

An evaluation of open-book examinations used in the training of professional accountants

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Abstract

This study was conducted among final-year accounting students who were preparing for the qualifying exam of the South African Institute of Chartered Accountants. Assessment in the first three years of study was done by means of closed-book exams, but in their final year, they were assessed by means of open-book tests and exams. Their perceptions on the effect that the introduction of open-book assessment (OBA) had on their study behaviour and whether the intended aims of introducing OBA of the regulatory bodies were attained, were gauged by means of questionnaires. A comparison was made between the views of these potential chartered accountants and those of lecturers in accounting departments..

Students were generally positive about the introduction of OBA, but lecturers were less enthusiastic. The conclusion was that the aims of OBA have generally been attained, in spite of negative study behaviours that were encountered. Finally, there are recommendations, which might help to reduce negative learning behaviours associated with OBA.

Opsomming

Hierdie studie is gedoen onder finalejaar-rekeningkunde-studente wat met voorbereidings vir die kwalifiserende eksamen van die Suid-Afrikaanse Instituut vir Geoktrooieerde Rekenmeesters besig was. Hierdie studente is voorheen deur middel van toeboek-eksamens geassesseer, maar in hul finale jaar is hulle toegelaat om sekere materiaal tydens toetse en eksamens in te neem. Hul persepsies aangaande die invloed wat hierdie wysiging in assesseringsmetode op hul studiegedrag gehad het en of die doelwitte van die regulerende liggame met die implementering van die oopboekbeleid bereik is, is gemeet deur middel van vraelyste wat onder studente versprei is. Hulle siening is ook met dié van dosente wat vir hulle klasgee, vergelyk.

Oor die algemeen was studente positief oor die implementering van die oopboekbeleid terwyl dosente minder entoesiasies was. Die gevolgtrekking is dat die doelwitte van die oopboekeksamen oor die algemeen bereik is ten spyte van die negatiewe studiegedrag wat daaruit voortgespruit het. Aanbevelings word ook gemaak oor hoe hierdie negatiewe studiegedrag verminder kan word.

Key words

Open-Book Assessment	Students are allowed to bring study material, which they may consult when answering questions, into test and exam venues. Limitations are often placed on quantity and kind of material that may be taken in. OBA is an acronym in this dissertation.
Closed-Book Assessment	Students are not allowed to take any material into test and exam venues.

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1 INTRODUCTION AND RESEARCH CONCEPT

1.1 Introduction

Most academics have probably heard the expression “assessment drives learning”. The fact that students' ways of learning change when the method of assessment changes, has been explored in literature. In one study amongst medical students it was found that students engaged more in clinical learning activities when the exam format was changed from a theoretical to a clinical format (Newble and Jaeger, 1983:165). In another study among nursing students it was found that better formulated questions used in conjunction with case scenarios enhanced critical thinking (Leung et al., 2008:719). The move by SAICA (South African Institute of Chartered Accountants) to change the qualifying exam from a closed-book exam to an open-book exam has opened up various debates amongst accounting academics as well as current members of SAICA. Most of them agree that the change in the method of assessment resulted in a change in learning. This has been confirmed in other studies on Open-Book Assessment. (Koutselini-Ioannidou, 1997; Boniface, 1985; Baillie and Toohey, 1997) Whether the change is for the good seems to be a contentious point.

1.1.1 *Brief History of open-book professional Accountancy examinations in South Africa*

SAICA introduced this policy for Part 1 of the South African Qualifying Examination (QE 1) in March 2003. The IRBA (Independent Regulatory Board for Auditors – previously PAAB) followed suit in November 2004 for Part 2 of the Qualifying examination – the Public Practice Examination (PPE). Since then the IRBA has followed the same policy as SAICA for their exams, except for the 2006 change where the IRBA decided to adhere to the previous policy of not allowing any notes to be made in allowed texts.

Before 2003 candidates were assessed by means of a closed-book exam. From 2003 to 2005 students were assessed by means of a partially open-book exam where they were allowed to bring in certain texts, but were not allowed to add notes to the texts apart from underlining, highlighting and limited annotation. This policy was criticized mainly due to problems in policing the texts of students and subsequent concerns about the playing field not being level. In 2006 the policy was adapted by SAICA to allow students to make any notes they wish in the allowed texts. (SAICA, 2006) This effectively resulted in a ‘full open-book’ policy with the only limitation being available space in allowed texts and the students' ability to cram information in open spaces in the texts. This presumably resulted in the

playing field being more level except maybe for differences in students' quality of eyesight and smallness of handwriting.

In a communiqué issued in 2008, SAICA communicated its resolution to change the policy back to the one initially introduced; i.e. underlining, highlighting and limited annotation. SAICA presumably made the change due to concerns amongst others that students spent too much time writing notes into the allowed texts instead of mastering the content. Instances were reported where students 'painted' correction fluid over pages of text and wrote in their own notes. Other writers are however of the opinion that note taking and annotation of texts is an important part of the learning process and should be encouraged. (Maharg, 1999:229; Eilertsen and Valdermo, 2000:99)

The South African Institute is not the first to introduce open-book assessment. The Institute of Chartered Accountants of England and Wales has investigated open-book techniques for its exams since 1988 and implemented OBA soon thereafter. In an article commenting on the introduction of OBA in England and Wales (Timms, 1990) it is mentioned that OBA is more relevant to testing skills required of a professional accountant and that reliance on rote learning should be reduced. At the same time though, the fear that it will be abused and that students are discouraged to commit essential knowledge to memory has also been mentioned. Amongst the other professional accounting bodies that have implemented OBA are those of the USA, Australia, Ireland and Scotland.

From the above short history of OBA in the training of professional accountants in South Africa, it is clear that there is a fair amount of uneasiness in academic circles. The jury still seems to be out as to whether the aims of OBA are being attained. If the changes in the format of the open-book exam in a relatively short period are taken into account, the last word has probably not been said as to how open this open-book exam should be.

1.1.2 Motivation for the implementation of OBA

The IRBA motivates the policy in a booklet (IRBA, 2004) where one of the aims of open-book assessment mentioned, is to guide students in their learning to a point where they are able to independently make the transition from **data** to **information** to **knowledge**. This is also called "knowledge management"; one of the professional competencies, which the IRBA believes, will be enhanced by adopting the open-book assessment policy.

This opinion is supported by Francis (1982:15) who makes the following comment:

“..., the strength of open-book examination is that it allows candidates to be tested on their ability to find and select knowledge and information to produce organised responses and satisfactory solutions to problems under reasonably favourable conditions”

The booklet also differentiates between knowledge that is ‘embedded’ and that which is ‘accessible’. The IRBA argues that Professional Accountants should have both. A possible practical example to illustrate this is that the accountant should know that a client could claim a deduction for wear and tear on equipment but can then look up the exact rate in the income tax act. This model of differentiating between embedded and accessible information lies at the heart of the decision to limit access to certain texts and limit time to complete the exam. This concept is investigated in a study (Rowlands and Forsyth, 2006) involving a CTA class at a South African University. In a study among medical students (Heijne-Penninga et al., 2008:969) the same concept is applied and referred to as ‘core’ (i.e. embedded) and ‘back-up’ knowledge (i.e. accessible). These students write a closed-book exam to test the core knowledge and an open-book test to assess back-up knowledge.

One of the main reasons for adopting OBA is to assess students in a way that as closely as possible matches a ‘real life’ situation. The argument is that in real life the professional will have access to information in performing their duties. Other disciplines also debate ways to reduce this gap between theory and practice as can be seen in research done in the training of legal professionals. (Maharg, 1999) The IRBA argues that the sheer volume of information that professionals are expected to use meaningfully requires a different set of skills that can be better developed by exposing students to such an assessment environment. This view is echoed in a study among medical students (Broyles et al., 2005) where it is evident that medical professionals experience the same pressure of a significant increase in the volume of available information.

Other reasons for implementing OBA put forward by the IRBA are that the teaching/learning/assessment process is enhanced, professional competence is more appropriately assessed and that lifelong learning is promoted and encouraged. Lifelong learning is very important for the accounting profession in South Africa as well as internationally, as can be seen in the drive to encourage practitioners to keep up to date, with the continuous professional development initiative. (SAICA, 2008) Some studies

(Koutselini-loannidou, 1997:138) contend that OBA encourages lifelong learning while other studies found that the opposite is actually true. (Moore and Jensen, 2007:49)

Other disciplines have been asking the same questions in the quest to bring theory and assessment closer to practice. The issue of OBA in the training of legal professionals in Scotland is explored in an article (Maharg, 1999) where this complex relationship between theory and practice and assessment is focused on. Chieh (1999) is also of the opinion that OBA is closer to "real life" situations that students will encounter in the work place. Vanderburgh (2005:184) also found that OBA offered positive results as far as critical thinking; writing and overall learning is concerned.

O' Flaherty, then the PAAB chief executive remarked after the 2004 PPE exams that OBA was implemented to place the "emphasis on application rather than rote learning"(Green, 2005). This widely accepted benefit of OBA runs like a golden thread through most research studies. (Vanderburgh, 2005; Theophilides and Dionysiou, 1996; Theophilides and Koutselini, 2000; Chan, 2003) 'Deeper' learning, or learning at higher taxonomical levels is emphasised over memorisation. The taxonomical levels refer to Bloom's taxonomy that describes the levels of understanding in ascending order as being knowledge, comprehension, application, analysis, synthesis and evaluation. Concerns regarding weaknesses among accounting students' deep thinking and problem-solving abilities are mentioned in a study concerned with learning styles of students. (Visser et al., 2006:99) The dilemma of bringing theory closer to practice for accounting students is also mentioned in a study at Stellenbosch University. (Steenkamp and Rudman, 2007:24) The focus of the qualifying exams of both SAICA and the IRBA has been to test students at higher levels, in other words it is unlikely that students will be required to simply reproduce information in the exam. Students can rather expect their abilities in the fields of application, analysis, synthesis and evaluation to be tested.

One of the main aims of teaching is to guide students to a point of understanding and to have the ability to apply this knowledge effectively, instead of having them regurgitate or 'memory dump' information that is ultimately meaningless to them. The desired product is students who can 'think'.

Marvin Minsky (as quoted in Maharg (1999)) made the following analogy to compare rote learning to thinking:

“An idea with a single sense can lead along only one track. Then, if anything goes wrong, it just gets stuck, a thought that sits there in your brain with nowhere to go, that’s why, when a person learns something ‘by rote’, that is, with no sensible connections, we say that they ‘don’t really understand’. Rich meaning networks, however, give you many different ways to go: if you cannot solve a problem one way, you can try another. True, too many indiscriminate connections will turn a mind to mush. However, well-connected meaning-structures let you turn ideas around in your mind, to consider alternatives and envision things from many perspectives until you find one that works. And that’s what we mean by thinking!”

The question of what should be allowed into the exam hall if OBA is applied is not a new one and not confined to the accounting profession. Maharg (1999:232) comments after the introduction of OBA to a professional legal course, where no notes in texts were allowed, that students did not “own” the information and that led to an increase in anxiety levels. This contrasts with research where students were allowed to bring in their own notes and the conclusion was made that anxiety levels were reduced. (Koutselini-Ioannidou, 1997:138; Chan, 2003) The question can rightly be asked why any restriction should be placed on what students bring into the exam hall (apart from space limitations in the exam hall). Propagators of allowing students to bring any notes into the exam argue that by limiting what they can bring with them, and what they can write in these texts, forces them to prepare in a way that is not necessarily optimal for their individual learning styles. In practice, they will surely have access to any material to solve problems. The format of OBA also differs between professional accounting bodies internationally. In Australia for instance students may bring in any material when writing the qualifying exams. (Australian Institute of Chartered Accountants, 2007) The Canadian Institute of Chartered Accountants allows certain unannotated texts to be accessed in printed or electronic format. (Canadian Institute of Chartered Accountants, 2008)

1.1.3 *Teaching and assessing accountants in training in South Africa*

Most South African universities follow the approach of assessing students by means of closed-book exams on graduate level (Von Wielligh, 2006)) with some at most allowing partial open-book in the third year of study. The main argument for this is to ensure that students have “embedded” the necessary knowledge, as became evident in a questionnaire

distributed among academics at [full-time] universities in 2007. An assumption that seems to underpin this argument is that knowledge will not be imbedded as well if students have access to texts in exams in earlier years of study. The role that memory plays in learning is a complex issue. In an article by Maharg (1999) he claims that a substantial body of research tells that, "Learning happens not by recording information, but by interpreting it". He further states that there is also a lot of proof that there is not necessarily a direct link between memory and good problem-solving skills.

At postgraduate level most universities then apply the same policy as prescribed by SAICA(Von Wielligh, 2006), allowing students to bring the allowed texts into exams and tests. One can pose the question whether one year's exposure to OBA is enough to prepare students and develop the envisaged competency of "knowledge management". Rowlands and Forsyth(2006:707) states:

"A clear understanding of the model by candidates is important and should be acquired early in the education process preceding the examination. This will allow students the opportunity to gain experience prior to the examination and will be best achieved through a process of teaching and learning which is congruent with the proposed open-book examination model".

Other researchers also emphasises the importance of aligning teaching strategies with the assessment method. (Koutselini-Ioannidou, 1997:138) This view seems to clash with the assumption that students need to be assessed by means of a closed-book exam in earlier years.

A common complaint of postgraduate lecturers is that students spend too much time "preparing" their books instead of properly studying the content. (Von Wielligh, 2006) This might be because students lack the necessary experience of studying in an open-book environment causing them to place a reliance on notes that will be useless without a deeper understanding of how to apply the knowledge. If this "preparing" leads to or is the result of good note taking or summarising skills it should not necessarily be seen in a bad light as some studies suggest that OBA improves note-taking skills. Theophilides and Dionysiou (1996:165) and Chan (2003) also concluded that students who are not used to open-book assessment need guidance in the learning process to achieve the benefits of this type of assessment.

A strong argument exists that lecturers need to change their approach to teaching in order that students can be adequately prepared for OBA. O Grady (2000) argues that teaching and learning must be aligned with assessment for OBA. He is also of the opinion that lecturers might be reluctant to embrace OBA because amongst others, more effort is required to set questions and grading becomes more difficult. Chieh (1999) supports this view. Lancaster (2006) explored précis-writing as a method to help students develop knowledge-management skills. It shows that some academics in South Africa are taking cognizance of the fact that teaching methods must be adopted for optimal OBA.

Another issue that has been raised is the fact that students are allowed to bring in the SAICA approved texts only, which is only available in English. There is however a significant percentage of students who receive tuition in Afrikaans. These students are potentially disadvantaged in comparison with English students when writing the qualifying examinations of SAICA and the IRBA. No studies related to this matter could be found in literature. In a study amongst black trainee accountants 70% indicated that they did not regard the fact that they could not write exams in their first language (which usually is not Afrikaans or English) as a disadvantage. (Wiese, 2006:163) It is assumed that the majority of these students did however write the exams in their language of tuition (mostly English). At the date of this study only Afrikaans and English were used as languages of tuition at South African universities.

1.2 Problem Statement

Assessment of the professional competence of accountants has been a cause of disagreement for decades. Various changes in the format have taken place in the not so distant past. The split between Part 1 (Mainly Accounting, management accounting and income tax) and Part 2 (mainly auditing) comes to mind followed by the introduction of the compulsory 18 month practical experience before Part 2 (administered by the IRBA) can be attempted. There was also the introduction by SAICA of the part 2 Financial Management exam for students taking the 'topp' specialisation route for qualification. The effort to move toward an exam that is as close as possible to a real life professional situation is obvious in all these changes, including changing the format to OBA. Although there will always be resistance to change, the introduction of OBA seems to be quite controversial.

The changes in the format of the exam in a short period of time are further proof that uncertainty with regard to the application of OBA exists. The difference in opinion amongst

academics, often of the same institution, as to how teaching and assessment should be approached is also problematic.

There are differing opinions on the format: closed-book, partial open-book, full open-book or any material. There is also difference of opinion as to when students should be exposed to OBA in their academic careers. There is a fair amount of scepticism as to whether the intended outcome of OBA is actually achieved with some having the opinion that it is detrimental to the quality of learning.

It is therefore clear that uncertainty exists as to whether the objectives of OBA are being achieved and what the best format of the open-book exam should be.

1.3 Research objectives

The research objectives are divided into general and specific objectives.

1.3.1 General objective

The objective of this research is to gain a better understanding of how OBA has affected the learning and teaching environment in the training of professional accountants.

1.3.2 Specific objectives

The specific objectives of this research are:

1. To perform a literature study of recent research done on OBA;
2. to assess the usefulness of OBA with specific reference to whether students and lecturers are of the opinion that SAICA and the IRBA have succeeded in reaching their objectives with the implementation of open-book assessment;
3. to compare the view of lecturers and students on whether lecturers changed their approach to teaching compared to when assessment was done by means of a closed-book exam;
4. to gain an understanding of the effects the open-book policy had on the study behaviour of students from the viewpoint of both students and lecturers;
5. to gain an understanding of the effects the open-book policy had on the behaviour of students when writing exams from the viewpoint of both students and lecturers;
6. to get the opinion of students and lecturers on when students should be exposed to open-book assessment;
7. to determine what the best format (closed-, partially open, fully open or any material) for the exam is from the viewpoint of both students and lecturers;
8. to determine how the fact that allowed texts are only available in English affected students who receive tuition in Afrikaans and
9. to make recommendations as to how teaching and assessment should be approached in an OBA environment.

1.3.3 Expected benefit of the research

The sooner clarity is reached on whether the open-book exam is actually a move in the right direction and as to how it should be applied, the better for students, teachers and ultimately the profession as a whole. This study aims to provide more clarity on the various contentious issues surrounding OBA.

1.4 Organisation of the research

Chapter one provides a background on the contentious issues surrounding OBA and outlines the problem statement and research objectives. Reference is also made to applicable research findings on the matter.

Chapter 2 provides a review of relevant research conducted both locally and internationally. Methodologies and findings are summarised and where necessary the relevance and conclusions are further commented on.

In chapter 3 the data utilised and the methodology applied by this dissertation are described. Limitations of the study are also discussed.

Chapter 4 critically analyses and discloses the findings. Empirical results are also compared with findings as reported in other studies described in Chapter two.

Chapter 5 contains a summary of the findings, concludes the research and makes recommendations for further research opportunities.

In the next chapter, relevant literature on OBA is reviewed and critically judged.

2 REVIEW OF RESEARCH LITERATURE

2.1 Introduction

In the previous chapter an overview of the issues surrounding OBA with specific reference to the South African context was given. From this a number of research objectives were set of which the first one is to do a literature review. In this chapter the review is done and it starts with a brief summary and dividing literature into 10 areas, addressing secondary objective 1. After that, the literature is discussed in chronological order rather than per objective as most studies cover more than one objective and the context of each study is important in making conclusions.

2.2 Summary of the literature review

The research conducted regarding OBA is varied in its approaches and subject fields. Most of the literature cuts across the following fields:

- the affect it has on student learning
- the affect it has on exam behaviour
- the affect it should have on teaching strategies

These fields are interrelated and therefore the approach was to present each study on its own instead of trying to group it into one of the abovementioned fields.

2.3 Areas to be covered

The following areas have been covered in other research studies relating to student perceptions, as seen in the following paragraphs:

1. Anxiety of students when writing exams
2. Performance of students in OBA compared to CBA
3. Effect on study behaviour
4. Increasing trend in competency development and the move away from studying
5. Effect on lifelong learning
6. Adaptation of teaching strategies to prepare students for OBA
7. Note-making in texts

8. Role that memory plays in learning cultures
 9. Effect of OBA on levels of thinking
 10. Different ways of applying OBA
-

2.3 Literature study

To make the discussion more systematic and easier to follow the previous studies have been divided into three groups.

2.3.1 Research of 1951-1982

In an article by Tussing (1951) he mentions the weaknesses of traditional (closed-book) examinations. Students with better memories obtain higher grades where the most proficient ones are actually those who can utilise the taught material the best. He describes the study behaviour of students as being the typical 'cram-unload-and-forget-method', which ultimately leads to an undesirable result.

Fear of forgetting is also mentioned as being detrimental to the performance of students. He argues that reasons for adopting OBA are:

- Determining ability to integrate information;
- Emphasis on application rather than memorisation;
- Questions emphasise reasoning above rote memory;
- Cramming is eliminated;
- Lessening of emotional strain before exams; and
- Tests are a closer resemblance to real life situations.

After implementing OBA he found that questions were adopted towards the utilisation of learned information to solve real life problems. It also leads to a shift in emphasis in the presentation of material. He acknowledges that preparing questions for OBA is more difficult than for closed-book exams.

The issue of time is also addressed and he feels that time limitation can differentiate the degree of familiarity with the subject matter.

No empirical evidence is presented in the study to substantiate these claims, but it does indicate the general perceptions about OBA that have been tested in the other studies discussed in this dissertation.

In a study at the University of Hawaii among child psychology students (Kalish, 1958), the performance of two groups of students who wrote the same exam, one group under open-book and the other under closed-book conditions, was measured.

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The findings were as follows:

- The performance of the two groups was the same in the exam, regardless of whether they were allowed to access material or not.
- Some students performed relatively better in open-book exams while others performed better in closed-book exams. It was derived that open-book exams measure different abilities than closed-book exams.
- Ratings by students of the benefit of open-book exams were not related to marks obtained in the exams.

In the study, no changes were made to the type of exam questions or tuition when compared to the traditional closed-book approach.

At the University of Wisconsin a study (Feldhusen, 1961) was done among 90 educational psychology students where they were assessed by means of open-book tests for both 'essay' type and 'objective' exams. Their perceptions on the new way of assessment were gauged by means of a questionnaire that was completed anonymously at the end of the course one week before the final exam (which was a closed-book exam).

The major findings were as follows:

- They felt their performance was the same in the closed-book and open-book tests.
- Cramming and memorisation were reduced.
- Students were equally split on whether the:
 - amount of reviewing was reduced;
 - amount of reviewing stayed the same or
 - whether allowing books and notes had little effect on the amount of reviewing.
- The tendency to cheat is reduced.
- Anxiety was reduced.
- OBA promotes learning during tests better than CBA.
- OBA is preferred to CBA and they intend to apply the method when they are teachers themselves.

No mention is made in the study of whether the setting of questions or teaching methods were adapted for the new way of assessment.

In a study among mature social work students (Jehu et al., 1970) the group was split in two and the students were allowed to use notes on alternating exams. Examiners also endeavoured to set questions that tested higher-order thinking. Their emotional state before and after the exams and sleeping patterns were gauged with a checklist. Furthermore,

students gave their opinion on their preference of exam type as well as other comments on the experiment.

The conclusions reached were that anxiety levels had not been reduced before the exam, but there was a significant reduction in anxiety levels while writing the exam.

At Florida State University a study was done among first-year geology students (Tanner, 1970) where students were also divided into two groups that wrote similar tests but one group was allowed to use their notebooks (not textbooks) while the others were not allowed to access any materials. This was done for four tests and the arrangement of allowing notebooks was alternated between the two groups. The overall performance of the students in the respective tests was then compared.

The conclusion was that when the tests were at a useful level of difficulty there was no difference in achievement. From comments made by students, the author further concluded that students did not prepare as well for the open-book tests as for the closed-book tests.

A study at a chemistry department among second-year students (Betteridge, 1971) was done where an open-book exam paper was introduced as the fourth part of the final exam. The other three papers were in a closed-book format. Lecturers initially reported difficulty in setting questions for this exam but felt at the end of the experiment that the questions were worth the effort that was put in.

Some of the findings were that answers were in general shorter in the open-book exam due to less 'waffling' by students. Furthermore, most students performed more or less the same in both types of exams with 20% of each class showing a marked difference between the two. A questionnaire was distributed among students from which the following results were obtained:

- 80% thought the exam was fair;
- 80% approached the exam in a different way than for the conventional exam, but they were equally divided as to whether this different approach was worth encouraging;
- 70% thought that the open-book paper should be kept part of the 2nd year studies but 70% were also opposed to it being included in the final degree exams;
- 40% favoured conventional exams; 30% open-book and 30% multiple choice exams;
- 70% felt under less pressure and
- most students felt the amount of books allowed should be limited.

The remark is made that the open-book exams could be used in later years of study to differentiate between the students' abilities to handle data well. The author propagates a 'judicious blend' of closed-book, open-book and multiple-choice exams.

In a study among 600 grade 12 secondary school mathematics students in the province of Alberta (Michaels and Kieren, 1973), the students wrote open and closed-book tests after which their performances, attitudes and anxiety levels were measured. The questions were set as if for closed-book tests. The findings were as follows:

- Students scored higher marks when knowledge and comprehension were tested in the open-book setting, but their performances were similar for application questions in both closed and open-book settings.
- Students were less anxious in the open-book setting.
- The attitudes of students towards the two settings were more or less similar.
- Students with better attitudes performed better while there was no relationship between anxiety levels and performances.

The authors concluded that there is a strong case for using open-book exams as assessment method for mathematics.

In Denmark a study was done in a physiology course among 120 medical students (Krarup, 1974) who were usually assessed by means of open-book exams. In the aforementioned studies, official exams were closed-book exams, which meant that the issue of whether fact learning suffers under open-book testing could not really be tested effectively. In this study, students were divided into two groups and wrote tests alternating between a closed-book and an open-book setting. In this instance students were actually not used to being tested in a closed-book setting. Only 15% of the marks of the tests were allocated for the pure recalling of facts.

The findings were that students performed better in the recall questions but scored similarly in interpretation and problem-solving questions when the two types of settings were compared. Students agreed in a survey that they benefited more from the recall question type than from problem-solving questions when they had access to books.

The authors advocate the use of open-book exams mainly due to the influence on the quality of questions and the effect on the working habits of students where books should be aids to thinking and not a substitute for it.

When Francis (1982) did a search on literature relevant to OBA, not more than 20 references were found. He made a very useful summary of all these studies spanning from

the study done in 1951 by Tussing to 1982 when he documented his findings on the introduction of OBA in a course in English Literature.

The summary is as follows:

1. Advantages of open-book examinations	
1.1 Reduces students' test anxiety	(Brockbank, 1968; Feldhusen, 1961; Jehu et al., 1970; Michaels and Kieren, 1973; Tussing, 1951)
1.2 Reduces need for memorising factual material	(Bacon, 1969; Betteridge, 1971; Feldhusen, 1961; Jehu et al., 1970; Tussing, 1951)
1.3 Reduces cheating by students	(Feldhusen, 1961; Tussing, 1951)
1.4 Factual knowledge still learnt	(Bacon, 1969; Krarup, 1974)
1.5 Promotes learning during testing	(Feldhusen, 1961)
2. Disadvantages of open-book examinations	
2.1 Students waste time using study materials during the examination	(Bacon, 1969; Jehu et al., 1970)
2.2 Amount of learning of study material is reduced	(Kalish, 1958; Tanner, 1970)
2.3 Students fail to answer questions	(Jehu et al., 1970)

3. No difference between open-book and traditional examinations	
3.1 No difference between levels of attainment on open-book and traditional examinations	(Brockbank, 1968; Feldhusen, 1961; Kalish, 1958; Jehu et al., 1970; Tanner, 1970)
3.2 No relationship between amount of assistance (from material) and attainment in open-book examination	(Kalish, 1958; Michaels and Kieren, 1973)
3.3 Preparing for open-book examination did not affect revision methods	(Feldhusen, 1961)
4. Other findings	
4.1 Weaker (<i>low scoring</i>) candidates do better in open-book than traditional examinations	(Betteridge, 1971; Paulker, 1974; Schumacher et al., 1978)
4.2 Open-book examinations should assess different abilities to those assessed by traditional examination	(Bacon, 1969; Feldhusen, 1961; Kalish, 1958)
4.3 Open-book examinations assist higher attainment on recall rather than on questions testing higher skills	(Krarup, 1974; Michaels and Kieren, 1973)

He mentions that most authors agreed with the statement made by Bacon(1969) that, ... the open-book examination makes straight the way to a greater concentration on ideas and concepts, on methods and development, whilst reducing the body of knowledge that needs to be remembered for an examination, and which will probably not need to be retained after the examination.

The study of Francis was done among 500 candidates in 30 schools and colleges of further education. An alternative open-book examination was given to an experimental group who also received teaching aimed at preparing students for the open-book exam. The questions

and answers of these students were compared with those of the traditional group by a panel of examiners that used a specific set of assessment criteria.

He concluded that the level of achievement attained by the OBA candidates was superior to that of the closed-book candidates and that the OBA candidates also had a more satisfying and rewarding learning experience. Over-reliance on using and over-annotation of texts were typical problems that were encountered.

OBA led to a reduction in anxiety levels but most students still memorised information citing insufficient time in the exam to look up answers as their main reason. Most candidates felt they did not waste unnecessary time needlessly looking through texts. Stronger candidates apparently benefited more than the weaker ones from the OBA approach.

Francis concludes that there are no clear reasons that OBA cannot be widely introduced, on the condition that exams are carefully designed and advantages and disadvantages are fully understood.

2.3.2 Research of 1983-2000

Boniface (1985) examined the relationship between the performance of students and how much they used notes during the exam. The study was performed among second-year design and analysis students. Observers were used to record the behaviour of students during the exam. A questionnaire was used to gauge aspects regarding the preparation for, experiences during and attitudes towards the examination. The findings were as follows:

- The amount of time spent accessing texts was negatively related to scores.
- Weaker students (based on previous scores obtained) spent more time consulting texts.
- Students reported that they spent less time preparing for the open-book test than what they would have for a closed-book test. A remark was made by the author that research can be done on the quality of preparation as well.

The author recommends that students must be adequately prepared on the techniques required to be successful in open-book exams.

A study at Cyprus University (Theophilides and Dionysiou, 1996), among 173 students enrolled in an introductory course on the foundations of education, aimed to determine the major functions of OBA and to determine how these functions vary with students' exam anxiety level and expected graduation grade. From the start, the teaching strategy was aimed to promote higher-order learning and students were in all tests and tasks required to apply higher-order thinking by having to analyse and synthesise information by means of

application questions. The exam tested the same higher-order thinking and students were allowed to bring in textbooks and notes.

Students were required to complete a questionnaire after which the data was factor analysed. Five major functions associated with OBA were identified, namely:

- creative use of knowledge gained;
- course content mastery;
- student self-evaluation and feedback;
- reduction of examination stress; and
- student self-regulation in course studying.

The anxiety levels of students and expected graduation grades did not have a significant influence on the perception of students of the functions of OBA.

The study suggests that deep learning is achieved by two major activities: students consult various sources and then they integrate this information. Learning therefore becomes personalized and study skills such as note taking and textbook studying are promoted. Students were also of the opinion that OBA reduced their exam stress.

In another study where 2 groups took the same exam, the one group on an open-book basis and the other on a closed-book basis (Koutselini-Ioannidou, 1997), the difference in marks obtained were insignificant. In this study, the teaching strategy was to encourage a deep approach to learning, active learning was encouraged, and memorisation was de-emphasised. The final exam also tested higher-order learning and was up to a standard expected in an OBA environment. They concluded that when higher-order skills and critical thinking are tested OBA does not measure different abilities than closed-book examinations. There also was a negative correlation between marks obtained and the number of students who consulted texts during the exam. The writer also refers to other studies that concluded that lecturers should provide students with strategies for acquiring and using information. Process-oriented instruction in learning and thinking strategies, help students to adopt a deeper approach to their learning. These findings emphasise that teaching strategies must be adopted to ensure that students benefit the most from OBA.

In another very liberal study in the engineering field (Baillie and Toohey, 1997), the researchers decided after consulting various studies on OBA to introduce a "power test" for second-year engineering students in a materials management course. This test would be open-book, with a generous amount of time allowed (up to a full day) while students could also consult with fellow students, as they might in professional practice, and even visit the library if they wished to. The amount of textbooks was limited and the consultation with

fellow students had to take place outside of the exam hall at set times. To minimise the risk of cheating, students were not allowed to take anything out, or bring anything into the exam hall after the exam had started.

The previous year the department changed their teaching approach to focus on deeper learning, while they assessed students by means of a closed-book exam. After they had analysed the results, they concluded that they did not achieve the desired change to higher thinking. After changing to OBA, they were of the opinion that the desired shift to deeper learning did take place. The conclusion is that if the change to higher thinking levels must take place, not only tuition methods need to be altered, but the assessment method as well. The authors are further of the opinion that if lecturers introduced students to OBA in their first year (even to a limited degree) the success would have been greater. The new way of assessment did cause some anxiety among students probably due to the prospect of facing the unexpected, even though lecturing staff exposed them to a trial exam in the OBA format. A number of students were not happy with the new form of assessment, which resulted in the conclusion that they may have retained a surface approach to learning.

Maharg (1999) focused on open-book examinations and its implications for effective legal education. He argues that the traditional requirement that students need to memorise law has deep cultural roots. It goes back to centuries when there was a scribal literary culture where memory was seen as more reliable than print. In a print culture, the situation has reversed and "the book" is seen as the reliable and objective source. He argues that current law students are still required to memorise but are not getting support for this mnemonic activity from the print culture and the educational environment, as was the case in a scribal literary culture. He states that:

‘the mysterious Other that students wrestle with in the examination hall is mnemosyne, memory itself’.

He further states that the change in the exchange and production of legal information in the last few decades has necessitated that teaching and assessment must adapt to accommodate this change. The Royal Commission on Legal Services in Scotland recognised this and recommended in 1980 that the reliance on rote learning be reduced, especially concerning problem-solving questions. The Commission saw OBA as a move that would enhance "practice-oriented learning".

He presents a case study where OBA was introduced for the first time in the examination for the Diploma in Trading Standards when "blank" statute books were allowed to be used in the examinations. He mentions that when the controlling body took the decision on the format of OBA, none of the existing literature on OBA even found its way into the debate. He refers to

other sources, that support his view of legal academics being “notoriously uninterested in educational research and its practical application to the teaching of the law.” They tend to place more emphasis on determining the content of the syllabus than on considering the learning process.

This observation might also be true for lecturers in South Africa who are involved in the training of accounting professionals. Few lecturers have formal educational training with the most important criteria for appointment being a Chartered Accountant. Training offered to lecturers by universities would have been useful if they actually applied it, however a number of universities’ accounting departments give little consideration to innovative teaching methods as propagated on these induction courses. As is the case with the Maharg’s research, if one may argue that more emphasis is placed on content than on critical evaluation of the learning process.

Maharg (1999) refers to a number of research studies done on the role that memory plays in learning, with a substantial body of research saying, “Learning happens not by recording information, but by interpreting it”. There is also substantial proof in literature that there is not necessarily a direct link between memory and good problem-solving skills.

He is very critical on the decision of not allowing annotations, post-its etc. that leads to students having to use texts they do not “own”. In interviews conducted with students, he concludes that access to the blank texts actually heightens student’s anxiety about assessment where they saw the blank texts as actually being part of the difficulty of the exam instead of being an aid in solving problems. When they asked students to choose between annotated text and blank texts, they unhesitatingly chose the annotated texts. Maharg argues that the blank open-book exam altered the familiar boundaries of closed-book assessment but denied students the “tools” they used in performing their day-to-day professional duties.

Allowing students to take in their notes in a first-year module in Legal Skills had students overwhelmingly endorsing the assessment method. The fact that they were able to use the same material they used for learning when they were assessed, had the positive results of students taking responsibility in deciding how to prepare for the exam and deeper learning was prioritised as rote learning was minimised.

The skills-based learning movement has been at the forefront of challenging the rationale behind memorising great tracks of “black letter law”. This movement emphasises the skill components that underpin learning instead of the weight of memorised “black-letter law”. It is learner-centred rather than content- (“corpus”)centred. What legal professionals do with the legal information is more important than substantive knowledge of law. Although memory plays a roll here, it is not pre-eminent.

In conclusion, Maharg states that beneath the debate about assessment there are deeper issues: how the profession views what it does, how practitioners should be prepared and models of teaching and learning. Various researchers have done studies on the relationship between theory and practice and he argues that whatever model of this relationship is preferred, will affect preferences of assessment methods. Propagators of the technical-rationality model that separates doctrine and theory, and applies it to practice will prefer closed rather than open-book and blank open-book rather than annotated open-book. If Schön's model of the reflective practitioner is preferred, then assessment methods that put legal doctrine and theory into context as much as possible, in what Vygotsky defined as "the zone of proximal development", will be preferred.

At the University of Cyprus a study (Theophilides and Koutselini, 2000) that compared students' perceptions of closed-book and open-book exams was done among education majors.

In preparing for the exams behaviour for the closed-book exam favoured:

- memorising;
- attention to facts and information;
- studying assigned texts only;
- applying surface study and
- postponing preparation until the end of the semester.

For the open-book exam behaviours that differed most from the closed-book exam were:

- higher-order thinking;
- practising study skills;
- in-depth study;
- studying beyond assigned reading and
- interrelation of acquired information.

During the examination the behaviours that differed most in favour of the open-book exam were:

- working creatively;
- better use of material;
- application of critical thinking;
- analyses and syntheses and
- deep probing.

The study confirms that assessment methods influence students' learning behaviour and that open-book exam reduces anxiety among students. Higher-order thinking is promoted more by OBA than by closed-book assessment.

One of the most comprehensive studies (Eilertsen and Valdermo, 2000) concerning OBA was done in Norway among upper secondary school learners. The study was performed over a 2-year period and involved an approach where teachers were trained and supported to implement OBA in their classes. The overall goal of the project was to encourage testing at cognitive levels beyond recall, also referred to as higher taxonomical levels of teaching and learning. The researchers investigated the effect that OBA had on changes in teaching and learning strategies, with specific focus on its taxonomical level.

The findings are especially useful for lecturers who want to implement teaching strategies to change the level of learning of students to higher taxonomical levels. The culture of rote learning caused difficulty for many students to adapt to OBA, some even preferring the traditional way of assessment that mostly requires the reproduction of information as it appears in textbooks or handouts, even if it meant that they would not have access to texts. The researchers emphasise the importance to prepare students for the new assessment strategy and to assist them in changing their learning habits. Nevertheless, most students adapted well to the change and showed an understanding of the benefits in changing their learning habits to higher taxonomical levels.

The acceptance of OBA was better amongst students who were exposed to a "rich variety" of learning methods such as group work, projects and excursions, which were also found to encourage meta-cognitive development i.e. making students more aware of how and at which level they are thinking. The development of tests and assignments for OBA proved to be a challenge requiring imagination and creativity. They disagree with Bailey & Toohey (1997) who puts "synthesisation of information from a variety of sources" forward as a requirement of OBA. Eilertsen and Valdermo (2000) state that this does not have to be a requirement to make OBA successful.

Interesting techniques applied in OBA were amongst others "Open Notebook", and "partly open-book". The Open Notebook allowed students to use only their notebooks in exams. They found that this led to better note taking, more varied and reflective writing and better student participation in general. The partly open-book meant that a part of a test would be close-book, while they allowed students to use notes and texts for the other part. The researchers experimented with this to counter other research findings that suggested that OBA lead to inadequate preparation by students. They are however of the opinion that the problem of inadequate preparation will decline if OBA is applied over a period of time and that students need to learn that they need to be prepared as well (if not better) for OBA than for closed-book exams. The fact that all teachers who participated in the study still applied

OBA 3 years after the study is an indication of its merits, being a positive contribution to teaching and learning at higher taxonomical levels.

In a South African study (Miller et al., 2000) conducted among 512 first-year psychology students revealed that the pattern of achievement for students were similar for open-book, multiple-choice and essay-type questions. They introduced four open-book tests, which tested higher order knowledge as part of the continuous assessment of students. These tests together with two essay assignments contributed one third of the final mark. The final exam was close-book and consisted of one-half essay type questions and one-half multiple-choice questions. They concluded that despite attempts to alter assessment methods to test for different skills, the relative performance of students remained stable, i.e. weak students performed poorly in all types of assessments and vice versa. Students' performance in questions that tested memory was the same in relation to questions that tested application of knowledge.

2.3.3 Research since 2000

In a study in engineering education (Chan, 2003) 178 students were interviewed on learning approaches, exam writing and their opinion of OBA. He also interviewed teachers on exams. The teachers were generally positive about OBA for all final-year subjects, which, according to them are integrated, application and design-based and real-life open-ended problems. The majority of the students also viewed OBA in a positive light. The conclusion was that based on the feedback of the students OBA does promote a deep-learning approach better than a closed-book exam.

He also argues that when lecturers implement OBA the conventional "single direction" lecturing mode be replaced with an interactive mode and that the focus should be on the processing of information rather than the reproduction thereof. He puts forward problem-based learning and project-based assignments as approaches that can be helpful in teaching in an OBA environment.

At the University of Botswana a study was done among Engineering students(Shine et al., 2004). From this, it is apparent that in the field of engineering education there is division as well, on whether exams should be open-book or close-book. There seems to be a cultural division where the British system favours close-book and the Continental European system favours open-book exams.

They argue that resistance to OBA among academics might be due to a realisation that it is much more demanding to set questions for OBA. The tests in the experiment were

computer-based and they promote it as an assessment tool appropriate for OBA, given its ability to promote application of knowledge in contrast with recall. They also give the cost effectiveness of this assessment method as a reason for making OBA more relevant if one takes the current funding pressures universities are facing into account.

For the empirical study, the marks of the same group of students were compared for both open-book tests as well as closed-book tests. They concluded that OB tests do not necessarily yield higher marks than CB tests. OB exams are encouraged, if lecturers are willing to adopt their teaching methods and are committed to the process. Training should also be provided to these lecturers in the design of OB examination.

In a study done among undergraduate physiology students (Vanderburgh, 2005) open-book exams were introduced together with a student authored exam. The exams were in the form of multiple-choice questions that required from students to integrate multiple terms and concepts. At the end of the course student feedback by means of questionnaires indicated, that OBA was well received by and beneficial to students. He further concluded that it might also promote a higher level of critical thinking.

In an article where the rationale of the format of the OB exam of the IRBA in South Africa is explained (Rowlands and Forsyth, 2006), the focus is on the philosophy that the professional accountant needs to have certain required knowledge “embedded”, in other words memorised, to respond to situations in practice. When required knowledge is not embedded, the accountant is expected to have the knowledge management skills to acquire this knowledge. This is at the heart of the decision to allow only certain texts into the exam and to limit the notes made in these texts to only provide explanation as to what is in the text. They state that the statutory authority (IRBA) has the view that approximately 75% of information addressing a problem should be “embedded” while students are required to refer to texts for the rest.

At the same time, exam questions should test knowledge at higher taxonomical levels (which has been the case with professional accounting examinations). Examiners must distinguish, when questions are set, between what is considered testing “embedded” or “accessible” knowledge, and marks (therefore time as well) should be allocated accordingly. This implies that examiners and students should be able to distinguish between the two types of knowledge.

To test the application of this concept the views of students as to whether or not questions are testing “embedded” knowledge were obtained and compared to the view of the examiner. For embedded knowledge there was a substantial correlation between the views

of examiners and students while the same cannot be said of questions testing non-embedded knowledge, with only 43,4% of students agreeing with the view of the examiner. The authors however still concluded that there is sufficient evidence to justify the abovementioned approach, citing that amongst others “there is no expectation that the judgement of examiners and the perception of candidates should be the same”.

This study considers the question whether knowledge should be memorised to be considered “embedded”. When students prepare there will be uncertainty with regard to what they have to commit to memory. Obviously, knowledge in texts not allowed into the exam hall must be committed to memory. What about information in allowed texts? Does the examiners consider part of that to be memorised and consequently allows no time for consulting texts? If so, then which part? The subjective nature of these decisions and its realisation are likely to cause students to be more anxious before exams. From the results of the experiment, more than half of the students considered knowledge to be embedded, which the examiner classified as non-embedded. It might also be proof that students might still prepare for these exams as if they were closed-book exams, with the exception of only certain parts of allowed texts. The consequences of considering a part of text to be tested as non-embedded while the examiner tests it as embedded, with the resulting reduction in time allowed, can have negative consequences on the performance of the student.

At a medical school in the USA the researchers tested the response of students to the introduction of an open-book exam. (Broyles et al., 2005) The University has two campuses that had the same multiple-choice exam. In the experiment, they allowed the students of the one campus to consult their textbook while writing the exam while students from the other campus were not allowed to use textbooks. In previous years the average marks obtained were almost similar at the two campuses, the open-book students’ average increased with 4%, which in the context of the study is statistically significant. It was however not enough to influence the final grades of students.

Students taking the open-book tests in general focused less on memorizing content but rather on understanding concepts. They appeared to approach the learning material as a whole with the orientation of a generalist to the knowledge base. Because of the positive results and acceptance by students, they implemented OBA at both campuses the following year.

The researchers are of the opinion that lecturers must advise students on how to prepare for OBA. They also suggest that some of the questions in their question bank need to be

changed, to assure that application of knowledge is tested and that students cannot merely look up answers.

They also state that the skill of finding relevant information quickly is becoming more important in the medical profession. Some physicians' view of 'I saw this in the past, I know what to do' needs to change to ensure they use the latest and clinically most relevant information to treat particular cases. They state that management of knowledge and its application need to be the focus, instead of retention of facts, and recommend the use of open-book tests.

Phillips (2006) did a study where, in an effort to enhance study skills among introductory biology students, open-book tests were introduced. These tests did not replace the traditional CB exams, but was introduced as additional assessment opportunities to encourage students to actually read their textbooks. As is commonly known students would rather refer to handouts, summaries etc. (and pressure is applied to lecturers to provide this) than to discover the knowledge themselves. In this particular course, some students even commented that textbooks were unnecessary.

To encourage reading of the textbook they introduced three open-book tests. Time was limited in order that students had to have read the text beforehand to locate the requested information in time. They divided students into three groups based on their initial marks: weak, moderate and strong. They monitored the progress of each group throughout the academic year. Weak students showed a dramatic improvement from the first to the third test, where moderate students showed a smaller improvement with strong students showing no improvement. On a further positive note, it also resulted in impromptu discussions, initiated by students, based on reading done.

He concluded that lecturers can use OBA successfully to assess and improve the study skills of particularly weaker students. He further recommends that first-year students be encouraged or required to enrol for training in study skills.

The improvement in performance of the weaker students might have been due to a realisation that they needed to work harder. The same behaviour might have been encountered under a closed-book assessment environment.

In another South African study among final-year accounting students (Lancaster, 2006), the writer mentions that when students are first given the opportunity to use texts in exams they often view this as 'knowledge', while it is actually still 'data' or 'information'. Critical thought is not applied and the result is a very shallow understanding of the text. This results in time

wasting in exams when paging through texts occur and often the result is a direct quote of the text out of context of the question.

In a short survey among 82 CTA students, 90% indicated that access to annotated texts were beneficial in the exam. Seventy percent indicated that the OBA process could be improved. Amongst others, students suggested more time in the exam to consult texts, better guidance in class in terms of annotation techniques and exposure to OBA earlier in their academic careers. More than 71% of students were also of the opinion that access to the texts in the exams and tests improved their knowledge of the texts. It also surfaced that some students avoided these texts when preparing for exams previously (for closed-book exams). Due to the texts being available, students actually started using the texts in preparing for the exams. Ninety-two percent of students also indicated that they annotated their texts mainly to save time and making texts clearer by using their own words. Maharg (1999) also refers to this benefit of 'personalising' texts. The problem that students might prioritise this 'personalising' above understanding texts and applying the resulting knowledge is also mentioned.

He puts précis writing forward as a strategy that can assist students to develop the inherent logic of the 'data-information-knowledge' process and demonstrates it by applying it to the companies' act.

In a study conducted amongst introductory biology students (Moore and Jensen, 2007) a group of students were given open-book exams during the semester (experimental group) and were assessed by means of a closed-book exam in the final exam. They assessed the control group by closed-book exams throughout the semester. The students who wrote the open-book exam performed significantly better than the control group in the open-book exam but significantly worse than the control group in the end of year closed-book exam. Furthermore, the open-book exam students showed academic behaviours that typify lower levels of academic achievement such as attending fewer lecturer and help sessions.

Moore and Jensen's conclusion is that OBA does not promote long-term learning and leads to negative learning behaviours. This study provides further proof that students' learning behaviour is definitely influenced by the way they are assessed.

What needs to be taken into account though is that both groups were taught in exactly the same way and that exam papers were identical. It is unlikely that the questions were generally testing higher levels of thinking especially if it is taken into account that it was an introductory course. In this context one can understand the negative change in learning behaviour of students where they knew they did not have to memorise information. Even

with the negative learning behaviour they still performed significantly better than the control group in the open-book tests.

2.4 Summary

When evaluating the findings of these studies it is important to take the context into account. In a number of studies the performances of two groups were compared where open and closed-book tests were used after which results were compared. The problem with these studies are that in most cases traditional teaching methods were used, questions were not necessarily adapted and final exams were usually in a closed-book format as well. It is thus unlikely that significant changes in overall learning behaviour would have taken place. Nonetheless, there is adequate proof that:

- Students' performances remained unchanged when higher-order learning was tested, regardless of whether or not they had access to texts. (Kalish, 1958:204; Michaels and Kieren, 1973:206; Krarup, 1974:163; Jehu et al., 1970:337; Betteridge, 1971:69; Koutselini-loannidou, 1997:136; Shine et al., 2004:209)
- Students are less anxious when writing open-book tests. (Feldhusen, 1961:645; Jehu et al., 1970:337; Betteridge, 1971:69; Michaels and Kieren, 1973:206; Theophilides and Dionysiou, 1996:166; Theophilides and Koutselini, 2000:391)
- Some students admitted that they put in less effort to prepare for open-book tests than for closed-book tests. (Feldhusen, 1961:645; Tanner, 1970:167; Boniface, 1985:208)
- A negative correlation between marks obtained and number of texts consulted during exams. (Koutselini-loannidou, 1997:135; Boniface, 1985:207; Francis, 1982:23)

Effects on teaching included the following:

- A realisation that students need to be specifically prepared for OBA and teaching strategies need to be adopted. (Boniface, 1985:209; Koutselini-loannidou, 1997:138; Baillie and Toohey, 1997:37; Eilertsen and Valdermo, 2000:95; Shine et al., 2004:210; Broyles et al., 2005:461)

Some studies took place where the whole teaching approach was changed to adjust to the open-book assessment environment. The major findings can be summarised as follows:

- Questions were adapted to test higher-order learning. (Tussing, 1951:600; Francis, 1982:23; Chan, 2003)

- Students tend to apply higher-order thinking more in an open-book exam environment than in a closed-book environment. (Theophilides and Koutselini, 2000:391; Eilertsen and Valdermo, 2000:98; Chan, 2003; Vanderburgh, 2005:184; Broyles et al., 2005:460)
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The next Chapter describes the research methodology that was applied in this dissertation.

3 RESEARCH METHODOLOGY

3.1 Introduction

In the previous chapter a chronological overview of previous research done on open-book assessment was presented. This chapter describes the research methodology that was followed in this study.

3.2 Definition of population

Two target groups were identified namely accounting students and their lecturers.

Students who are studying to become Chartered Accountants are for the purposes of this study regarded to be under training to become professional accountants. They have already completed an accounting degree and enrolled for a programme to obtain a Certificate in Theory of Accounting (CTA). This qualification is required by SAICA in order to gain access to the qualifying exam. SAICA accredits certain institutions to award this qualification, most of them [full-time] universities.

The student target group of the study is CTA students enrolled at [full-time] universities in South Africa during 2006. Participating universities are the Universities of Pretoria, Johannesburg, Cape Town, Stellenbosch, Free State, Rhodes, Western Cape and North-West. The Universities of Kwa Zulu Natal, Nelson Mandela Metropolitan, Fort Hare and Witwatersrand did not participate due to classes that had been completed for the year or simply because they did not respond to the request. Full-time universities were targeted because students had, at the time the questionnaires were distributed, already been exposed to open-book tests. Part-time (correspondence) universities typically do exam type assessment at the end of the year only.

CTA students of 2006 had in general been assessed by means of closed-book exams in undergraduate studies and by means of open-book exams in their postgraduate (CTA) studies. They were therefore in a position to compare the two approaches.

The lecturers were all lecturers who lecture at accounting departments at the universities of Pretoria, Johannesburg, Stellenbosch, Western Cape, Nelson Mandela Metropolitan, Witwatersrand and North West. The number of lecturers at these universities was 252 in

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total. This number is based on staff lists and contact detail lists gained from secretaries as well as websites. These lists were not necessarily 100% up to date but were assumed fairly accurate.

3.3 Data collection

Data was collected by means of an anonymous questionnaire that was handed out to the students during lecture time under supervision of lecturers. Pre-printed stationery with only crosses to be made in blocks was used for the completion and sent back to the writer. These forms were electronically captured by a scanning device and appropriate software. Error checking was done manually during this scanning process to ensure accuracy of data.

No specific ethical issues were identified and the ethics committee of the University of Stellenbosch approved the research project.

3.4 Design of questionnaire

The questionnaire (Annexure A) was compiled by taking the various research studies (Chan, 2003; Theophilides and Dionysiou, 1996; Theophilides and Koutselini, 2000) and the questionnaires they used into account. Questions were formulated to gather appropriate data to provide information regarding the research objectives set. This questionnaire was given to a few colleagues (all lecturers at the Stellenbosch University Department of Accounting) first who had to complete it and provide feedback especially regarding time and clarity as to what was required. A test run was done on five CTA students at Stellenbosch University to ensure that students were also able to complete it satisfactorily. The Statistics Department at the University of Stellenbosch was also consulted to provide input to ensure that data could be statistically analysed. The questionnaire was deemed adequate to allow meaningful statistical analysis.

This questionnaire (Annexure A) comprises the following sections:

- Personal profile and academic history
- Exposure to an open-book policy
- Changes to approach to learning, teaching and assessment
- Usefulness of permissible text and extent of use
- Benefits and constraints of open-book assessment

Some questions required “yes” or “no” answers and in others, students needed to indicate their preferences. Most questions are in the form of statements and students had to indicate their level of agreement on a 1 to 5 scale. Consideration was given to a 1 to 4 scale that would have had the benefit of making it impossible to be neutral on a statement (i.e. 3 on a 1 to 5 scale). The 1 to 5 scale was eventually chosen with a major contributing factor to the decision being that cognisance should be taken of a neutral stance towards statements as well.

The questionnaire aimed at the lecturers (Annexure B), was based on the one designed for the students. Certain adjustments, such as removing questions gauging personal study behaviour, were made to cater for the needs of the lecturers and space was provided for comments.

3.5 Definition of sample

The number of questionnaires processed was 1065. A total of 1490 students were enrolled at the different universities, which gave a response rate of 71%. In total 2185 students were enrolled at full time universities, which means that 48% of all full-time students enrolled for the CTA participated in the study.

The number of lecturers who responded was 59, which means a response rate of 23,4 % was achieved. 15 of these lecturers were CTA lecturers, which is 25,4% of the sample.

Although the response rate of the lecturers were disappointing it is considered adequate to arrive at the conclusions in this dissertation. This was confirmed by the Statistics Department at the University of Stellenbosch.

3.6 Data analysis

The types of statistical tests included:

- Frequency analysis
- Summary statistics indicating percentages of students who selected a particular option
- Ranking of preferences based on the level of agreement on statements

3.7 Limitations of the research

Due to the anonymity of the questionnaires, the results could not be compared with the actual performance of students in tests and exams. This information would have helped especially to gain an understanding as to how the study and writing habits of strong students compared with that of weak students. An attempt was made to assess this by including an indication of marks obtained in the previous year's study. Trends identified based on the correlation between this information and other responses were insignificant.

In conjunction with the lack of information on the performance of the students, are estimates made by students in completing the questionnaire with regard to time spent on making notes and consulting notes during tests. These estimates are obviously very subjective and without a reliable indication as to how students actually performed in the CTA course, the determination of correlations between the performances of students versus time spent on making and consulting notes became impossible.

Where it was deemed appropriate, views were obtained on the different subjects. After processing the questionnaires, it became apparent that many students were not allowed to bring in any material when writing management accounting tests, effectively turning it into closed-book tests. This was because the allowed texts were deemed not to have any relevance to management accounting and some lecturers prohibited its use. In some instances though, where integrated papers (i.e. more than one subject covered in the same paper) were written, students could theoretically write in the allowed texts information pertaining to management accounting. This caused a situation where data relating to management accounting must be viewed in the light of this inconsistent treatment and in some instances in this dissertation; it was omitted from analysis.

3.8 Summary

Overall, the responses from students were very good and it is disappointing that so few lecturers responded to the questionnaire. It does still provide an adequate response to make meaningful conclusions.

In the next chapter the data collected by means of these questionnaires is analysed and findings are discussed.

4 ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

In the previous chapter the research methodology was discussed and the way data was collected was described. In this chapter the results of the analysed data are discussed.

In general the results are indicated as a percentage of students who completed the question. A scale of 1 to 5 was mostly used ,with 1 being 'fully disagree' and 5 being 'fully agree'. To make analysis more understandable though, in many instances it was reduced to a 3 point scale with 1 and 2 added together to indicate disagreement and 4 and 5 added together to indicate agreement. Generally, where 3 had been selected it was considered to be a neutral response. The discussion that follows is done in the sequence of questions in the questionnaire.

4.2 Initial review and analysis

4.2.1 Profile of participants

4.2.1.1 Students

General information regarding students was gathered primarily to determine whether certain trends for groups with similar demographics do exist.

The results were as follows:

Question

		Male	Female
1	Gender	45%	55%
	Marginally more female than male students completed questionnaires.		
2-4	Language		
	Information was gathered to gain insight into the behaviour of students depending on their first language.		

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First language	Afr	Eng	Other
	46%	38%	17%

Second language	Afr	Eng	Other
	28%	60%	12%

Language in which your course is presented	Afr	Eng
	42%	58%

Language in which you write exams	Afr	Eng
	40%	60%

Although the first language of most students is Afrikaans, most students receive tuition in English. Consequently most students also wrote exams in English.

5 <i>Ethnic Group</i> <i>(Optional)</i>	Black	Coloured	White	Indian	Other
	21%	4%	67%	6%	2%

Most students were white (67%), followed by black, Indian and coloured.

7-13 Students were asked to indicate what their marks were in their previous year of study. The purpose of this was to determine whether the perceptions of "stronger" students differ from those of "weaker" students. The results were as follows:

	75-100%	60-74%	50-59%	0-49%	N/A
<i>Financial accounting</i>	13%	44%	37%	6%	1%
<i>Auditing</i>	11%	46%	39%	3%	1%
<i>Taxation</i>	16%	48%	31%	4%	1%
<i>Management accounting</i>	19%	41%	33%	4%	2%
<i>Commercial law</i> *	12%	18%	18%	1%	50%
<i>Information systems</i> *	18%	19%	10%	1%	52%

* Not all universities present Commercial Law and Information systems on third-year level.

Most students performed in the 60-74% bracket followed by the 50-59% bracket.

Question 14 gauged how many open-book tests students have written during the year:

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92% of students wrote more than 4 open-book tests in the year with 8% having written between one and four tests. This proves that students who participated in the study have had the necessary exposure to OBA to express their opinions.

4.2.1.2 Lecturers

The general information of lecturers who participated in the study was as follows:

Question

Lecturer Personal profile

1	Gender	Male 40%	Female 60%	
2	First language	Afrikaans 72%	English 28%	Other
3	Second language	Afrikaans 26%	English 72%	Other 2%
4	Language in which you present your course	Afrikaans 59%	English 21%	Both 20%
5	Years of lecturing experience? (round up to full year)	8.95 average		
6	Are you a qualified Chartered Accountant?	Yes 76%	No 24%	

From the above 6 questions the following is clear:

- Most of the lecturers were female (60%)
- Most were Afrikaans speaking (72%) while most (59%) also presented their courses in Afrikaans.
- Years of lecturing experience varied considerably with an average of 8.95 years

7	If you are a qualified Chartered Accountant, in which year did you pass the board exam?	From 1977- 2004
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All of the respondents qualified when the qualifying exam was in a closed-book format.

Indicate which subjects you currently lecture and for which group of students.

	1st yr	2nd yr	3rd yr	CTA	Other
8 <i>Financial accounting</i>	16%	10%	14%	9%	2%
9 <i>Auditing</i>	0%	5%	5%	2%	0%
10 <i>Taxation</i>	2%	5%	5%	5%	3%
11 <i>Management Accounting</i>	0%	7%	3%	7%	0%
12 <i>Commercial Law</i>	0%	0%	0%	0%	0%
13 <i>Information Systems</i>	12%	2%	0%	0%	0%

Most of the lecturers lecture Financial Accounting. Some lecturers lecture more than one subject.

14	Do you lecture students who study to become chartered accountants?	Yes 81%	No 19%
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The majority of respondents lecture with the view of preparing candidates (81%) to become Chartered Accountants with 19% lecturing other students.

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	0	1-4	>4
15 How many open-book examinations/tests have your students written in the past 12 months?	51%	11%	38%
49% of lecturers who responded have lectured students who were assessed by means of open-book tests.			

When deciding on the target population, consideration was given to only include those who actually have experience in lecturing in an OBA environment. It was eventually decided to include all lecturers involved in the training of accountants for the following reasons:

- Part of the questionnaire aimed to get the opinions of lecturers on when OBA should be implemented in the academic careers of students. Therefore, the opinions of pre-graduate lecturers were considered to be relevant, especially to gauge how open they are to commit to implementing OBA for the subjects they lectured then.
- Most lecturers are Chartered Accountants (76%) who have sat through the qualifying exam and have a good understanding of what is technically required to become a Chartered Accountant.

From the data gathered the following conclusions can be made regarding the population:

- An adequate spread of lecturers per subject was achieved to ensure all subject specific opinions are taken into account.
- Experience levels of lecturers varied greatly; between 1 and 31 years with the average per lecturer being 8.95 years.
- Lecturers who responded were mostly Afrikaans speaking and also presented their courses mostly in Afrikaans.

4.2.2 Usefulness of open-book exam

The objective addressed in this section is to assess whether students and lecturers are of the opinion that SAICA and the IRBA have succeeded in reaching their objectives with the implementation of open-book assessments. These objectives are set out in a document published by the IRBA. (IRBA, 2004)

The opinions of students as well as those of lecturers were obtained by requesting them to state whether they agree or disagree with the following statements, by using a scale of 1 to 5 where 1 is "totally disagree" and 5 is "totally agree". The opinions compare as follows:

4.2.2.1 Fairness and reliability of assessment

Question 62

The open-book approach for assessment is a **fairer** way of testing your professional knowledge and application thereof than a traditional examination.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	5%	4%	16%	26%	49%
	10%		16%	75%	
<i>Lecturers</i>	6%	13%	22%	44%	15%
	19%		22%	59%	

Question 63

The open-book approach for assessment is a more reliable way of testing your professional knowledge and application thereof than a traditional examination.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	6%	8%	24%	28%	35%
	14%		24%	63%	
<i>Lecturers</i>	9%	24%	24%	31%	13%
	33%		24%	44%	

As far as OBA being a fairer and more reliable way of assessment more students (63 %) and lecturers (44 %) agree than disagree. Lecturers are however less enthusiastic than students on the statement with fewer indicating that they agree and more indicating that they disagree.

4.2.2.2 Quality of education

Question 72

Students received **better/ more useful education** due to open-book assessment

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	10%	13%	33%	25%	19%
	23%		33%	44%	
<i>Lecturers</i>	13%	19%	33%	30%	6%
	32%		33%	36%	

Both students (44 %) and lecturers (36 %) tend to lean towards agreeing with the statement that students received better education. Students tend to agree largely with the statement while lecturers are almost equally divided on being neutral, agreeing and disagreeing.

4.2.2.3 Effect of approach to learning

Question 73

Students' **approach to learning** has improved due to open-book assessment

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	9%	17%	28%	29%	17%
	26%		28%	46%	
<i>Lecturers</i>	17%	25%	31%	23%	4%
	42%		31%	27%	

On whether students' approach to learning has improved due to open-book assessment, it is clear that students and lecturers have differing opinions. Students in general agree (46 %) while lecturers disagree (42 %). Some of the remarks made by lecturers in the questionnaire shed some further light on the concerns of lecturers that students are not preparing as well as they should:

"Although no Management Accounting/Financial Management texts are allowed we have found that our students are writing the solution to merger questions or free-cash flow questions in their Legislation handbooks - in other words recipes to answering questions. This however they believe is a substitute to understanding the work - once again I believe that open-book assessments in certain cases have resulted in a loss of depth of knowledge and understanding - the book now contains all they need!"

"I am really convinced that open-book assessment has resulted in candidates no longer thinking about many issues. Total reliance is placed on the book's content - they often are unable to apply the content in the books allowed during assessments."

"Students have a false sense of security when in an open-book examination and think they do not have to study AT ALL."

"In my opinion open-book has become a crutch, and students prepare less than 5 years ago."

4.2.2.4 Appropriateness to assess knowledge

Question 74

Open-book assessment resulted in tests, exams and assignments to be more appropriate to **assess** students' knowledge.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	5%	12%	32%	30%	21%
	17%		32%	51%	
<i>Lecturers</i>	11%	11%	28%	40%	9%
	22%		28%	49%	

Most students and lecturers seem to agree with this statement.

4.2.2.5 Assessment of professional proficiency

Question 75

Open-book assessments are a **better way of testing students' abilities to apply integrated knowledge, skills and professional values** appropriate to the practice of a Registered Accountant and Auditor at entry level than closed-book assessments

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	3%	9%	20%	34%	34%
	12%		20%	68%	
<i>Lecturers</i>	9%	9%	15%	45%	21%
	18%		15%	66%	

Most students and lecturers seem to agree quite strongly with this statement (68% of students and 66 % of lecturers respectively).

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4.2.2.6 Enhancement of student's responsibility

Question 76

The change to open-book assessment resulted in lecturers requiring of students to **take responsibility** for their own **learning** and to **manage** their **knowledge** effectively.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	6%	11%	23%	35%	24%
	17%		23%	59%	
<i>Lecturers</i>	8%	8%	21%	44%	19%
	16%		21%	63%	

Most students and lecturers seem to agree with this statement (68% of students and 63 % of lecturers respectively).

4.2.2.7 Enhancing skills to deal with knowledge expansion

Question 77

Open-book assessment is a **better means of addressing the ever-increasing demands made by society for professionals** to have access to and be able to meaningfully use information in an age of rapid knowledge expansion than closed-book assessment.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	3%	4%	18%	34%	40%
	7%		18%	74%	
<i>Lecturers</i>	4%	4%	19%	56%	19%
	8%		19%	75%	

Most students and lecturers seem to agree strongly with this statement. (74% of students and 75 % of lecturers).

In general it can be deduced from the information gathered, that students and lecturers agree that the IRBA has achieved the desired results with OBA, except that lecturers seem

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to be of the opinion that there has been a negative impact on the approach to learning by students.

4.2.3 *Format of the exam*

The following objectives were addressed in this section:

- To get the opinion of students and lecturers on when students should be exposed to open-book assessment and
- To determine what the best format (closed-book, partially open-book, fully open or any material) would be for the exam from the viewpoints of both students and lecturers

The first section aimed to gain an understanding regarding “how open” students and lecturers reckon exams should be. Due to the difference in the nature of subjects, opinions were asked on each subject in pre-graduate years.

The results were as follows:

4.2.3.1 *Allowed Materials*

Select the materials that should, in your opinion, be permissible in the venue during an open-book examination

Q	Students		Lecturers	
	Yes	No	Yes	No
79	61%	39%	88%	12%
80	93%	7%	54%	46%
81	58%	42%	25%	75%
82	48%	52%	24%	76%

If only the views of lecturers of CTA courses (comprising 25% of respondents) are taken into account the results are as follows:

Q	CTA Lecturers	
	Yes	No
79 Current allowed texts (without notes)	69%	31%
80 Notes made in current allowed texts	64%	36%
81 Limited volume of separate notes (e.g. 1 Arch lever file)	46%	54%
82 Other sources of information including textbooks	31%	69%

The above question was included in the questionnaire due to the decision made by SAICA and IRBA to allow certain texts only in the exam venue. Textbooks and class notes are not allowed in the exam venue. Based on the literature studies done it seems that in most cases when exams are open-book, textbooks and other class notes are allowed as well. The format of the exam is thus important with the limitations placed on what students may bring into the exam venue placing it somewhere between a closed and open-book format.

Question 81 was also brought in to explore options to overcome the space problem when 'any material' is allowed. With the volume of information that students are expected to handle space in the exam hall may indeed be a problem, unless more space is provided for exam writing. Limiting the volume of material might solve this problem and contribute to better planning by students as to what they bring in with them.

From the opinions gauged, the preference of students to a more 'open' exam is clear, compared to that of the lecturers. Most lecturers (54%) and students (93%) agree that notes should be allowed in current texts.

Most students (58%) however feel that a further 'limited number of separate notes' should be allowed where only 25% of lecturers agree with this option. Interestingly CTA lecturers, who have OBA experience, are more open to this idea with 46% of them in favour of this option.

Almost half (48%) of the students are in favour of allowing any material into the exam while only 24% of lecturers agree.

4.2.3.2 Level of introduction of open-book assessment

For the next section the following definitions were given in the questionnaire:

- *Closed-book* = no material permissible
- *Partial open-book* = certain texts permissible (as per SAICA policy) but additional notes not permissible to be made in texts
- *Full open-book* = current SAICA policy i.e. texts plus any notes to be made in permissible texts
- *Any material* = Any text (including any handbooks/notes) are permissible

Participants were asked to indicate at which level and the extent that they believe students should be exposed to full or partial open-book exam policy in the various subjects for every year of study.

The results were as follows:

Q	S = Students view L = Lecturer's view	<i>Closed-book</i>		<i>Partial open-book</i>		<i>Full open-book</i>		<i>Any material</i>	
		S	L	S	L	S	L	S	L
83	Postgraduate level : all subj.	14%	9%	7%	34%	37%	47%	43%	11%
	<u>Under-graduate level</u>								
	First year								
84	<i>Financial Accounting</i>	83%	94%	12%	6%	3%	0%	3%	0%
	Second year								
85	<i>Financial Accounting</i>	59%	77%	31%	19%	7%	4%	3%	0%
86	<i>Auditing & Commercial Law</i>	61%	64%	26%	33%	9%	2%	4%	0%
87	<i>Taxation</i>	48%	55%	27%	30%	21%	15%	5%	0%
88	<i>Management Accounting</i>	71%	77%	16%	19%	8%	2%	4%	2%
	Third year								
89	<i>Financial Accounting</i>	17%	30%	30%	53%	42%	17%	10%	0%
90	<i>Auditing & Commercial Law</i>	28%	33%	28%	40%	34%	26%	10%	0%
91	<i>Taxation</i>	15%	30%	25%	39%	50%	26%	11%	4%
92	<i>Management Accounting</i>	41%	47%	21%	40%	27%	12%	10%	2%

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Question 83 confirms the feedback from Questions 79 to 82 that students favour an 'any material' format where lecturers prefer the 'full open-book' format. 43% of students favoured the 'any material' format while only 11% of lecturers agreed.

For the first two years of study, most students and lecturers are of the opinion that the closed-book format is better, except for taxation where only 48% of students favoured the closed-book option while the rest favoured some kind of open-book format. However, 55% of lecturers felt that 2nd year taxation should still be a closed-book examination.

For the third year of study however, less than 50% of both students and lecturers favoured the closed-book format, with the rest favouring some kind of open-book format. Students favoured the full open-book format where lecturers favoured the partial open-book format. In general, participants favoured taxation to be the most 'open' of the subjects with management accounting being the least 'open'. For all subjects only about 10% of students favoured the any material option for the third year where almost no lecturers favoured this option.

Interestingly the views of CTA lecturers were as follows:

	Closed-book A	Partial open-book B	Full open-book C	Any material D
Postgraduate level (Hons/CTA) : all subjects	15%	23%	46%	15%
<u>Under-graduate level</u>				
First year				
<i>Financial Accounting</i>	92%	8%	0%	0%
Second year				
<i>Financial Accounting</i>	54%	38%	8%	0%
<i>Auditing & Commercial Law</i>	50%	40%	10%	0%
<i>Taxation</i>	50%	42%	8%	0%
<i>Management Accounting</i>	73%	18%	9%	0%
Third year				
<i>Financial Accounting</i>	31%	31%	38%	0%
<i>Auditing & Commercial Law</i>	40%	20%	40%	0%
<i>Taxation</i>	42%	17%	42%	0%
<i>Management Accounting</i>	60%	10%	30%	0%

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It seems as if CTA lecturers are more in favour of earlier introduction of OBA, especially in the second year of study:

Indicating a preference of closed-book assessment:

Second year

Financial Accounting

Auditing & Commercial Law

Taxation

CTA Lecturers	All lecturers
54%	77%
50%	64%
50%	55%

This might be significant in that the reason for this shift might be due to frustrations with negative learning behaviour encountered among CTA students when exposed to OBA for the first time in their academic careers, where other lecturers have not yet encountered this.

Some of the opinions expressed by lecturers:

“Given the incredible volumes of work students have to master these days, particularly in Financial Accounting, I can understand the logic for using an open-book approach. The biggest hesitation I have to saying whether or not this is the ideal approach is - what is the depth of knowledge that students have in these subject areas? At lower levels, second year etc, I am of the opinion that because students are allowed to use their books during assessments, they see this as a good reason for not having to study.”

“Unfortunately, if the current situation of open-book assessments remains, then one will have to allow students to make notes in the texts - how do you police this otherwise? By introducing open-book assessments too early in the university curriculum, students do not build the foundation required to master the respective subjects.”

“Given my earlier comment that students tend to think that they do not have to study the theory at all, I feel strongly that students should have closed-book exams for at least the first two study years, this then forces

them to study the theory and get a sound theoretical background first before we start introducing open-book exams.”

“Students need to take more responsibility for their own learning in order to be successful in an open-book exam. However, it is doubtful whether students have the capacity to take on such a responsibility at an undergraduate level.”

“At a stage, first to third year, students must learn the important stuff. If you are in a meeting with some one, you cannot refer to your textbook the whole time.”

“Extra notes made in accounting standards could lead to better understanding of the work but should not be the focus of the student.”

“I feel that maybe open-book should be allowed only at CTA/Honours level, as we have 3rd year accounting students who don’t even know the definition of an asset by the time they obtain a degree! That surely cannot be right! Students need adequate theoretical background, and this should be ‘studied by rote way before the open-book should be contemplated.”

“I believe that students should not memorise information that in practice they will in any case obtain from a textbook. What is the sense in memorising information that you will never be required to know by heart. “

“The SAICA legislation handbook is used in every lecture. I read some sections with them, help them with interpretation, highlighting and adding additional notes.

I am definitely in favour of the open Act exam.”

4.2.4 Preparation (including teaching)

The research objective that this section deals with is to gain an understanding of the effect the open-book policy had on the study behaviour of students from the viewpoint of both students and lecturers. The relevant opinions of students were compared with those of the lecturers.

4.2.4.1 Volume of work mastered

Question 59

An open-book examination is better than a closed-book examination as I master more work than I would have if it were a closed-book exam.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	9%	9%	21%	26%	34%
	18%		21%	60%	
<i>Lecturers</i>	15%	31%	24%	18%	13%
	46%		24%	31%	

The difference in opinion between lecturers and students is clear. It confirms the perception of lecturers that students' approach to learning has not improved due to open-book assessment, as is evident in Question 73 under the Usefulness of OBA section in this dissertation. Quite possibly lecturers are more sceptical about the 'mastering' component of the question than the quantity component.

4.2.4.2 Effect on deeper learning activity

Question 60

When preparing for the exam students **spend less time on memorising information, formulas etc.** and more time working through integrated questions and in-depth study than they would have for a closed-book exam.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	4%	3%	10%	24%	58%
	7%		10%	82%	
<i>Lecturers</i>	13%	11%	15%	42%	20%
	24%		15%	62%	

From the above result it safe to assume that students agree strongly with the fact that less rote learning takes place and that they spend more time performing higher-learning activities. Most lecturers also agree with the statement, although considerably less than the students. (62% versus 82%)

4.2.4.3 Time utilised for making notes

Question 58

Students could use their preparation **time** for examinations better by studying the content instead of writing notes in the permissible texts

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	21%	26%	24%	12%	17%
	47%		24%	29%	
<i>Lecturers</i>	7%	4%	9%	40%	40%
	11%		9%	80%	

This result again confirms the belief of lecturers that students rather engage in the 'shallow' activity of making notes instead of making an effort to understand the content. The notes then become a crutch that inevitably breaks during the exam. Again, as in Questions 59 and 73 there is a big difference in opinion between students and lecturers.

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4.2.4.4 Coaching on how to prepare for OBA

Question 16-19

Have you received any coaching regarding the approach or been taught the best technique when **preparing** for an open-book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	23%	26%	29%	16%	7%
	<i>Auditing</i>	28%	26%	27%	14%	6%
	<i>Taxation</i>	18%	19%	25%	25%	13%
	Average	23%	24%	27%	18%	8%
		47%		27%	26%	
<i>Lecturers</i>		17%	21%	38%	17%	7%
		38%		38%	24%	

In the table above, management accounting was left out due to the risk of skewing results. The lecturers' response is based on a question they were asked on whether they coached students to prepare them for OBA. Only lecturers who had OBA teaching experience were asked for their opinion.

Most students and lecturers seem to agree that not much coaching took place with the majority indicating 3 or lower (74% and 76% respectively).

4.2.4.5 Change in teaching approach

Question 32-35

Did lecturers adapt or change their approach to teaching after the implementation of the open-book policy for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	52%	22%	16%	6%	4%
	<i>Auditing</i>	53%	21%	16%	7%	4%
	<i>Taxation</i>	48%	19%	19%	7%	6%
	Average	51%	21%	17%	7%	4%
		72%		17%		11%
<i>Lecturers</i>		14%	18%	36%	21%	11%
		32%		36%		32%

For this question only the opinion of lecturers who taught students who were assessed by OBA were asked and management accounting's result was also left out for the same reason as stated earlier. The average response for the other three subjects was calculated because the difference between the responses was insignificant. Lecturers' responses were not subject specific and therefore it was decided to make a general comparison rather than a subject specific one.

Most lecturers selected the middle road with 36% indicating a 3 on the scale, 32% the 4 and 5 on the scale and 32% the 1 and 2 on the scale. Students on the other hand felt strongly that there had been no or very little change in the teaching approach of their lecturers with around half of them indicating that there was no change in approach and 72% indicating a 1 or 2 on the scale. The difference in opinion between students and lecturers is obvious.

4.2.4.6 Change in approach to studying

Question 24 - 27

Does your approach or technique in **studying for and preparing for examinations** with the view on writing an exam (based on an open-book policy) differ from the approach you would previously have followed in preparing for a traditional examination or test for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	13%	19%	22%	26%	20%
	<i>Auditing</i>	13%	15%	19%	27%	26%
	<i>Taxation</i>	10%	14%	18%	32%	26%
	Average	12%	16%	20%	28%	24%
		28%		20%		52%

In the table above, management accounting was left out again due to the risk of skewing results. The average was calculated due to insignificant differences between the responses per subject.

Most students seem to be in agreement that there has been a change in their learning approach with 52% indicating a 4 and 5 on the scale. Only 10%-13% indicated that there was no change in their approach at all. If this result is evaluated in conjunction with Question 60, the conclusion can be made that OBA caused a change in the approach to learning of students in that they are more engaged in deeper-learning activities.

4.2.4.7 Adequacy of education

Question 15

Do you believe that your previous **university education** adequately prepared you to answer an exam for which an open-book policy has been implemented?

61% 39%

Yes	No
-----	----

From the above question it seems that although they are of the opinion that little change took place in the approach to teaching of lecturers, most students feel that overall they were adequately prepared for assessment.

4.2.4.8 Note Making

	Disagree		Neutral	Agree	
	1	2	3	4	5
56: • I have difficulty in deciding what notes to add to the permissible texts.	22%	22%	23%	15%	18%
	44%		23%	33%	
57: I started preparing for the examination earlier by reading and placing tags on books.	11%	12%	22%	25%	30%
	23%		22%	55%	
54: There is too little space in the permissible texts to write in everything I want.	16%	12%	20%	15%	37%
	28%		20%	52%	

Questions 56, 57 and 54 were more specifically aimed at the note-making component of students' preparation. Most students indicated that they do not have much of a problem on deciding what notes to add to the texts. The fact that 33% agree that they have difficulty in deciding and 23% being neutral show that there still is a significant portion of students who might benefit from guidance or earlier exposure to OBA to master the skill of note making.

The majority agreed that the lack of space in texts is problematic for making the notes they deem necessary. It concurs with the response to Question 55:

4.2.4.9 Time spent on making notes

Question 55

I waste time when preparing for the exam to copy information from other sources into the permissible texts. It would be better to allow other sources in the exam as well.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	13%	15%	20%	15%	37%
	28%		20%	52%	
<i>Lecturers</i>	17%	17%	19%	25%	23%
	34%		19%	48%	

This question challenged the decision to allow notes to be made, but only in the allowed texts. This might have resulted in time being spent on copying existing notes into the texts, which could have been utilised better. Students and lecturers seem to agree on this (52% and 48% respectively).

4.2.4.10 Time spent on making notes

Estimate the percentage of time spent on **making notes in the allowed texts** when preparing for examinations per subject

Q

		0%	0%-5%	5%-10%	10%-25%	>25%
93	<i>Financial Accounting</i>	2%	25%	29%	27%	16%
94	<i>Auditing</i>	9%	19%	24%	24%	23%
95	<i>Taxation</i>	2%	15%	25%	31%	28%
96	<i>Management Accounting</i>	21%	30%	19%	17%	13%

The above question is obviously very subjective and hardly reliable. An attempt was made to gain an understanding into the note-making behaviour of students, also referred to as 'preparing texts'. This was included specifically due to concerns raised by lecturers in the past.

The only worthwhile analysis would be to compare the perceptions of students per subject and possibly in general. Students seem to make more notes for taxation than for other

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subjects. 28% of students indicated they used more than 25% of their preparation time to make notes for taxation. If the data is considered to be reliable the conclusion can be made that the majority of students (more than 75%) in general spend less than 25% of their preparation time on making notes in texts.

4.2.5 Writing examinations

This section deals with the research objective of aiming to gain an understanding of the effects the open-book policy had on the behaviour of students when writing exams from the viewpoint of both students and lecturers.

Due to the difference in nature of subjects, opinions per subject were required. Where it was deemed meaningful the opinion of lecturers were also acquired and compared with that of the students. The results are as follows:

4.2.5.1 Coaching exam writing

Questions 20-23

Have students received any coaching regarding the approach or been taught the best technique to employ when **writing** an open-book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	19%	25%	29%	20%	7%
	<i>Auditing</i>	24%	27%	28%	15%	6%
	<i>Taxation</i>	16%	21%	28%	24%	11%
	Average	20%	24%	28%	19%	8%
		44%		28%		27%
<i>Lecturers</i>		14%	28%	28%	21%	10%
		42%		28%		31%

In the table above, management accounting was again left out due to the risk of skewing results. The average was calculated due to insignificant differences between the responses per subject and to make it comparable with the responses of lecturers.

Students and lecturers seem to agree that very little coaching was given on how to write an exam with more than 42% choosing a 1 or 2 on the scale. T

The most coaching was done for taxation, and the least coaching was done for auditing.

4.2.5.2 Approach to answering questions

Questions 28-31

Does your approach or technique in answering questions (based on an open-book policy) differ from the approach you would previously have followed in a traditional examination or test for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	19%	23%	27%	18%	12%
	<i>Auditing</i>	20%	22%	24%	19%	15%
	<i>Taxation</i>	17%	21%	23%	24%	15%
	<i>Average</i>	19%	22%	24%	21%	14%
		31%		24%		35%

From the above there seems to be a significant change in the approach followed by students with 59% of respondents indicating a 3-5 on the scale. For taxation the change in technique was the most notable and for accounting the least.

4.2.5.3 Approach to setting questions

Questions 36-39

Did lecturers adapt their approach to **setting questions** after the implementation of the open-book policy for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
<i>Students</i>	<i>Financial Accounting</i>	31%	20%	20%	17%	12%
	<i>Auditing</i>	30%	20%	22%	17%	11%
	<i>Taxation</i>	31%	22%	22%	15%	10%
	Average	30%	21%	21%	16%	11%
		51%		21%	27%	
<i>Lecturers</i>		7%	11%	16%	44%	22%
		18%		16%	66%	

For this question there is a definite disagreement between lecturers and students. 51% of the students feel that there has not been much of a change by selecting a 1 or 2 on the scale with 49% having selected a 3 – 5. Lecturers however feel there has been a definite change with 66% choosing a 4 or 5 on the scale. This can also be gathered from comments made by lecturers:

'Especially applicable to theoretical questions: students do not earn marks for transcribing theory directly from the standard, but for the application of the theory.'

'Questions focus more on testing insight and application of theoretical knowledge than just testing the theory itself.'

'Theory questions can't be asked straight forward - it must be made practical. More detailed calculation questions can be asked since they have the Act.'

'An open-book exam puts pressure on students to apply their knowledge; there should be very few marks for knowledge, which makes it more difficult.'

'I am of the opinion that there is more focus currently on application of the relevant theory and less focus on recalling and studying by rote. Marks awarded for theory are awarded because candidates identified its relevance and no longer just because they could recall it. The emphasis is currently much more on understanding the theory and principles and converting understanding into marks. I do however believe that candidates who leave the majority of theory for the exam (i.e. to look it up while writing the exam) will not be successful and therefore the approach to preparing for exams has not changed that significantly.. Candidates should also know what is in the Standard should they need to look up one or two things.'

'There is most definitely a vast change in how theory questions should be approached by students, as well as a change in mark allocations for theory questions.'

'Theory questions in particular were more interpretive, and more severely marked, needed to be context specific.'

4.2.5.4 Use of texts

Question 40 - 43

To what extent do you currently use your permissible text during the examination, using a scale of 1 to 5, where 1 is "not at all" and 5 is "extensively".

	1	2	3	4	5	
40: Financial Accounting (avg:6.86/10)	2%	17%	34%	30%	17%	
	19%		34%	47%		
41: Auditing (avg:6.52/10)	10%	18%	30%	23%	20%	
	28%		30%	43%		
42 : Taxation (avg:7.87/10)	2%	8%	21%	34%	36%	
	10%		21%	70%		
43 : Management Accounting (avg:5.25/10)	29%	20%	22%	17%	12%	
	49%		22%	29%		

Students seem to use permissible text mostly for Taxation, followed in a distant second by Financial Accounting with Auditing close on its heels. For these three subjects the indication is that students do actually use their texts to a large extent with more than 70% choosing a 3-5 on the scale. Management Accounting is last, probably due to the fact that at many universities it was assessed in a closed-book format.

4.2.5.5 Usefulness of allowed texts

Rate the usefulness of the permissible texts during an examination where 1 is "not useful at all" and 5 is "extremely useful".

		1	2	3	4	5
Q	<u>The SAICA Students Handbook:</u>					
44	Volume 1 (IFRS)	5%	6%	12%	24%	53%
45	Volume 2 (Auditing)	11%	21%	28%	21%	20%
46	Volume 3 (Ethics/Circulars); and Volume 4 (Exposure Drafts).	41%	28%	17%	9%	6%
47	SAICA Legislation Handbook	4%	3%	7%	16%	70%
48	The Public Accountants and Auditors Board Manual of Information (one volume)	36%	19%	25%	10%	11%
49	Own notes made in the permissible texts	3%	2%	9%	20%	67%

The above feedback correlates with the opinions in questions 40 to 43. The Legislation Handbook, including tax legislation is regarded the most useful text together with own notes made in texts. The International Financial Reporting Standards are also seen as quite useful, followed by the auditing standards.

4.2.5.6 Anxiety before exams

I am **less anxious** before the exam than I would have been if it was a closed-book exam (per subject)

	Disagree		Neutral	Agree	
	1	2	3	4	5
50 : Financial Accounting					
<i>Students</i>	21%	17%	23%	20%	20%
	38%		23%	40%	
<i>Lecturers</i>	14%	11%	26%	40%	9%
	25%		26%	49%	

	Disagree		Neutral	Agree	
	1	2	3	4	5
51 : Auditing					
<i>Students</i>	18%	18%	25%	19%	21%
	36%		25%	40%	
<i>Lecturers</i>	7%	7%	31%	41%	14%
	14%		31%	55%	

	Disagree		Neutral	Agree	
	1	2	3	4	5
52 : Taxation					
<i>Students</i>	14%	13%	21%	21%	31%
	27%		21%	52%	
<i>Lecturers</i>	5%	8%	16%	43%	27%
	13%		16%	71%	

	Disagree		Neutral	Agree	
	1	2	3	4	5
53 : Management Accounting					
<i>Students</i>	32%	17%	21%	14%	16%
	49%		21%	30%	
<i>Lecturers</i>	13%	33%	30%	13%	10%
	36%		30%	23%	

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Except for Management Accounting, which was assessed at many universities in a closed-book format, students and lecturers agree that OBA brought down anxiety levels. For Taxation the agreement is much stronger, with Financial Accounting and Auditing having an almost equal percentage of students agreeing and disagreeing with the opinion leaning slightly towards a reduction in anxiety.

It seems as if lecturers overestimated the reduction in anxiety levels with a significantly higher percentage of lecturers agreeing with the statements than students.

The following remark made by a lecturer sheds further light on the topic:

‘Students are still anxious about exams despite their open-book preparation. This is due to the fact that the exam is much more understanding-focused. I do however believe that students are starting to understand the work better and are learning to use the standard to get to the final answer.’

4.2.5.7 Time restraints

Question 61

To be beneficial more time should be permissible during examinations for consulting permissible texts.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	7%	11%	19%	22%	42%
	18%		19%	66%	
<i>Lecturers</i>	22%	20%	25%	20%	13%
	42%		25%	33%	

From the above comparison it is clear that students disagree with lecturers by lobbying for more time while lecturers disagree more. 33% however agrees with the statement.

A lecturer commented as follows:

'The Financial Accounting syllabus is overloaded; therefore, students will feel a bit less anxious in the exam knowing that the definitions etc are available. However, the time constraints of the exam do not really allow them to use their "open books". As the SAICA exam needs to test accuracy under time constraints, this dilemma will always exist.'

4.2.5.8 Time spent consulting texts

Estimate the percentage of time that you spend per exam on consulting the permissible texts and notes.

Q	0%	2-5%	5-10%	10-20%	>20%
64 Financial Accounting	1%	30%	35%	21%	13%
65 Auditing	9%	33%	26%	18%	14%
66 Taxation	1%	13%	27%	31%	28%
67 Management Accounting	31%	34%	17%	10%	7%

Again students seem to use their texts for Taxation the most. A lecturer's remark:

'I get the impression that students in fact think they do not have to spend time studying and reading the theoretical work at all as they have their books with them when they write exams. Hence they spend too much time during a test paging through their books looking for answers. Ideally, your textbook is an emergency measure that you may use during a test. I certainly do not think the idea is that they should come to a test to start reading the theory for the first time, when they should already know it and use the time to apply it.'

4.2.5.9 Effect on Performance

Do you believe the open-book policy benefited your performance during examinations, using a scale of 1 to 5, where 1 is "no benefit at all" and 5 is "very beneficial".

68 : Financial Accounting		1		2		3		4		5	
<i>Students</i>		6%	12%	28%	31%	24%					
		18%		28%	55%						
<i>Lecturers</i>		6%	32%	41%	18%	3%					
		38%		41%	21%						

69 : Auditing		1		2		3		4		5	
<i>Students</i>		11%	15%	27%	25%	23%					
		26%		27%	48%						
<i>Lecturers</i>		11%	21%	36%	32%	0%					
		32%		36%	32%						

70 : Taxation		1		2		3		4		5	
<i>Students</i>		4%	6%	19%	31%	40%					
		10%		19%	71%						
<i>Lecturers</i>		0%	14%	33%	36%	17%					
		14%		33%	53%						

71 : Management Accounting		1		2		3		4		5	
<i>Students</i>		29%	18%	22%	15%	16%					
		47%		22%	31%						
<i>Lecturers</i>		21%	41%	31%	7%	0%					
		62%		31%	7%						

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In general students feel OBA has improved their performance in the exam. Again Taxation came out on top followed by Financial Accounting and Auditing. Management Accounting's result should again be viewed in the light of the closed-book format in which it was assessed in many instances.

Lecturers are again more sceptical than students with more choosing the lower end of the scale and fewer choosing the higher end of the scale.

4.2.6 Language

This question dealt with the language issue of texts only available in English while it is their second language:

Question 78:

Students who study in a language other than English have a disadvantage due to the fact that the permissible texts are only available in English.

	Disagree		Neutral	Agree	
	1	2	3	4	5
<i>Students</i>	16%	12%	19%	17%	36%
	28%		19%	53%	
<i>Lecturers</i>	7%	13%	30%	35%	15%
	20%		30%	50%	

Students and lecturers seem to agree with the fact that some of the prescribed texts are only available in English and that it places students who study in another language at a disadvantage (53% and 50% respectively).

4.2.7 Summary

In this chapter the data collected was analysed and discussed. In the next chapter conclusions are made by also taking other literature on the subject into account. Recommendations based on these findings are also made.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In the previous chapter the data was collected (as described in chapter 3), analysed and discussed. In Chapter 2 relevant literature studies were discussed, which addressed secondary objective 1. In this chapter conclusions based on these chapters are made by bringing the empirical evidence into context with findings of other studies. Where applicable, recommendations for the way forward are also made.

5.2 Usefulness of open-book exam

The objective addressed in this section is to assess whether students and lecturers are of the opinion that SAICA and the IRBA have succeeded in reaching their objectives with the implementation of open-book assessments. (IRBA, 2004) (Secondary objective 2.)

This research objective has been achieved in that the responses of students and lecturers gave clear evidence as to where they stand on the matter. The details of these results are described in par. 4.2.2.

Based on the responses of students and lecturers it can be deduced that OBA:

- *Is more appropriate to assess students' knowledge than CBA with 51% of students agreeing and 49% of lecturers agreeing. Only about 20% disagreed with around 30% being neutral. (par. 4.2.2.4)*
- *Is a fairer and more reliable way of assessing the knowledge of students. In answering question 62, 75% of students felt assessment is fairer with 59% of lecturers agreeing (par. 4.2.2.1). Question 63 had 63% of students agreeing that OBA is a more reliable test with 14% disagreeing. 44% of lecturers agreed while 33% of them disagreed (par.4.2.2.1).*
- *Resulted in students receiving a better and more useful education. Question 73 had 63% of students agreeing that OBA is a more reliable test with 14% disagreeing. 44% of lecturers agreed while 33% of them disagreed (par.4.2.2.2).*
- *Is better for testing application of integrated knowledge and skills than CBA. Only 14% of students disagreed while 33% of lecturers disagreed (par 4.2.2.5). This has*

been confirmed by other studies..(Vanderburgh, 2005:184; Theophilides and Dionysiou, 1996:165; Theophilides and Koutselini, 2000:391; Chan, 2003)

- Contributed towards students taking responsibility for their own learning and managing their knowledge effectively with around 60% of both students and lecturers agreeing on this (par. 4.2.2.6).
- Is a better means of addressing the constant increase in information that professional accountants are expected to use meaningfully with around 75% of students and lecturers agreeing (par. 4.2.2.7). This is confirmed for other professions in a study amongst medical students (Broyles et al., 2005:461) and legal professionals. (Maharg, 1999:231)

In conclusion it does seem that OBA is a move in the right direction to bring theory closer to practice in the training of professional accountants. The negative study behaviour typically encountered in an OBA environment seems to be overestimated and can be reduced with earlier exposure and following the right teaching strategies (see conclusion under 5.4).

5.3 Effect of OBA on student learning and lecturer teaching

The research objective that this section deals with is to gain an understanding of the effects the open-book policy has on the study behaviour of students from the viewpoints of both students and lecturers. The relevant opinions of students were compared with those of the lecturers (Secondary objectives 3 and 4).

As encountered in other studies, not necessarily due to the introduction of OBA (Newble and Jaeger, 1983:170), students' learning approach changed when the assessment method was changed. This was confirmed by this study by most students agreeing that their approach to learning did change due to the introduction of OBA. The only question remaining is whether introducing OBA is a change for the better.

Other studies found that in general OBA supports a change to deeper 'thinking' also referred to as learning at higher taxonomical levels.(Chan, 2003; Theophilides and Dionysiou, 1996:165; Theophilides and Koutselini, 2000:391; Vanderburgh, 2005:184; Broyles et al., 2005:460) This study confirmed this with the majority of students (82%) and lecturers (62%) agreeing that less memorising was done by students and their focuses shifted towards integrating knowledge and in-depth study (par. 4.2.4.2). Another positive result of OBA is that most students (55%) indicated that they started their preparation earlier by reading and

placing tags on books (par. 4.2.4.8). In a closed-book assessment environment students typically postpone their preparation to closer to the exam.(Theophilides and Koutselini, 2000:383)

When students were asked whether they mastered more work than when studying in a closed-book context, 60% agreed, although only 31% of lecturers agreed (par.4.2.4.1). Most lecturers (80%) also felt that students wasted time by adding notes to their books instead of studying the content, while only 29% of students felt the same way (par. 4.2.4.3). The perception of lecturers that students place too much reliance on their texts is evident from comments made, such as:

“I am really convinced that open-book assessing has resulted in candidates no longer thinking about many issues. Total reliance is placed on the book’s content - they are often unable to apply the content in the books being used during assessments.”

“Students have a false sense of security in an open-book examination and think they do not have to study AT ALL.”

“Open-book has become a crutch, and students prepare less than 5 years ago.”

The fact that OBA might have a negative effect on the learning behaviours of students have been found in other studies too. (Feldhusen, 1961:645; Jehu et al., 1970:337; Tanner, 1970:167; Moore and Jensen, 2007:49) It mainly boils down to an over-reliance on texts, which manifests in time wasted by trying to look up answers and students being under-prepared for exams. The question can be asked what the extent of these behaviours is. Is there a possible overreaction among lecturers? In some studies these negative behaviours were more pronounced among weaker students (Koutselini-Ioannidou, 1997:137) who would probably have performed badly regardless of the format of the exam. (Miller et al., 2000:172) In this dissertation, a fair number of students acknowledged that OBA had a detrimental effect on their study behaviour. However; the majority felt that the effect was positive.

More importantly, the possible causes for this behaviour must be investigated. Most of the studies where negative behaviour was encountered were 'pilot' studies where students were introduced to OBA for the first time. Some writers argued that over time this negative behaviour will subside as students realise the mistake of relying too much on their texts. (Francis, 1982:23; Eilertsen and Valdermo, 2000:100) Others emphasise the importance that in order to unlock the potential of OBA to improve deeper learning teaching strategies need to align with the method of assessment. (Theophilides and Dionysiou, 1996:167; Koutselini-loannidou, 1997:138; Baillie and Toohey, 1997:37; Eilertsen and Valdermo, 2000:100; Chan, 2003) To test whether this has taken place in the training of the students, specific questions on the matter showed the following results:

- Most students and lecturers felt that very little coaching took place in preparing for OBA with most (more than 70%) choosing 1 to 3 on a 5 point scale (par. 4.2.4.4).
- On whether lecturers changed their approaches to teaching 51 % of students indicated 'none at all' while only 14% of lecturers selected this option (par. 4.2.4.5).

In conclusion, it seems that OBA has changed the learning behaviour of most students to a deeper approach. Lecturers however feel that the general learning approach of students has suffered. In many instances, little change seems to have taken place in the way lecturers teach in the open-book assessment environment. If lecturers seriously address this issue, the incidence of negative learning behaviour might also decline.

Some of the teaching strategies proposed in literature to help unlock the potential of OBA to promote deeper learning are:

- Promoting note taking and textbook studying (Theophilides and Dionysiou, 1996:165)
- Process oriented instruction in learning and thinking strategies (Koutselini-loannidou, 1997:132)
- 'Rich variety' of learning methods e.g. group work, projects and excursions (Eilertsen and Valdermo, 2000:97)
- Interactive instead of single direction lecturing, focusing on processing information rather than reproduction, problem-based learning and project-based assignments (Shine et al., 2004:200)
- Précis writing (Lancaster, 2006)

Implementing these strategies might be a challenge due to, amongst other factors, the following:

- At many universities accountancy-related classes are very big with a high student–lecturer ratio. This makes interactive classes and individual feedback very difficult. Universities are usually reluctant to allocate more resources to accounting departments as these profitable courses provide valuable cross subsidising for other unprofitable courses.
- Students' feedback is often used for performance appraisal of lecturers, which puts lecturers under pressure to teach in a certain way. Summaries and notes are provided to students (often demanded by them) whereby the opportunity to develop this important learning skill goes a begging. Ultimately lecturing becomes lecturer-centred instead of student-centred.
- Uncertainty about the long-term adherence to OBA by regulatory bodies (SAICA and IRBA) can make lecturers reluctant to fully embrace and implement OBA teaching strategies sooner. There might be a fear that students can be taught following an OBA approach and when the time arrives the regulatory body might have changed the assessment method back to closed-book or a 'less open' format than students are used to.
- Resistance to change, especially if the widespread and often vocal negativity amongst lecturers towards OBA are taken into account.
- A realisation that setting questions for open-book exams are much more demanding (Shine et al., 2004:199).

5.4 Writing the open-book exam

This section deals with the research objective, which aims to gain an understanding of the effects the open-book policy had on the behaviour of students when writing exams from the viewpoints of both students and lecturers (Secondary objective 5).

The perception that students will perform better when exams are open-book, have been tested in other studies. In general it has been found that when recalling is tested students will perform better. (Krarup, 1974:163; Michaels and Kieren, 1973:206; Moore and Jensen, 2007:48; Broyles et al., 2005:460) However, when higher-order thinking was required in exams performance in open-book and closed-book exams were substantially the same.(Shine et al., 2004:209; Koutselini-Ioannidou, 1997:136) In this study students were not asked whether they thought OBA exams were easier because traditionally the CTA tests and exams are much more difficult than what they would have encountered earlier in their studies. Nevertheless, most students (55% selected a 4 or a 5 on a 5 point scale when asked how beneficial the open-book policy was on their performance) felt that having access

to texts benefited their performance in most subjects in the exam while fewer lecturers agreed (only 21% selected a 4 or a 5 on the same 5 point scale) (par. 4.2.5.9). This finding seems to follow the same trend when opinions regarding students' approach to learning were gauged with lecturers tending to be more negative about the effect of OBA.

Most students and lecturers agreed that OBA caused a reduction in their anxiety levels however, lecturers seemed to overestimate this reduction when their views were compared to those of students where 10-20% more lecturers agreed that anxiety levels were reduced (par. 4.2.5.6). This reduction in anxiety levels was found in other studies as well.(Theophilides and Dionysiou, 1996:166; Francis, 1982:24; Feldhusen, 1961:645; Jehu et al., 1970:337)

Overall students and lecturers agreed that not a lot of coaching on how to write an open-book exam took place. More than 10% more of both lecturers and students indicated a 1 or a 2 on a 5 point scale than those who indicated a 4 or a 5 (par. 4.2.5.1). Furthermore, most students felt that there was no significant difference in the way questions were set compared to a closed-book exam with 30% indicating no change at all took place. Only 7% of lecturers indicated that no change at all took place and 66% selected a 4 or a 5 on the 5 point scale when asked how many questions were adapted for OBA (par. 4.2.5.3). In this instance the views of lecturers are probably more reliable as they would be the best judges of how they set questions. This is confirmed by the following comments made by lecturers:

'Questions are more focused on testing insight and application of theoretical knowledge than just testing the theory itself.'

'Theory questions should not be asked directly – they should assess practicalities. More detailed calculation questions can be asked since they have the Act.'

'An open-book exam puts pressure on students to apply their knowledge; there should be very little marks for knowledge, which makes it more difficult.'

Traditionally CTA tests and exams assessed higher-order thinking skills of students, also when they were assessed using a closed-book format. It seems that OBA in general led to lecturers moving even further away from testing lower-order learning.

66% of students were of the opinion that more time should be allocated for consulting texts to have any benefit. Only 33% of lecturers agreed (par. 4.2.5.7). This finding among students corresponds with that of Lancaster (2006). The issue of how much time should be allowed in exams is controversial. In explaining the IRBA's time limitation on the open-book exam Rowlands and Forsyth(2006:706) states:

“Allowing unlimited time would not enable the examination to assess the candidates `embedded' knowledge as sufficient time would be available to refer to texts in situations where knowledge is expected to be embedded. It follows that where knowledge is not expected to be embedded candidates should be given the time to refer to texts.”

This explanation shows a reverence for testing memorization. (Maharg, 1999:227) The dilemma is further described in the following lecturer's comment:

'The Financial Accounting syllabus is overloaded; therefore, students will feel a bit less anxious in the exam knowing that the definitions etc are available. However, the time constraints of the exam do not really allow them to use their "open books". As the SAICA exam needs to test accuracy under time constraints, this dilemma will always exist.'

On the one hand, OBA needs to test students' abilities to access texts but on the other hand; they are expected to work under time constraints that might lead to students reverting to a closed-book learning approach anyway. Francis(1982:24) found the same behaviour among students in a study where they still memorised a lot of information due to time constraints, even when they were allowed to consult texts during the exam. The question can also be asked whether these severe time constraints reflect situations encountered in practice. In a study where unlimited time was allowed for an engineering course (Baillie and Toohey, 1997:45) results were positive, but the conclusion was made that at least some practical time constraint should be placed on the exam.

Time constraints for exams will always be a controversial issue and this study does not attempt to find a concise answer. It does however seem that severe time constraints imposed for exams diminish the advantages offered by having access to texts.

5.5 *When should OBA be introduced?*

The objective addressed in this section is to get the opinion of students and lecturers on when students should be exposed to open-book assessments (Secondary objective 6).

If it is accepted that the final qualifying exam of the regulatory bodies always is an open-book exam, at what stage should students be exposed to this format in their academic careers? Some studies reported the successful implementation of OBA at secondary-school level (Eilertsen and Valdermo, 2000:24; Francis, 1982:24) as well as at first-year university level. (Theophilides and Dionysiou, 1996:167) The same authors are of the opinion that longer exposure to OBA might lead to a decrease in negative learning behaviour originating from an over reliance on texts.

In this dissertation, students and lecturers are of the opinion that for the first two years of study a closed-book format should be used, (par. 4.2.3.2), with more than 60% of students and even more lecturers (64% and more) who indicated a preference for closed-book assessments. The only exception was Taxation, where 52% of students (vs. 45% of lecturers) selected the OBA approach for the 2nd year of study (not all universities present Taxation in the second year with some introducing it only in the third year of study).

For the third year of study most students (more than 70%) and lecturers (more than 60%) favoured some kind of open-book approach, with students favouring a more open format than lecturers. Interestingly CTA lecturers favoured an earlier and more open introduction of OBA than other lecturers. This might be due to having an expectation that it might assist in the eradication of negative learning behaviours earlier on in their studies.

In conclusion there is a strong argument for introducing OBA earlier, which seems to be well supported by students and lecturers for at least the third year of study, with significant but lesser support for the second year of study.

5.6 *Format of exam*

The objective addressed in this section is determining what the best format (closed-, partially open, fully open or any material) for the exam would be from the viewpoints of both students and lecturers (Secondary objective 7).

The frequent changes in the format of the open-book exam by the SAICA since its inception show that uncertainty as to 'how open' the exam should be exists. The decision to allow only certain texts is based on the philosophy that students need to be tested on 'embedded' (which is equated by the authors as being 'memorised') and 'non-embedded' knowledge. (Rowlands and Forsyth, 2006:706) This differentiation between the two types of knowledge is problematic due to the inherent subjectivity thereof that can have a detrimental effect on students' performance. In the study (Rowlands and Forsyth, 2006) among Honours students 56,6% of students differed with the view of the examiner on what knowledge is supposedly 'non-embedded', in other words, the examiner expected of students to look up the 'knowledge' where students felt it was 'embedded'. Based on the finding most students are probably still memorising information that examiners feel can be accessed during exams.

Apparently the regulating body expects 75% of knowledge to be 'imbedded'. (Rowlands and Forsyth, 2006:707) Memorisation is thus expected from students in preparing for the exam, despite it being an open-book exam. This reverence of memory is also found in legal educational circles and has deep cultural roots (Maharg, 1999:224) originating from the scribal culture of centuries ago. This cultural division is confirmed in an engineering education study (Shine et al., 2004:197) where it is mentioned that the British system favours closed-book and the Continental European system favours open-book exams. There is however evidence in literature that "Learning happens not by recording information, but by interpreting it" and that there is not necessarily a direct link between memory and good problem-solving skills. (Maharg, 1999:228) The skills-based learning movement that emphasises that what is done with knowledge is more important than the knowledge itself, endorses this viewpoint.

As far as placing limitations on the making of notes in texts is concerned Maharg (1999:229) was very critical of a decision by the regulating body to allow blank texts only in an open-book legal exam. He argued that it resulted in students not 'owning' the texts and disallowing

the use of their normal 'tools' they would have used in carrying out their professional practice. Other authors revere making notes as an important learning skill that should be encouraged. (Eilertsen and Valdermo, 2000:99; Theophilides and Dionysiou, 1996:165) Allowing own notes to be taken into the exam should therefore encourage this skill.

In the dissertation, paragraph 4.2.3.1, students indicated that they would prefer the exam indeed to be more 'open' than the current format with their most popular option to have access to the current texts with any annotations allowed, as well as a limited volume of separate notes with 58% of students selecting this option. Legal students in another study showed the same tendency by preferring annotated texts to the blank texts. (Maharg, 1999:229) Interestingly only 48% of students in this dissertation indicated that any material should be allowed in the exam. On the other hand, most lecturers (54%) indicated that their preferred format is currently allowed texts with any annotations. An interesting finding is that 46 % of lecturers with OBA experience were in favour of allowing a limited volume of separate notes compared to only 25% of all lecturers supporting the idea. Students' preference to a more open exam at CTA level with lecturers preferring a less open approach was confirmed by another question where the preferred format per study year had to be indicated. Students preferred the 'any material' format where lecturers preferred the 'full open-book' (i.e. current texts plus any material) format (4.2.3.2). This question did not put the limited volume of text forward as an option.

A further motivation for possibly allowing a limited volume of notes over and above the current allowed texts is that most students indicated that the limited space in current allowed texts hampers their ability to make all the notes they want. Most students and lecturers agree that unnecessary time is wasted in re-writing notes in allowed texts and that this problem can be solved by allowing other sources as well.

Given the results of this study and by taking other research into account the reasons for placing a limitation on notes or even limiting the amount of texts to a specific list does not seem to carry much weight. Serious consideration should be given to 'opening up' the exam more by allowing other sources as well.

5.7 Effect of examination language

Students (53%) and lecturers (50%) agree that students who receive tuition in Afrikaans are disadvantaged due to certain texts only being available in English (Secondary Objective 8).

5.8 Summary conclusion

This study was conducted among final-year accounting students who are preparing for the qualifying exam of the South African Institute of Chartered Accountants. They were assessed in the first three years of study by means of closed-book exams, but in their final year they were assessed by means of open-book tests and exams. Their perceptions on the effect that the introduction of open-book assessment (OBA) had on their study behaviour and whether the intended aims of introducing OBA of the regulatory bodies were achieved were gauged by means of questionnaires. Their views were compared with those of lecturers in accounting departments.

Students were generally positive about the introduction of OBA, but lecturers were less enthusiastic. The conclusion reached was that the aims of OBA are being achieved in general, in spite of negative study behaviours encountered. Furthermore, there is compelling evidence from other studies that OBA can lead to a deeper-learning approach among students, provided that teaching strategies are adapted and questions are set correctly.

The objectives set in Chapter one has (par. 1.3) been achieved:

1. A literature study of research done on OBA has been done (par.2.3).
2. The usefulness of OBA with specific reference to whether students and lecturers are of the opinion that SAICA and the IRBA have succeeded in reaching their objectives with the implementation of open-book assessments has been assessed (par. 5.2). The finding is that these objectives have generally been achieved.
3. The views of lecturers and students on whether lecturers have changed their approach to teaching compared to when assessment was done by means of a closed-book exam were compared (par.5.3). Little change seems to have taken place.
4. The effects the open-book policy had on the study behaviour of students from the viewpoint of both students and lecturers were assessed (par.5.3). Although lecturers were sceptical, students were of the opinion that there was a positive change in their study behaviour.
5. An understanding of the effects the open-book policy had on the behaviour of students when writing exams from the viewpoints of both students and lecturers were gained (par.5.4).
6. The opinion of students and lecturers on when students should be exposed to open-book assessment were gauged (par.5.5) with students favouring an earlier introduction of OBA than lecturers.

7. The best format (closed-, partially open, fully open or any material) for the exam from the viewpoints of both students and lecturers was determined (par. 5.6) with students showing a preference for a more open format than lecturers.
8. How the fact that allowed texts are only available in English affected students who receive tuition in Afrikaans was determined (par. 5.7) with students and lecturers agreeing that these students were adversely affected.
9. Recommendations as to how teaching and assessment should be approached in an OBA environment were made (par.5.9).

5.9 Recommendations

This paragraph addresses Secondary Objective 9, namely to make recommendations on the application of OBA. When making these recommendations one has to admit that there are areas of uncertainty. The strong culture and reverence for memorisation contribute to this uncertainty. Why change something that has seemingly worked well in the past?

On the other hand one has to acknowledge that as in other disciplines there seems to have been an explosion in subject related information in the recent past. With the information age getting into full swing this pressure will keep mounting. OBA can contribute in this regard to equip students better to deal with this information overload.

The following recommendations are made:

- The current format of the qualifying exam should be adapted to include an additional volume of separate notes to curb the unproductive use of time by 'preparing' books.
- More time should be allowed for students to consult their texts for OBA to make a significant difference in how students write and prepare for exams.
- To curb negative study behaviour in the final year of study, OBA should be introduced at universities in earlier years of study.
- When OBA is introduced teaching strategies must be adapted to promote deeper learning and crucially; test and exam questions must be adjusted.
- Students should get guidance on how to prepare for OBA.

5.10 Limitations

This study is based on perceptions but it has to be acknowledged that when research is done on educational matters such as these, one does not necessarily have the luxury of acquiring hard facts.

Ideally a comparative long-term study where actual performances of students are measured would have been ideal to get a better understanding of the issues at hand. Whether this can be achieved in practice is highly doubtful.

One also has to acknowledge that students might be biased to answer questionnaires such as the one used in the study with the 'hidden agenda' of having their lives made easier. Some lecturers might argue that they do not necessarily know what is good for them.

5.11 Recommendations for further research

To enhance understanding of the effects of OBA on the learning behaviour of students the following research opportunities can be pursued:

- Investigate international experience gained where other regulatory bodies introduced OBA, specifically in the training of professional accountants.
- The effect that long-term exposure to OBA has on negative learning behaviour.
- The effect that different teaching strategies have on encouraging deeper learning in an OBA environment.
- How practitioners experience the product of OBA assessment, namely, how these students perform in the workplace.

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ANNEXURES

Annexure A : Students' Questionnaire

Survey questionnaire: Honours students perception on open book examination and the impact on students learning behaviour

Please complete the following questions below either by inserting an "X" in the appropriate tick box on the answer sheet

A Personal profile and academic history

- 1 Gender

A	B
Male	Female
- 2 First language

A	B	C
Afrikaans	English	Other
- 3 Second language

A	B	C
Afrikaans	English	Other
- 4 Language in which your course is presented

A	B	C
Afrikaans	English	Other
- 5 Language in which you write exams

A	B
Afrikaans	English
- 6 Current academic registration

A	B	C	D
1st year	2nd year	3rd year	Hons/CTA
- 7 Ethnic Group (Optional)

A	B	C	D	E
Black	Coloured	White	Indian	Other

Select your final mark obtained in your previous year of study. If you did not have a particular subject as part of your curriculum, please indicate "N/A".

- 8 Financial accounting
 - 9 Auditing
 - 10 Taxation
 - 11 Management accounting
 - 12 Commercial law
 - 13 Information systems
- | | | | | | |
|---|---------|--------|--------|-------|-----|
| | 75-100% | 60-74% | 50-59% | 0-49% | N/A |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |

B Exposure to an open book exam policy

- 14 How many open-book examinations/tests have you written in the current academic year?

A	B	C
0	1-4	>4
- 15 Do you believe that your previous university education adequately prepared you to answer an exam for which an open book policy has been implemented?

A	B
Yes	No

Have you received any coaching regarding the approach or been taught on the best technique to employ when preparing for an open book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?

- 16 Financial accounting
 - 17 Auditing
 - 18 Taxation
 - 19 Management accounting
- | | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |

Have you received any coaching regarding the approach or been taught on the best technique to employ when writing an open book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?

- 20 Financial accounting
 - 21 Auditing
 - 22 Taxation
 - 23 Management accounting
- | | | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |
| A | B | C | D | E | |

C Changes in approach to learning, teaching and assessment

Does your approach or technique in **studying for and preparing for examinations** with the view on writing an exam (based on an open book policy) differ from the approach you would have previously followed in preparing for a traditional examination or test for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
24	Financial accounting	A	B	C	D	E
25	Auditing	A	B	C	D	E
26	Taxation	A	B	C	D	E
27	Management accounting	A	B	C	D	E

Does your approach or technique in **answering questions** (based on an open book policy) differ from the approach you would have previously followed in a traditional examination or test for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
28	Financial accounting	A	B	C	D	E
29	Auditing	A	B	C	D	E
30	Taxation	A	B	C	D	E
31	Management accounting	A	B	C	D	E

In your view, did your lecturers adapt or change their approach to **teaching** after the implementation of the open book policy for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
32	Financial accounting	A	B	C	D	E
33	Auditing	A	B	C	D	E
34	Taxation	A	B	C	D	E
35	Management accounting	A	B	C	D	E

In your view, did your lecturers adapt their approach to **setting questions** after the implementation of the open book policy for the following subjects using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?

		1	2	3	4	5
36	Financial accounting	A	B	C	D	E
37	Auditing	A	B	C	D	E
38	Taxation	A	B	C	D	E
39	Management accounting	A	B	C	D	E

D Usefulness of permissible text and extent of use

To what extent do you currently use your permissible text during the examination, using a scale of 1 to 5, where 1 is "not at all" and 5 is "extensively".

		1	2	3	4	5
40	Financial accounting	A	B	C	D	E
41	Auditing	A	B	C	D	E
42	Taxation	A	B	C	D	E
43	Management accounting	A	B	C	D	E

Rate the usefulness of the permissible texts during an examination where 1 is "not useful at all" and 5 is "extremely useful".

		1	2	3	4	5
44	(a) The SAICA Students' Handbook:					
	• Volume 1 (International Financial Reporting Standards)	A	B	C	D	E
45	• Volume 2 (Auditing)	A	B	C	D	E
46	• Volume 3 (Ethics/Circulars); and Volume 4 (Exposure Drafts).	A	B	C	D	E
47	(b) The SAICA Legislation Handbook	A	B	C	D	E
48	(c) The Public Accountants and Auditors Board Manual of Information (one volume)	A	B	C	D	E
49	(d) Own notes made in the permissible texts	A	B	C	D	E

State whether you agree or disagree with the following statements, using a scale of 1 to 5 where 1 is "totally disagree" and 5 is "totally agree" :

		1	2	3	4	5
	* I am less anxious before the exam than I would have been if it was a closed book exam (per subject)	A	B	C	D	E
50	Financial accounting	A	B	C	D	E
51	Auditing	A	B	C	D	E
52	Taxation	A	B	C	D	E
53	Management accounting	A	B	C	D	E
54	* There is too little space in the permissible texts to write in everything I want	A	B	C	D	E
55	* I waste time in preparing for the exam to copy information from other sources into the permissible texts. It would be better to allow other sources in the exam as well.	A	B	C	D	E
56	* I have difficulty on deciding what notes to add to the permissible texts.	A	B	C	D	E
57	* I started preparing for the examination earlier by reading and placing tags on books.	A	B	C	D	E
58	* I could have used my preparation time for examinations better by studying the content in stead of writing notes in the permissible texts.	A	B	C	D	E
59	* An open book examination is better than a closed book examination as I master more work than I would have if it was a closed book exam.	A	B	C	D	E
60	* In preparing for the exam I spent less time memorising information, formulas etc. and more time working through integrated questions and in-depth study than I would have for a closed book exam.	A	B	C	D	E
61	* More time should be permissible during examinations to consult the permissible texts for it to have any benefit.	A	B	C	D	E
62	* The open book approach for assessment is a more fair way of testing your professional knowledge and application thereof than a traditional examination.	A	B	C	D	E
63	* The open book approach for assessment is a more reliable way of testing your professional knowledge and application thereof than a traditional examination.	A	B	C	D	E

Estimate the percentage of time that you spend per exam on consulting the permissible texts and notes.

		0%	2-5%	5-10%	10-20%	>20%
64	Financial accounting	A	B	C	D	E
65	Auditing	A	B	C	D	E
66	Taxation	A	B	C	D	E
67	Management accounting	A	B	C	D	E

E Benefits and constraints of open book assessment

Do you believe the open book policy has benefited your performance during examinations, using a scale of 1 to 5, where 1 is "no benefit at all" and 5 is "very beneficial".

- 68 Financial accounting
- 69 Auditing
- 70 Taxation
- 71 Management accounting

1	2	3	4	5
A	B	C	D	E
A	B	C	D	E
A	B	C	D	E
A	B	C	D	E

Using a scale of 1 to 5 indicate in whether you agree with the following statements where 1 represents "disagree totally" and 5 "totally agree".

	1	2	3	4	5
72 • I received better/ more useful education due to open-book assessment	A	B	C	D	E
73 • My approach to learning has improved due to open-book assessment	A	B	C	D	E
74 • Open-book assessment caused tests, exams and assignments to be more appropriate to assess my knowledge.	A	B	C	D	E
75 • Open book assessment is a better way of testing my ability to apply integrated knowledge, skills and professional values appropriate to the practice of a Registered Accountant and Auditor at entry level than closed book assessment	A	B	C	D	E
76 • The change to open book assessment caused my lecturers to require from me to take responsibility for my own learning and manage my own knowledge effectively.	A	B	C	D	E
77 • Open-book assessment is a better means of addressing the ever-increasing demands made by society for professionals to have access to and be able to meaningfully use information in an age of rapid knowledge expansion than closed book assessment.	A	B	C	D	E
78 • Students who study in a language other than English have a disadvantage due to the fact that the permissible texts are only available in English.	A	B	C	D	E

Select the materials that should, in your opinion, be permissible into the venue during an open-book examination

- 79 Current allowed texts (without notes)
- 80 Notes made in current allowed texts
- 81 Limited volume of separate notes (e.g. 1 Arch lever file)
- 82 Other sources of information including textbooks

Yes	No
A	B
A	B
A	B
A	B

Please specify, by inserting a "X" in the appropriate box, at which level and the extent that you believe a student should be exposed to full or partial open book exam policy in the various subjects for every year of study.

- *Closed book* = no material permissible
- *Partial open book* = certain texts permissible (as per SAICA policy) but additional notes not permissible to be
- *Full open book* = current SAICA policy i.e. texts plus any notes to be made in permissible texts
- *Any material* = Any text (including any handbooks/notes) are permissible

		Closed book	Partial open book	Full open book	Any material
83	Post-graduate level : all subjects	A	B	C	D
	Under-graduate level				
	First year				
84	<i>Financial accounting</i>	A	B	C	D
	Second year				
85	<i>Financial accounting</i>	A	B	C	D
86	<i>Auditing & Commercial Law</i>	A	B	C	D
87	<i>Taxation</i>	A	B	C	D
88	<i>Management accounting</i>	A	B	C	D
	Third year				
89	<i>Financial accounting</i>	A	B	C	D
90	<i>Auditing & Commercial Law</i>	A	B	C	D
91	<i>Taxation</i>	A	B	C	D
92	<i>Management accounting</i>	A	B	C	D

Estimate the percentage of time spent on **making notes in the allowed texts** in preparing for examinations per subject

		0%	0%-5%	5%-10%	10%-25%	>25%
93	<i>Financial accounting</i>	A	B	C	D	E
94	<i>Auditing</i>	A	B	C	D	E
95	<i>Taxation</i>	A	B	C	D	E
96	<i>Management accounting</i>	A	B	C	D	E

Annexure B : Lecturers' questionnaire

Survey questionnaire: Lecturer's perception on open book examination

Please complete the following questions below by either inserting an "X" in the appropriate cell or entering other requested information on the spreadsheet

Personal profile

1	Gender	Male	Female	
		<input type="text"/>	<input type="text"/>	
2	First language	Afrikaans	English	Other
		<input type="text"/>	<input type="text"/>	<input type="text"/>
3	Second language	Afrikaans	English	Other
		<input type="text"/>	<input type="text"/>	<input type="text"/>
4	Language in which you present your course	Afrikaans	English	Both
		<input type="text"/>	<input type="text"/>	<input type="text"/>
5	Years of lecturing experience ? (round up to full year)	<input type="text"/>		
6	Are you a qualified Chartered Accountant?	Yes	No	
		<input type="text"/>	<input type="text"/>	
7	If you are a qualified Chartered Accountant, in which year did you pass the board exam?		Part 1	Part 2
		<input type="text"/>	<input type="text"/>	<input type="text"/>

Indicate which subjects you are currently lecturing and for which group of students.

		1st yr	2nd yr	3rd yr	CTA	Other
8	Financial accounting	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	Auditing	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	Taxation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11	Management accounting	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12	Commercial law	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
13	Information systems	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

14	Do you lecture students who are studying to become chartered accountants?	Yes	No	
		<input type="text"/>	<input type="text"/>	
15	How many open-book examinations/tests have your students written in the past 12 months?	0	1-4	>4
		<input type="text"/>	<input type="text"/>	<input type="text"/>

Only answer questions 14 to 17 if your students have been assessed by way of an open book exam:

16	Have you given coaching regarding the approach or taught the best technique to students to employ when preparing for an open book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?	1	2	3	4	5
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
17	Have you given coaching regarding the approach or taught the best technique to students to employ when writing an open book exam using a scale of 1 to 5 where 1 is "no coaching at all" and 5 is "extensive coaching"?	1	2	3	4	5
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
18	Did you adapt or change your approach to teaching after the implementation of the open book policy using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?	1	2	3	4	5
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
19	Did you adapt your approach to setting questions after the implementation of the open book policy using a scale of 1 to 5 where 1 is "no change in approach" and 5 is "significant change in approach"?	1	2	3	4	5
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Any comments regarding changes in approach (including how your approach has changed):

State whether you agree or disagree with the following statements, using a scale of 1 to 5 where 1 is "totally disagree" and 5 is "totally agree" :

		1	2	3	4	5
	• Students are less anxious before the exam than they would have been if it was a closed book exam (per subject)					
20	Financial accounting	1	2	3	4	5
21	Auditing	1	2	3	4	5
22	Taxation	1	2	3	4	5
23	Management accounting	1	2	3	4	5
24	Students should be coached or taught the best techniques to employ when preparing for and writing an open book exam	1	2	3	4	5
25	• Students waste time in preparing for the exam to copy information from other sources into the permissible texts. It would be better to allow other texts as well.	1	2	3	4	5
26	• Students must use preparation time for examinations better by studying the content in stead of writing notes in the permissible texts.	1	2	3	4	5
27	• An open book examination is better than a closed book examination as students master more work than they would have if it was a closed book exam .	1	2	3	4	5
28	• In preparing for exams students spend less time memorising information, formulas etc. and more time working through integrated questions and in-depth study than they would have for a closed book exam.	1	2	3	4	5
29	• More time should be permissible during examinations to consult the permissible texts for it to have any benefit.	1	2	3	4	5
30	• The open book approach for assessment is a more fair way of testing students' professional knowledge and application thereof than a traditional examination.	1	2	3	4	5
31	• The open book approach for assessment is a more reliable way of testing students' professional knowledge and application thereof than a traditional examination.	1	2	3	4	5

Any comments on the questions 18-29:

Do you believe the open book policy has benefited students' performance during examinations (per subject), using a scale of 1 to 5, where 1 is "no benefit at all" and 5 is "very beneficial".

		1	2	3	4	5
32	Financial accounting	1	2	3	4	5
33	Auditing	1	2	3	4	5
34	Taxation	1	2	3	4	5
35	Management accounting	1	2	3	4	5

Any comments on questions 30-33:

Using a scale of 1 to 5 indicate in whether you agree with the following statements where 1 represents "disagree totally" and 5 "totally agree".

		1	2	3	4	5
36	• Students receive better/ more useful education due to open-book assessment	1	2	3	4	5
37	• Students' approach to learning has improved due to open-book assessment	1	2	3	4	5
38	• Open-book assessment caused tests, exams and assignments to be more appropriate to assess students' knowledge.	1	2	3	4	5
39	• Open book assessment is a better way of testing students' ability to apply integrated knowledge, skills and professional values appropriate to the practice of a Registered Accountant and Auditor at entry level than closed book assessment	1	2	3	4	5
40	• The change to open book assessment caused lecturers to require from students to take responsibility for their own learning and manage their knowledge effectively.	1	2	3	4	5
41	• Open-book assessment is a better means of addressing the ever-increasing demands made by society for professionals to have access to and be able to meaningfully use information in an age of rapid knowledge expansion than closed book assessment.	1	2	3	4	5
42	• Students who study in a language other than English have a disadvantage due to the fact that the permissible texts are only available in English.	1	2	3	4	5

Any comments on questions 34-40:

Select the materials that should, in your opinion, be permissible into the venue during an open-book examination

		Yes	No
43	Current allowed texts (without notes)	Yes	No
44	Notes made in current allowed texts	Yes	No
45	Limited volume of separate notes (e.g. 1 Arch lever file)	Yes	No
46	Other sources of information including textbooks	Yes	No

Please specify, by inserting a "X" in the appropriate box, at which level and the extent that you believe a student should be exposed to full or partial open book exam policy in the various subjects for every year of study.

- *Closed book* = no material permissible
- *Partial open book* = certain texts permissible (as per SAICA policy) but additional notes not permissible to be
- *Full open book* = current SAICA policy i.e. texts plus any notes to be made in permissible texts
- *Any material* = Any text (including any handbooks/notes) are permissible

		Closed book	Partial open book	Full open book	Any material
		A	B	C	D
47	Post-graduate level (Hons/CTA) : all subjects	A	B	C	D
	<u>Under-graduate level</u>				
	First year				
48	Financial accounting	A	B	C	D
	Second year				
49	Financial accounting	A	B	C	D
50	Auditing & Commercial Law	A	B	C	D
51	Taxation	A	B	C	D
52	Management accounting	A	B	C	D
	Third year				
53	Financial accounting	A	B	C	D
54	Auditing & Commercial Law	A	B	C	D
55	Taxation	A	B	C	D
56	Management accounting	A	B	C	D