	< >	8	
29.	4	←	9	The general advantages of open book assessment are possible if the student has properly prepared for the open book assessment
30.	4	←	10	without proper time management one will not be able to take advantage of the open book assessment.
31.	5	< >	6	
32.	5	< >	7	
33.	5	< >	8	
34.	5	←	9	The quality of answers can only be improved if the student uses the proper study approach.
35.	5	←	10	Proper time management results in improved quality of answers
36.	6	< >	7	

37.	6	< >	8	
38.	6	< >	9	
39.	6	←	10	Proper time management will guard against the negative symptoms of time management.
40.	7	←	8	If a student feels that the open book exam adds no value then they will be chaotic in the exam hall.
41.	7	←	9	Lack or inadequate mental preparation results in the student being chaotic in the exam hall.
42.	7	←	10	Proper time management helps one to manage the situation inside the exam hall.
43.	8	←	9	A proper approach helps the student appreciate the value-add of an open book exam.
44.	8	< >	10	
45.	9	→	10	A proper study approach results in effective time management.

Thank you for your participation!

Appendix 10.3: Individual ART of interview #3

ART#3

U			

PERSONAL INFORMATION

Please tick the appropriate box:

1 What is your gender? | Male | ~~Female~~ |

Below is a list of the affinities you are requested to consider. Please also refer to the list of affinity descriptions for completing the table below. Remember that an arrow can go either left or right, but not in both directions.

Affinities	**Possible relationships**
1. Good preparation 2. Back-up 3. Encourage 4. General advantages 5. Improve quality of answers 6. Negative symptoms of open book assessment 7. Environment 8. Personal experience and hindrance 9. Different approach 10. Time management	If Affinity 1 influences Affinity 2 then: 1 → 2 If Affinity 2 influences Affinity 1 then: 1 ← 2 If there is no relationship between affinities: 1 < > 2

Line no.	Affinity pair			Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience
1.	1	→	2	If I have prepared well enough, I can use the books as a back-up tool
2.	1	→	3	If I am well prepared, I feel motivated in an exam.
3.	1	→	4	I can only use the general advantages of an open book assessment if I am well prepared
4.	1	→	5	If I am well prepared, ~~my~~ the quality of my answers will improve.
5.	1	< >	6	Even if you have an open book assessment, you need to be well prepared anyway
6.	1	< >	7	The environment doesnt affect me, I had to train myself to not be distracted
7.	1	→	8	If you use the open book correctly, be prepare well enough, it should not be a problem.
8.	1	←	9	You should follow the different approach to ensure that you are well prepared
9.	1	→	10	If you are well prepared, your time will be managed effectively
10.	2	→	3	You feel encouraged because you have a back-up.
11.	2	→	4	I think the fact that you have a back-up is one of the most important general advantages.

12.	2	← →	5	The quality of the answers definitely improves as you can quite directly from the act.
13.	2	< >	6	Having a back-up didnt influence me negatively at all.
14.	2	< >	7	/
15.	2	< >	8	If you manage it correctly, the fact that you have the back-up shouldn't influence you negatively.
16.	2	←	9	A different approach should be followed to help you use the back-up correctly
17.	2	←	10	If you don't manage your time correctly, the positive use of the Back-up will become negative
18.	3	→ ←	4	I definitely felt more encouraged pecause of the fact that I knew I didn't have to memorize everything
19.	3	→	5	I knew that I could improve the quality of my answers because of that 'fuzzy feeling'
20.	3	< >	6	/
21.	3	< >	7	/
22.	3	→	8	Because of my feeling of encouragement, my personal experience was very positive.
23.	3	←	9	You will only feel encouraged when you follow the different approach
24.	3	←	10	If you don't manage your time properly, the Feeling of encouragement won't be there.
25.	4	→	5	Because of the general advantages, I could improve the quality of my answers
26.	4	< >	6	/
27.	4	< >	7	/
28.	4	< >	8	/
29.	4	←	9	You could only enjoy the general advantages of open book when a different study approach is followed, and time is managed effetively
30.	4	←	10	
31.	5	< >	6	/
32.	5	< >	7	/
33.	5	→	8	The fact that the quality of your answers improve should impact your experience positively
34.	5	←	9	The quality of your answers will only improve if a different approach is followed, and time is managed correctly.
35.	5	←	10	
36.	6	< >	7	/

37.	6	< >	8	
38.	6	< >	9	
39.	6	←	10	Proper time management will guard against the negative symptoms of time management.
40.	7	←	8	If a student feels that the open book exam adds no value then they will be chaotic in the exam hall.
41.	7	←	9	Lack or inadequate mental preparation results in the student being chaotic in the exam hall.
42.	7	←	10	Proper time management helps one to manage the situation inside the exam hall.
43.	8	←	9	A proper approach helps the student appreciate the value-add of an open book exam.
44.	8	< >	10	
45.	9	→	10	A proper study approach results in effective time management.

Thank you for your participation!

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Appendix 10.4: Individual ART of interview #4

ART #4

U			

PERSONAL INFORMATION

Please tick the appropriate box:

1 What is your gender? | Male | ~~Female~~ (ticked) |

Below is a list of the affinities you are requested to consider. Please also refer to the list of affinity descriptions for completing the table below. Remember that an arrow can go either left or right, but not in both directions.

Affinities	**Possible relationships**
1. Good preparation 2. Back-up 3. Encourage 4. General advantages 5. Improve quality of answers 6. Negative symptoms of open book assessment 7. Environment 8. Personal experience and hindrance 9. Different approach 10. Time management	If Affinity 1 influences Affinity 2 then: 1 → 2 If Affinity 2 influences Affinity 1 then: 1 ← 2 If there is no relationship between affinities: 1 < > 2

	Affinity pair			Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience
1.	1	→	2	If you prepare well, confidence in open-book tool is increased.
2	1	←	3	More time can be spent on understanding whilst studying as opposed to only memorising facts.
3.	1	←	4	Open book encouraged me to focus on understanding and applying concepts instead of becoming a walking text book
4.	1	→	5	I found that if one do not prepare well incorrect references can be provided as the true issue is misunderstood
5.	1	←	6	If one has a basic knowledge it is easier to score more marks.
6.	1	←	7	In general disturbances are minimal. It depends a lot on the emotional state of surrounding students e.g. stress
7.	1	→	8	The use of the Act has assisted me immensely regarding how to commence answering questions.
8.	1	→	9	The only change I have experienced was positive, i.e. you can spend more time in understanding than memorising
9.	1	←	10	Exam technique is essential. No text book or preparation can compensate for poor exam technique.
10.	2	→	3	It was comforting to know that a back-up was available.
11.	2	←	4	If you do not know where to find relevant info, the back-up mechanism fails.

12.	2	<—>	5	If the test is open book, straightforward technical questions are usually not included.
13.	2	<—>	6	If one wants to effectively use text books, then good preparation is a pre requisite
14.	2	—>	7	If allowed to use text books, then it assists in overcoming a lack of concentration caused by the environment
15.	2	<—>	8	If proper preparation is done, then open book assessments are complimentary.
16.	2	<—>	9	If proper preparation takes place, then there is no significant difference as one is then not required to excessively prepare the text books.
17.	2	<—>	10	If books is used as a last resort then time is effectively managed.
18.	3	<—	4	If one can refer to text books, then one usually feels more positive
19.	3	<—>	5	If one does not apply proper exam technique then reference to text books are of no significant use
20.	3	<—>	6	If you prepare well you do not need to make extensive notes in text books - it depends a lot on study technique
21.	3	<—	7	If students do not consider others, then the open book matter can become disturbing.
22.	3	<—>	8	If you understand the Act early on, then it will assist you greatly in future when you become responsible for your own learning
23.	3	<—>	9	If text books are not allowed, more time would be spent memorising.
24.	3	<—	10	If you apply poor study + exam technique, text books become less value adding
25.	4	—>	5	If you can reference to text books, then it improves quality of answers as you are more certain that you're applying your knowledge to the right facts.
26.	4	<—>	6	
27.	4	<—>	7	
28.	4	<—	8	If tools/aids are not perceived positively then they become less value adding.
29.	4	<—	9	If you apply proper study methods, text books will aid in corroborating + enhancing understanding.
30.	4	<—	10	If you understand the text books info, then you can manage time more effectively.
31.	5	<—>	6	
32.	5	<—>	7	
33.	5	<—	8	If you reference excessively to text books, then you may not be able to answer all questions which detracts from quality.
34.	5	<—	9	If you do not understand the layout of the text book then quality may decrease.
35.	5	<—	10	If you study correctly, then quality increases.
36.	6	<—>	7	

Appendix 10.5: Individual ART of interview #5

ART #5				
	Affinity pair			**Give an example in natural language using an IF/THEN statement to explain the relationship according to your personal experience**
1.	**1**	→	**2**	If I prepare properly, then it does make me more confident to know that there is a back up if something goes wrong. If I have a back up, then I have two things to help me: my knowledge that I studied **and** my books.
2.	**1**	→	**3**	If I know what is going on in the book, then I will feel more encouraged.
3.	**1**	→	**4**	If I have prepared well, then I will know exactly where to look.
4.	**1**	→	**5**	If I have prepared well, then I will know exactly which detail will be relevant to my answer to improve its quality, and where to find it.
5.	**1**	←	**6**	If I know that the book will be there, then I might feel tempted to not study a section as well as I would have if the exam was not open book.
6.	**1**	→	**7**	If a student has prepared sufficiently, then the need to page through textbooks will be minimal – the book is only there to help with more detailed answers and not for every question.
7.	**1**	→	**8**	If a student has prepared sufficiently, they should not doubt their knowledge.
8.	**1**	**<>**	**9**	I felt no difference in my preparation; books were there merely for confidence.
9.	**1**	→	**10**	If there is a lack of preparation, then time will be wasted as you will not know where to look for a specific thing if required, and if you know your work you will not have to refer to the book for every question.
10.	**2**	→	**3**	If I have a backup, I will automatically feel more confident should the worst case scenario arise and I go completely blank.
11.	**2**	→	**4**	If I have a backup, then this does help in the situation when exam stress gets the better of me and I forget the technical detail I have learnt.
12.	**2**	→	**5**	If I have a backup, then my answers will be more technically correct.
13.	**2**	→	**6**	If I have a backup, then I may be tempted to not learn something as thoroughly as I should.
14.	**2**	**<>**	**7**	If students have a backup, then they should be more confident in their knowledge (provided they have studied appropriately) and will not need to page extensively through their books.
15.	**2**	→	**8**	If students have a backup, then this can lead to excessive checking of answers.
16.	**2**	→	**9**	If I have a backup, then my study method will change from trying to memorize to focusing more on understanding the work.

17.	**2**	→	**10**	If I have a backup, then I find I must make sure that I still stick to the allocated time per question.
18.	**3**	←	**4**	If an open book exam helps students to reduce the amount of technical work that needs to be memorized, then they feel more motivated to write the exam as the negative connotations of going blank is reduced.
19.	**3**	→	**5**	If I am faced with an open book exam, then I am immediately less stressed, which has an effect on the quality of the answers that I give.
20.	**3**	→	**6**	If a student is faced with an open book exam, then they may under estimate how thoroughly the work still needs to be learnt and understood.
21.	**3**	**<>**	**7**	Being more motivated and confident to write an exam does not have an effect on how much one will page through the textbooks.
22.	**3**	**<>**	**8**	
23.	**3**	←	**9**	If a student studies in the right way and does not substitute the use of the books for learning and understanding the work, then it can make a student feel for optimistic and encouraged about the exam.
24.	**3**	→	**10**	If a student feels more motivated and encouraged to write an exam, then they will be more relaxed in the exam and be able to manage their time better.
25.	**4**	→	**5**	If I have the very technical detail in front of me, then the quality of answers will most certainly improve.
26.	**4**	→	**6**	If I have the advantage of having the book as an aid for checking up on technical detail **only**, and I spend my time studying and understanding the work and just noting where to find the section if need be, then in my experience the time spent on preparing my books is minimal.
27.	**4**	→	**7**	If students have the advantage of having an open book exam, I have had the experience that many students rely too much on this which results in them paging through their books a lot, which can be disruptive.
28.	**4**	→	**8**	If students still thoroughly prepare for the exam, then the use of books during the exam shouldn't lead to self doubt and excessive double checking.
29.	**4**	←	**9**	If students prepare in the right way (more understanding than memorizing), then the use of books during the exam can be an advantage, as it gives the student more time to really grasp concepts, as opposed to having to memorize long lists of things as well.
30.	**4**	→	**10**	If students have the advantage of a visual tool during the exam and have prepared thoroughly enough, then they will be able to manage their time as they will be more relaxed.
31.	**5**	**<>**	**6**	I don't think that in order to provide quality answers depends on how well you have prepared your textbook. If you have studied the book properly, you will know

				where to look if the need arises.
32.	**5**	→	**7**	If students have access to more detail, then this can result in more paging around and disruption of peace.
33.	**5**	**<>**	**8**	
34.	**5**	→	**9**	If an open book assessment is used to help improve the quality of a student's answers, then this will change the approach to studying and mental preparation, as it will be pointless for an examiner to ask straightforward questions. Questions will centre more on application than regurgitation of data.
35.	**5**	→	**10**	If the student has the technical detail in front of them, then they won't need to spend so much time memorizing work, but can focus more on understanding and application.
36.	**6**	→	**7**	If I don't study the work properly, then it will result in me having to page endlessly through my books during the exam, which will be disruptive.
37.	**6**	→	**8**	If I don't prepare properly for an exam, then I will feel as if the exam is more difficult because I would have under estimated how well I needed to understand the work.
38.	**6**	←	**9**	If I prepare for the exam properly, in that I take time to understand the work and know where to find it in my books, then preparing my books for referencing should not take long.
39.	**6**	←	**10**	If I spend my studying time on the right things and in the right way, then in the exam I won't need to refer to my books for everything, and If I do need to look something up, I will know where to find it.
40.	**7**	←	**8**	If I'm writing an open book exam with a lot of students who have spent their time writing in their books rather than studying, then the peace in exam room is disrupted.
41.	**7**	←	**9**	If I study in the correct way (knowing and understanding my work) and don't spend hours writing in my books, then I find I don't need to page through my books when writing.
42.	**7**	←	**10**	If I study in the correct way (knowing and understanding my work) and don't spend hours writing in my books, then I find I don't need to page through my books when writing.
43.	**8**	←	**9**	If I study in the right way, then I won't feel the need to double check myself the whole time.
44.	**8**	←	**10**	If study sufficiently and know my work, then I will only need to check my books if absolutely necessary.
45.	**9**	→	**10**	If I understand that an open book assessment does not replace studying and understanding the work, then I will not waste time paging through my books as I will only use the books if necessary.

Appendix 11: Detailed documentation used to compile the interviews' SID

In compiling the Pareto protocol, the *first step* is to count the exact number of votes (frequency) each relationship or affinity pair has received in a summarised ART. This number is recorded in a 'Frequency in affinity pair order table'. The total number of votes (frequencies) is tallied and recorded at the bottom of the table. *Step 2* is to arrange the 'Affinities in descending order of frequency with the Pareto protocol and Power analysis table' (Table 1). The researcher has to arrange the frequencies in descending order. In other words, the affinity pair with the most votes is listed first in the table and the remaining pairs are sorted accordingly. Now the researcher has to add four columns to this table.

Table 1: Affinities in descending order of frequency with Pareto protocol and power analysis

	Affinity pair relationship	Frequency sorted (descending)	Cumulative frequency	Cumulative percent (relation)	Cumulative percent (frequency)	Power
1	1 →2	5	5	1.1100	3.4	2.3
2	1 →5	5	10	2.2200	6.9	4.7
3	2→ 3	5	15	3.3300	10.3	7.0
4	4 → 5	5	20	4.4400	13.8	9.4
5	1 ←6	4	24	5.5500	16.6	11.0
6	1 →3	4	28	6.6600	19.3	12.7
7	3← 4	4	32	7.7700	22.1	14.3
8	4 ← 9	4	36	8.8800	24.8	15.9
9	5 ← 9	4	40	9.9900	27.6	17.6
10	5←10	4	44	11.1000	30.3	19.2
11	6 ← 9	4	48	12.2100	33.1	20.9
12	1 ←9	3	51	13.3200	35.2	21.9
13	1 →4	3	54	14.4300	37.2	22.8
14	1 →8	3	57	15.5400	39.3	23.8
15	1→10	3	60	16.6500	41.4	24.7
16	2←10	3	63	17.7600	43.4	25.7
17	2→ 5	3	66	18.8700	45.5	26.6
18	3 ← 9	3	69	19.9800	47.6	27.6
19	3 → 5	3	72	21.0900	49.7	28.6
20	3←10	3	75	22.2000	51.7	29.5
21	4←10	3	78	23.3100	53.8	30.5
22	6←10	3	81	24.4200	55.9	31.4
23	8 ← 9	3	84	25.5300	57.9	32.4
24	9→10	3	87	26.6400	60.0	33.4
25	2 →4	2	89	27.7500	61.4	33.6
26	2 →7	2	91	28.8600	62.8	33.9

27	2← 4	2	93	29.9700	64.1	34.2
28	2← 9	2	95	31.0800	65.5	34.4
29	3 → 6	2	97	32.1900	66.9	34.7
30	3→10	2	99	33.3000	68.3	35.0
31	4→10	2	101	34.4100	69.7	35.2
32	5 ← 8	2	103	35.5200	71.0	35.5
33	6 → 8	2	105	36.6300	72.4	35.8
34	7 ← 9	2	107	37.7400	73.8	36.1
35	7← 8	2	109	38.8500	75.2	36.3
36	**7←10**	**2**	**111**	**39.9600**	**76.6**	**36.6**
37	1 ←3	1	112	41.0700	77.2	36.2
38	1 ←4	1	113	42.1800	77.9	35.8
39	1 ←7	1	114	43.2900	78.6	35.3
40	1 ←8	1	115	44.4000	79.3	34.9
41	1 →7	1	116	45.5100	80.0	34.5
42	1 →9	1	117	46.6200	80.7	34.1
43	1←10	1	118	47.7300	81.4	33.6
44	2 →6	1	119	48.8400	82.1	33.2
45	2 →9	1	120	49.9500	82.8	32.8
46	2→ 8	1	121	51.0600	83.4	32.4
47	2← 5	1	122	52.1700	84.1	32.0
48	2← 6	1	123	53.2800	84.8	31.5
49	2→10	1	124	54.3900	85.5	31.1
50	3 ← 6	1	125	55.5000	86.2	30.7
51	3 ← 7	1	126	56.6100	86.9	30.3
52	3 → 8	1	127	57.7200	87.6	29.9
53	3← 5	1	128	58.8300	88.3	29.4
54	4 → 6	1	129	59.9400	89.0	29.0
55	4 → 7	1	130	61.0500	89.7	28.6
56	4 → 8	1	131	62.1600	90.3	28.2
57	4← 8	1	132	63.2700	91.0	27.8
58	5 ← 6	1	133	64.3800	91.7	27.3
59	5 → 9	1	134	65.4900	92.4	26.9
60	5 →7	1	135	66.6000	93.1	26.5
61	5 →8	1	136	67.7100	93.8	26.1
62	5← 7	1	137	68.8200	94.5	25.7
63	5→10	1	138	69.9300	95.2	25.2
64	6 ← 7	1	139	71.0400	95.9	24.8
65	6 → 7	1	140	72.1500	96.6	24.4
66	6← 8	1	141	73.2600	97.2	24.0
67	6→10	1	142	74.3700	97.9	23.6
68	7 → 8	1	143	75.4800	98.6	23.1
69	8←10	1	144	76.5900	99.3	22.7
70	8→10	1	145	77.7000	100.0	22.3

71	1 ←2	0	145	78.8100	100.0	21.2
72	1 ←5	0	145	79.9200	100.0	20.1
73	1 →6	0	145	81.0300	100.0	19.0
74	2 ←3	0	145	82.1400	100.0	17.9
75	2← 7	0	145	83.2500	100.0	16.8
76	2← 8	0	145	84.3600	100.0	15.6
77	3 ← 8	0	145	85.4700	100.0	14.5
78	3 → 7	0	145	86.5800	100.0	13.4
79	3 → 9	0	145	87.6900	100.0	12.3
80	3 →4	0	145	88.8000	100.0	11.2
81	4 ← 5	0	145	89.9100	100.0	10.1
82	4 ← 6	0	145	91.0200	100.0	9.0
83	4 ← 7	0	145	92.1300	100.0	7.9
84	4 → 9	0	145	93.2400	100.0	6.8
85	5 → 6	0	145	94.3500	100.0	5.7
86	6 → 9	0	145	95.4600	100.0	4.5
87	7 → 9	0	145	96.5700	100.0	3.4
88	7→10	0	145	97.6800	100.0	2.3
89	8 → 9	0	145	98.7900	100.0	1.2
90	9←10	0	145	99.9000	100.0	0.1
		145				

The cumulative frequency column records the running total or cumulative frequency. This is calculated by adding the frequency to the running total of the previous affinity pair. The cumulative percent (relation) represents each relationship as a percentage of the total possible number of affinities. In the current study the cumulative percent (relation) was 1.1% (one out of a total of ninety). The cumulative percent (frequency) column is calculated by utilising the cumulative frequency column. The corresponding number in the cumulative frequency column is used for each affinity pair. This is expressed as a percentage of the total frequencies (in this study, it was 145) and the percentage is entered in the cumulative percent (frequency) column. The power column represents an index of the degree of optimisation of the system. This can be calculated by deducting the results in the cumulative percent (relation) column from the results in the cumulative percent (frequency) column.

The cumulative percent (relation) column and the cumulative percent (frequency) column are the keys to deciding which of the affinity pairs should be included in the Interrelationship Diagram (IRD). The question is, where is the cut-off point when is to the inclusion and exclusion of the affinity pairs from the IRD. In this study the power reaches a maximum at affinity pair relationship 36. This indicates that 36 relationships accounts for 76,6% of the variation in the system. **The first 36 affinity pairs will thus be included in the group IRD.** The 36 affinities that were identified with the Pareto protocol were summarized for more convenient access to the data and used to create a tabular IRD (Table 2).

Table 2: The 36 affinities to be utilised for the IRD

Number	Affinity pair	Frequency
1	1 → 2	5
2	1 → 5	5
3	2 → 3	5
4	4 → 5	5
5	1 ← 6	4
6	1 → 3	4
7	3 ← 4	4
8	4 ← 9	4
9	5 ← 9	4
10	5 ← 10	4
11	6 ← 9	4
12	1 ← 9	3
13	1 → 4	3
14	1 → 8	3
15	1 → 10	3
16	2 ← 10	3
17	2 → 5	3
18	3 ← 9	3
19	3 → 5	3
20	3 ← 10	3
21	4 ← 10	3
22	6 ← 10	3
23	8 ← 9	3
24	9 → 10	3
25	2 → 4	2
26	2 → 7	2
27	2 ← 4	2
28	2 ← 9	2
29	3 → 6	2
30	3 → 10	2
31	4 → 10	2
32	5 ← 8	2
33	6 → 8	2
34	7 ← 9	2
35	7 ← 8	2
36	**7 ← 10**	**2**

An IRD is a matrix containing the affinity pairs or relationships in a system. In the matrix, arrows indicate the type of relationship between the affinities. When an arrow points from affinity A to affinity B, it indicates that A influences B or B is influenced by A. For every affinity pair, two arrows are used, one pointing upwards and the second pointing leftwards.

Table 3: Tabular IRD

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
1		↑	↑	↑	↑	←		↑	←	↑	6	2	4
2	←		↑	↑	↑		↑		←	←	4	3	1
3	←	←		←	↑	↑			←	←	2	5	-3
4	←	←	↑		↑				←	←	2	4	-2
5	←	←	←	←				←	←	←	0	7	-7
6	↑		←					↑	←	←	2	3	-1
7		←						←	←	←	0	4	-4
8	←				↑	←	↑		←		2	3	-1
9	↑	↑	↑	↑	↑	↑	↑	↑		↑	9	0	9
10	←	↑	↑	↑	↑	↑	↑		←		6	2	4

Table 4: Tabular IRD: Sorted in descending order of Δ

	1	2	3	4	5	6	7	8	9	10	Out	In	Δ
9	↑	↑	↑	↑	↑	↑	↑	↑		↑	9	0	9
1		↑	↑	↑	↑	←		↑	←	↑	6	2	4
10	←	↑	↑	↑	↑	↑	↑		←		6	2	4
2	←		↑	↑	↑		↑		←	←	4	3	1
6	↑		←					↑	←	←	2	3	-1
8	←				↑	←	↑		←		2	3	-1
4	←	←	↑		↑				←	←	2	4	-2
3	←	←		←	↑	↑			←	←	2	5	-3
7		←						←	←	←	0	4	-4
5	←	←	←	←				←	←	←	0	7	-7

In the table, ‘**out**’ represents all the upwards arrows and ‘**in**’ represent all the leftwards - arrows. In order to determine the deltas (Δ), the ‘**ins**’ have to be subtracted from the ‘**outs**’ (Table 3). Then the table is arranged in a descending order according to the deltas (Table 4). At this point, affinities are divided into drivers or outcomes in order to draw the SID. The affinities are categorised according to the values in the delta and the ‘**out**’ and ‘**in**’ columns of the IRD. All the positive delta numbers (Affinities 9, 1, 10 and 2) are drivers, and all the negative delta numbers (Affinities 6, 8, 4, 3, 7 and 5) are outcomes. Further refining of the affinities can be found in the '**out'** or '**in'** column with a zero value. An affinity containing a zero value in the '**out'**- column is classified as a primary driver (Affinities 9). An affinity for which the '**in'**-column contains a zero value is classified as a primary outcome (Affinities 7 and 5) (Figure 1).

Figure 1: Tentative composite SID assignments for all the interviews

Affinity	Assignment
9	Primary driver
1	Secondary driver
10	Secondary driver
2	Secondary driver
6	Secondary outcome
8	Secondary outcome
4	Secondary outcome
3	Secondary outcome
7	Primary outcome
5	Primary outcome

***Affinities**: **1**-Good preparation, **2**-Back-up, **3**-Encourage, **4**-General advantages, **5**-Improve quality of answers, **6**-Negative symptoms, **7**-Environment, **8**-Personal experience and hindrance, **9**-Different approach, **10**-Time management

At this stage in the analysis, the data is ready to be used in a SID. When drawing the SID, the drivers should be placed on the left-hand side and the outcomes on the right hand, with the primary drivers and primary outcomes furthest from one another. The secondary drivers and outcomes must be placed between the primary drivers and secondary drivers with the circulator or pivot in the middle. Affinities with the same status must be arranged vertically.

A completed cluttered SID is drawn utilising the information from the IRD (Table 4). The purpose of this stage is to deliver a diagram that represents all the relationships in the system. When there are more affinities that result in an increase in relationships, this SID would be of no real value, as it is too complex to allow for conclusions to be drawn from the diagram. It is therefore essential for the SID to be uncluttered (Diagram 1). This is done by eliminating all possible relationships that can be substituted with another pathway on the diagram. This process of uncluttering will continue until all redundant relationships are deleted.

Diagram 1: Final and uncluttered SID for interviews