

Applying a framework-based approach to teach complex problem-solving to Accounting students

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LIST OF ABBREVIATIONS

CA(SA)	Chartered Accountant (South Africa)
CF	Conceptual Framework for Financial Reporting
CIPC	Companies and Intellectual Property Commission
FASB	Financial Accounting Standards Board
GAAP	Generally Accepted Accounting Principles
IAAER	International Association for Accounting Education & Research
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
SAICA	South African Institute of Chartered Accountants
US GAAP	United States Generally Accepted Accounting Principles

DISSERTATION SUMMARY

Title: Applying a framework-based approach to teach complex problem-solving to Accounting students

Key terms: Accounting education, Ausubel's subsumption theory, chartered accountancy, complex, constructivism, Conceptual Framework for Financial Reporting (CF), conceptual teaching, framework-based, lifelong learning, fully guided approach, minimally guided approach, International Accounting Standards (IAS), International Accounting Standards Board (IASB), International Financial Reporting Standards (IFRS), problem-solving, problem-solving ability, South Africa, students, teaching approaches, university

Accounting transactions are becoming more complex, and more extensive accounting guidance is provided on a continuous basis in the accounting standards. In addition, accounting guidance changes often and additional guidance is added to the standards regularly. In view of this immense amount of accounting knowledge that an accountant can be expected to have, exacerbated by often multifaceted structures in accounting problems, it can be challenging and onerous to solve certain accounting problems.

The premise of this study is that accounting problems can also be solved in a less complex manner with reference to the foundational accounting concepts included in the Conceptual Framework for Financial Reporting (CF). The solution to the accounting problem using the CF should result in a similar answer had the detailed, complex accounting guidance been consulted. This is based on the understanding that the detailed guidance is consistent with the CF and that the CF is not underdeveloped. In the experience of the author of this dissertation, however, the CF is rarely used to consider the accounting treatment of specific transactions and the first point of reference is usually the detailed, specific guidance.

In order to impart a practice of incorporating the CF in problem-solving, the study in this dissertation is underpinned by educational philosophies rooted mainly in constructivism, and specifically in Ausubel's subsumption theory. Applied to accounting education, this theory suggests a framework-based approach whereby educators first instill a detailed knowledge of the CF in an Accounting course and thereafter present details of specific accounting transactions by building and cross-referencing to the foundational concepts in the CF. In addition, the paradigm in Accounting courses should also incorporate problems and experiments through which students can construct their own knowledge, rather than being passive recipients of an educator's teaching style. Recent literature on

framework-based teaching suggests that such an approach is beneficial as it enhances lifelong learning.

This study reported on a framework-based approach incorporated in an Accounting course and aimed to determine students' ability to solve complex accounting problems by referring only to the CF, as well as to determine the factors that could influence their ability to solve the problems and the preferred problem-solving approach of students in facing future accounting problems. In order to address the broad aim of this study, it was divided into two sections, each to identify and analyse a different aspect of accounting problem-solving that incorporated the CF. The study in this dissertation focused mainly on an interpretive research paradigm. The first project had the primary objective of determining whether students have the ability to solve complex accounting problems by using only the CF and determining which factors could influence their ability. This was established by analysing the content and results of an assignment administered to third-year Accounting students at a South African university in which students were required to solve problems using only the CF. The second project had the objective of determining the preferred future approach students will take in solving accounting problems after they have been exposed to a framework-based assignment. This was established through qualitative measures and augmented by a questionnaire to analyse the students' perceptions.

The contributions of this dissertation are manifold and include, but are not limited to, the realisation that a conceptual approach to accounting education is beneficial in Accounting courses. The results in this study indicate that the ability of students to solve complex accounting problems by referring only to the CF may depend on the complexity of the scenario and the students' familiarity with the problem. In addition, after being exposed to a framework-based assignment, students may tend to prefer a mixed approach in solving accounting problems, which entails a combination of the concepts in the CF and specific accounting guidance governing a particular transaction. The author also believes that this study makes a practical contribution by providing an actual framework-based assignment which can be used or adapted by other Accounting educators to use in similar courses, or to help them develop similar assignments or case studies or to replicate the study.

From an educational perspective, it is recommended that Accounting educators incorporate an emphasis on the CF in their teaching approach. As students are exposed to opportunities to exercise their judgement using the concepts included in the CF, they will gain experience in this and be able to exercise better judgement in future. Each time a student is exposed to a problem requiring to be solved using the CF, or is required to make necessary judgements with regard to the CF, it will lead to the creation of new knowledge which the student can constantly link and cross-reference to existing knowledge and experiences. It also appears that, when students are exposed to problem-

solving using the CF, it may lead to accountants adopting a more balanced approach by considering more CF constructs in solving future accounting problems.

Although the study in this dissertation was conducted at only one university, its implications are by no means limited to this institution. Extrapolation of results cannot be attempted due to the nature of the research design, but the results in this study are valuable and enhance accounting education literature in better understanding students' problem-solving abilities and their preferred problem-solving approach. The research is therefore valuable to any Accounting educator, as well as the institutional bodies guiding accounting education and its syllabi. It is hoped also that some of the findings will inspire other educational institutions to promote a framework-based approach in an innovative manner.

REMARKS

The reader is reminded of the following:

- This dissertation is presented in article format in accordance with the policies of the Faculty of Economic and Management Sciences' WorkWell Research Unit at North-West University and consists of two research articles.
- In terms of the rules of the North-West University's Faculty of Economic and Management Sciences it is **not** a requirement that any of the submitted articles be published before the master's degree can be awarded.
- Each of the individual articles complies with the writing style requirements (i.e. the abstract, spelling, grammar and referencing requirements) of the specific journal to which the article was submitted.
- The author requirements and related documentation specific to each journal are included as part of the annexures at the end of the dissertation.
- The research project in this dissertation has undergone ethical review. The proposal was presented at a Faculty of Economic and Management Sciences of the North-West University Research Meeting and accepted. The Faculty Research Meeting assigned project number EMS14/08/19-01/01 (see **Annexure E** on page **121**). Ethical clearance has also been obtained from the institution at which the research was conducted, granting permission for the researcher to distribute and collect questionnaires from students in order to successfully complete the research project (ethics approval project number CF12/0940 – 2012000428) (see **Annexure F** on page **122**). Various measures were taken to ensure that ethical research was conducted, including but not limited to voluntary and anonymous participation.

CHAPTER 1:

PURPOSE, SCOPE AND EXTENT OF THE STUDY

1. Introduction and background

Accounting transactions have become increasingly complex in recent years and the application of accounting standards to these increasingly complex transactions, events and circumstances has required more specialised skills and resources from accountants (Grant Thornton, 2014). One of the contributing factors to the complexity is the vast amount of accounting guidance included in the accounting standards, together with the complexities in the guidance itself. Another contributing factor is that the specific, complex guidance often changes at rapid intervals (IFRS Foundation, 2013a).

It is proposed that an accounting problem (even a complex one) could also be solved in a less complex manner by referring to the basic accounting principles, i.e. the overarching construct on which accounting guidance is based, namely the Conceptual Framework for Financial Reporting (CF) (IFRS Foundation, 2010), which forms the backbone of accounting guidance in South Africa and most other countries. This approach to solving accounting problems suggests that a detailed understanding and knowledge of the CF could aid significantly in the application of accounting guidance to an accounting transaction, event or circumstance. It therefore makes sense to incorporate this approach in the professional education of accountants, and at the same time also assess their ability to resolve complex accounting problems whilst employing a detailed knowledge and understanding of the CF. This approach would require educators to teach Accounting by linking the specific guidance back to the overall concepts of accounting as included in the CF (Wells, 2011).

The ideas mentioned in the previous paragraph link in with the well-known educational theory of constructivism, in which Piaget (1976) indicates that when students assimilate, they incorporate new experiences into an existing framework without changing that framework. The CF is therefore the overarching construct on which new accounting knowledge is based, and each specific element of new knowledge in accounting with regard to specific standards should contribute to the existing knowledge and understanding of the CF.

In accounting for transactions, events and circumstances, there are generally two major sets of accounting standards that can be applied in the financial reporting process. These two sets of accounting standards are the International Financial Reporting Standards (IFRS) and United States Generally Accepted Accounting Principles (US GAAP) (Litan, 2002; Sawani, 2009). Whilst certain countries (amongst others, countries in the European Union, Australia, Japan and China) use their own nomenclature for their generally accepted accounting standards, these standards are largely equivalent to IFRS (Australian Accounting Standards Board, 2008; Deloitte, 2013; Dezan Shira & Associates, 2013; IFRS Foundation, 2013e; PWC, 2013; Schaub, 2005).

Each set of accounting standards consists of principles and rules, and although one set of accounting standards cannot be at either end of the spectrum and consist of a mixture of principles and rules, it is perceived that US GAAP contains more precise rules in comparison with IFRS; hence IFRS require more judgements (Alexander & Jermakowicz, 2006; Bennett *et al.*, 2006; Collins *et al.*, 2012; Hodgdon *et al.*, 2011; Jamal *et al.*, 2010; Konte, 2013; Nelson, 2003; Schipper, 2003; Wüstemann & Wüstemann, 2010). As long as these two sets of standards exist, there will be arguments for and against both approaches. Advantages of a rules-based approach are perceived to be greater comparability and consistency, but since it seems to have a “tick-box” approach, transactions could be structured to achieve a desired result. Accounting standards that are principles-based require much more judgement based on the economic reality of a transaction with a ‘substance over form’ element (meaning that accounting transactions are accounted for in accordance with their economic substance, rather than their legal form), but lack some comparability and result in more diverse reporting (Alexander & Jermakowicz, 2006; Bennett *et al.*, 2006; Benston *et al.*, 2006; Collins *et al.*, 2012; Nelson, 2003; Nobes, 2005; Schipper, 2003; Wüstemann & Wüstemann, 2010).

In South Africa, IFRS are applied as the primary set of accounting standards for various companies as specified in the South African Companies Act 71 of 2008 (CIPC, 2010). The purpose of this study was not to continue any debate or support any specific argument for or against principles-based accounting standards, but rather to focus on principles-based teaching of IFRS and solving complex accounting problems by using a principles-based IFRS approach. The fact that the study was conducted in South Africa does not, however, limit the findings to South Africa only, as IFRS are adopted in 114 jurisdictions around the globe (which require IFRS for all or most listed companies and financial institutions in their capital markets), and a further 15 reporting jurisdictions permit the use of IFRS for some listed companies (IFRS Foundation, 2015).

A variety of previous research studies suggest that accounting standards that are in majority principles-based (supported by some concrete rules which are derived from the high-level principles) would result in better and more relevant financial reporting (Dennis, 2008; Kranacher, 2010; Nelson, 2003; Nobes, 2005; Wüstemann & Wüstemann, 2010). The CF in IFRS is the framework that precedes all IFRS accounting standards and sets out the objective of financial reporting, the qualitative characteristics of useful financial information, the definition, recognition and measurement of the elements of financial statements and concepts of capital and capital maintenance (IFRS Foundation, 2010; IFRS Foundation, 2013b).

The CF is an essential element in the development of principles-based accounting standards as it creates the overall construct and accounting theory on which financial reporting is based. The International Accounting Standards Board (IASB), the regulatory body that issues the IFRS, recognises that in certain circumstances there could be a difference between the framework and a

specific standard. In the instance that a difference exists, the specific standard will prevail over the framework (IFRS Foundation, 2010). Besides any differences, the CF guides the process of standard-setting by providing the fundamental principles and foundation for detailed financial reporting standards. The CF provides structure to the process of creating financial reporting standards and ensures that standards are based on fundamental principles (Gore & Zimmerman, 2007; IFRS Foundation, 2010).

The IASB continues to progress to a more principles-based approach to standard-setting, which ultimately increases the use of professional judgement (Tweedie, 2007a; Tweedie, 2007b). This move to principles-based standards has resulted in exploring an approach to teach financial accounting on a conceptual level where the underlying principles of the CF are emphasised and used as a basis for teaching financial accounting to all students (IFRS Foundation, 2013c). Teaching with a principles-based approach would involve linking the guidance in specific standards to the concepts underlying the CF and only explaining when there is a departure in a specific standard (Hodgdon *et al.*, 2011; Tweedie, 2007a). It is also crucial to teach students to make simple and complex judgements about classification, recognition, measurement, presentation and disclosure of transactions with reference to the underlying concepts of accounting as included in the CF (Hodgdon *et al.*, 2011).

According to Barth (2013), it is crucial to teach six elements regarding IFRS and their underlying concepts:

1. Teach an understanding of the CF, including concepts relating to the objective of financial reporting, qualitative characteristics, recognition and measurement of elements and capital maintenance.
2. Teach foundational economic concepts and how to recognise the underlying economic reality of a transaction.
3. Teach current IFRS requirements with reference to the underlying economic reality of a transaction and the concepts included in the CF.
4. Teach how to make judgements using IFRS.
5. Prepare students for a global world.
6. Use practical examples by adopting a global perspective.

Literature indicates that a conceptual approach to teaching IFRS equips students with a cohesive understanding of IFRS in order to exercise the necessary judgements to adapt to changes in accounting standards at any stage of their careers (Tweedie, 2007b; Wells, 2011). Teaching at a conceptual level enhances the student's understanding of the concepts underlying financial accounting as included in the IASB's CF and contributes to lifelong learning in the field of accounting (IAAER, 2013; IFRS Foundation, 2013c).

2. Motivation and problem statement

In recent years, the accounting treatment of transactions, events and circumstances has become more complex, and more extensive accounting guidance is included on a continuous basis in the standards. As per the 2014 version of the IASB publication of a set of IFRS books entitled 'A guide through IFRS', the accounting standards consist of a total of 41 reporting standards and 21 interpretations, which encompass a total of 4 885 pages of accounting guidance (IFRS Foundation, 2014). Therefore, as discussed above, although IFRS are principles-based to a large extent, there is still a vast amount of accounting guidance included in the standards.

Students in South Africa that are enrolled for an accounting degree are exposed to a wide variety of topics during their studies, which include the CF and most non-specialised accounting standards. Many students studying an accounting degree wish to become a Chartered Accountant (South Africa) (CA(SA)). The syllabus used by universities as prescribed by the South African Institute of Chartered Accountants (SAICA), which accredits their qualifications, indicates that 33 standards and 10 interpretations are examinable in the SAICA 2016 Initial Test of Competence (SAICA, 2015). This represents 80.5% of standards and 47.6% of interpretations included in the entire IFRS and equates to a substantial amount of work the students must get through. In many cases, even the students that are not on the CA(SA) pathway are also required to understand most of this syllabus, with somewhat lesser detailed or less complex knowledge required.

When solving a specific accounting problem, the first point of reference is usually a specific accounting standard dealing with the problem. It is argued that the disadvantage of this approach is threefold:

1. A detailed knowledge of all the accounting guidance included through the entire set of IFRS is required in order to:
 - a. identify the problem correctly; and
 - b. apply the appropriate accounting treatment.

It is therefore submitted that detailed knowledge of 4 885 pages of accounting guidance is necessary to follow this approach with success.

2. Even though the problem-solver has adequate knowledge of the 4 885 pages of accounting guidance (or had adequate knowledge at some point in their careers, i.e. just after they have successfully completed their studies), the IASB is constantly updating and changing the specific accounting guidance included in the standards (often to be more in line with the CF). Hence the problem-solver might use outdated guidance to solve the problem as a certain period might have elapsed since he/she had adequate knowledge of all the accounting guidance.

3. In certain instances, transactions or events could occur that are not directly dealt with by one of the specific accounting standards, which may render detailed knowledge of the guidance not useful.

To counter the above problems, and to contribute to lifelong learning through continuous understanding of IFRS, it is suggested that Accounting be taught with reference to the underlying concepts on which the standards are based. This is referred to as principles-based teaching or framework-based teaching. The two terms “principles-based teaching” or “framework-based teaching” have a similar meaning, but for the purpose of this study, the latter term will be used. Framework-based teaching relates the accounting treatment of transactions, events and circumstances to the objective of financial statements and the qualitative characteristics of financial information, together with the concepts of recognition and measurement as included in the CF (Wells, 2011). It is also the objective of SAICA for CA(SA)s to develop fundamental competencies that will foster lifelong learning (SAICA, 2014).

Some authors acknowledge that there are shortcomings in the CF, specifically relating to some concepts of measurement, presentation, disclosure and derecognition, as well as information relating to the economics of a transaction and transparency (Barth, 2007; Barth & Schipper, 2008; Christensen, 2010; IFRS Foundation, 2013d; Wells, 2003; Wells, 2011). If these concepts need to be taught about a specific topic, the teaching should focus more on the guidance contained in the specific standard, linking it to the objective and qualitative characteristics in the CF.

It is also acknowledged that specific accounting guidance could be inconsistent with the concepts in the CF as discussed earlier. These inconsistencies should diminish as the IASB finalises its project to revise the CF and as the standards are amended and replaced to become more principles-based (Wells, 2011). However, as long as inconsistencies exist, they should be pointed out in the teaching of IFRS, emphasising that they are not based on a concept in the CF and providing reasons.

In accounting for any transaction, event or circumstance, the following suggested step approach is summarised from the literature for the recognition, measurement, presentation and disclosure of all elements relating to the transaction (Barth, 2013; Hodgdon *et al.*, 2011; Wells, 2013):

1. Identify the underlying economics of the accounting transaction, event or circumstance.
2. Identify what information relating to the transaction, event or circumstance is relevant and can be faithfully represented for the users of financial information.
3. Identify if the underlying concepts relating to recognition, measurement, presentation and disclosure are included in and are consistent with the CF.

4. Identify whether or not IFRS provide specific guidance applicable to the concept, as well as if any specific guidance is inconsistent with the CF.
5. Identify where judgement is required in developing an accounting policy and where judgements and estimates should be applied to the accounting phenomena.

Sadly, accounting education often tends to focus mainly on technical training, which teaches students how to pass qualifying examinations rather than equipping them with the skills required to have a cohesive understanding and the competencies required in practice (Albrecht & Sack, 2000; Gabbin, 2002; Van der Schyf, 2008). This is amplified by students' tendency to take an approach of surface and rote learning with the sole purpose of obtaining a degree as easily as possible (Booth *et al.*, 1999). To add to this problem, the chartered accountancy qualification is perhaps becoming increasingly difficult to obtain and is perceived by students as involving a vast amount of work of high complexity and an increasing number of standards that are continually evolving and expanding (Sadler & Erasmus, 2005).

In order to elaborate on the suggested teaching approach in accounting education and explain the motivation and problem statement more clearly, the educational theories and paradigms to support a framework-based approach are first explained in the next subsection, followed by the research problem and research questions.

2.1 Education theory underpinning a framework-based teaching approach

2.1.1 Constructivism and subsumption theory

There are a range of educational theories of how teaching and learning take place, each with its own background in a different psychological and epistemological tradition (University College Dublin, n.d.). The complex and comprehensive conceptual explanations provided within each theory can be applied in different settings. Complicated and social issues can be viewed from different perspectives through various theories and these theories provide a framework within which analyses can be conducted (Reeves *et al.*, 2008). The purpose of this study was not to debate different psychological or educational theories, but rather the research objectives and method of this study were guided by the educational theories most relevant to the study.

The theory of constructivism suggests that learners are not only passive recipients of information, but that they actively create knowledge through experience and by interpreting information given to them. Constructivism is a category of learning theory in which emphasis is placed on prior knowledge

and building on this knowledge and experience of the learner (Fosnot, 2013; Kundi & Nawaz, 2010). Formalisation of this theory is generally attributed to Jean Piaget (Ackermann, 2001; Wadsworth, 1996), who focused on mechanisms by which knowledge is internalised by learners. Piaget (1976) suggests that learners construct new understanding from existing frameworks of knowledge through processes of accommodation and assimilation. This study incorporates Piaget's description of assimilation in constructivism (Piaget, 1976). When individuals assimilate, they integrate new knowledge, experiences and learning into an existing framework. As this study focuses on gaining an in-depth knowledge and understanding of the CF in accounting, and building on this knowledge through new discussions that constantly refer to this framework, students can constantly assimilate the new knowledge gained with reference to the CF.

Ever since constructivism became prevalent in the mid-twentieth century, there has been debate about the amount of instruction to be provided during teaching, ranging from pure unguided minimal instruction where students learn through experiments and construct their own knowledge based on minimal guidance provided, to providing direct and detailed instructional guidance required by the discipline where students should not be left to discover knowledge themselves. General advantages of the fully guided approach are that it provides all necessary material and explanations, but disadvantages are that material might be rote learned and that learning beyond the instruction given is discouraged (Boud *et al.*, 2013; Bruner, 1961; Kirschner *et al.*, 2006; Mayer, 2004; Papert, 1980; Steffe & Gale, 1995).

The experiment in this study was grounded in a constructivist minimally guided approach where students were required to solve a complex accounting problem by using limited guidance based on the CF and prior knowledge about the economics of accounting transactions or events. Even though the experiment in the study focused more on a minimally guided approach, it is believed that a mixed approach should be promoted in accounting education where the problem is solved by understanding the economics of the transaction, applying the concepts of the CF to the transaction, and supporting the solution with the detailed guidance in the standards. Educators cannot rely purely on minimal instruction; however, they should accentuate the importance of overall concepts that guide a discipline, enhanced by scaffolding techniques and feedback and guided by the details of a discipline, with reference to the overarching construct on which the discipline is based.

Based on more focus on the CF during the Accounting course, it is suggested that accounting education be rooted in cognitive learning approaches such as Ausubel's subsumption theory. This is underpinned in learning theories such as constructivism (and especially assimilation) and is based on the following two principles (Ausubel, 1962):

1. The most general ideas of a subject should be presented first and then progressively differentiated in terms of detail and specificity.
2. Instructional materials should attempt to integrate new material with previously presented information through comparisons and cross-referencing of new and old ideas.

Faithful to the above ideas, the current study promotes that accounting education should be based on the following principles:

1. The most general ideas in accounting are presented to students first, i.e. the CF.
2. New material on the specific guidance in each accounting standard is then cross-referenced with the CF to build new knowledge with reference to the existing overarching CF knowledge. As new knowledge is built, horizontal, vertical and cross-links can be made to contribute to meaningful learning.

2.1.2 Framework-based teaching approach

By following a framework-based approach to teaching, the sense of being overwhelmed by the vast amounts of work experienced by students could be reduced to some extent. Through this framework-based approach, students obtain a detailed and in-depth knowledge and understanding of the underlying concepts of accounting as included in the CF. The in-depth knowledge and understanding are then used as a basis for understanding the detailed accounting guidance contained in the specific IFRS (Wells, 2011).

This approach also seems more logical as a student needs to obtain a deep understanding of only 32 pages of the IFRS handbook (i.e. relating to only the CF), to equip him/her to better understand the remaining 4 853 pages of accounting guidance, without having to rote learn the specific accounting guidance. As already mentioned, there could be inconsistencies in the CF and the specific standards, and in these cases, they should specifically be pointed out to students in an Accounting course. Framework-based teaching will then require students to have a detailed understanding of the concepts in the CF, understanding the specific accounting guidance in areas where the CF is lacking, and knowing the exceptions where inconsistencies with the CF exist.

2.2 Problem statement and research questions

Based on the above motivation and especially in view of the bombardment of extensive, complex guidance contained in IFRS, the problem that gave rise to the purpose of the current study was formulated as follows:

The use of the CF in solving complex accounting problems is not sufficiently emphasised in accounting education.

On this premise, this study aimed to determine whether students do in fact have the ability to solve complex accounting problems by referring only to the CF. It is acknowledged that in practice an accountant will have the ability to use both the CF and specific guidance in standards to make the necessary judgements to solve accounting problems according to the five-step approach discussed earlier. However, this study tested a student's ability to solve a complex accounting problem only with reference to the CF. As accounting practitioners usually refer directly to the specific guidance in IFRS, this study also aimed to identify the approach students would follow in solving accounting problems, i.e. whether they would look to the CF, specific accounting standards, or a mixture of both. Based on the earlier discussion that accounting problems could be solved by using only the CF and a similar conclusion would be reached if the specific accounting guidance in the standards were used (granted that the problem does not contain any of the inconsistencies between the CF and the specific standard), the purpose of this study was therefore to determine whether students have the ability to solve complex accounting problems by using only the CF (as well as to determine which factors could influence their ability) and to determine the problem-solving approach students would take in future when facing a complex accounting problem.

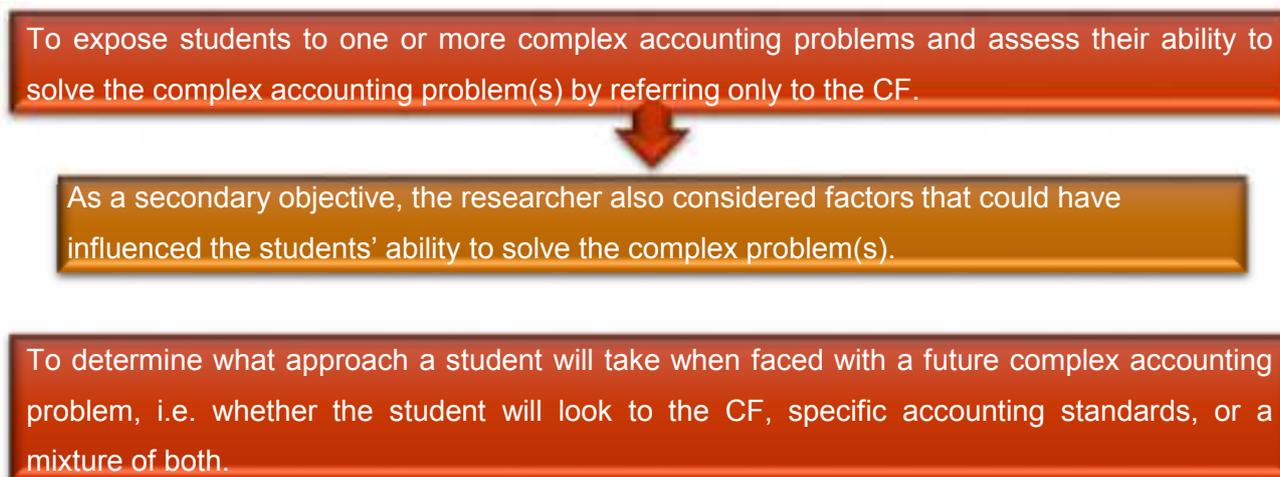
To research if it is possible to overcome the problem of needing an in-depth knowledge of the vast majority of accounting guidance to solve accounting problems, the research questions in this study were as follows:

- Are students able to solve complex accounting problems by referring only to the CF?
- What approach will students follow to solve future complex accounting problems?

3. Research objectives

The research questions gave rise to the following research objectives set out in Figure 1:

Figure 1: Research objectives



4. Research methodology

To provide a platform to address the research objectives, a class of third-year Accounting students were given a never-before-seen, individual-based assignment containing complex accounting problems which they had to solve using only concepts underlying the CF. Information on the assignment, the participants to the study and method of data analysis is presented below.

4.1 Assignment

The assignment was developed by the lecturer (who is also the researcher of this study) based on a real-life scenario from an entity in the financial services industry. All names were replaced by random fictitious names, e.g. "Entity A" and "Entity B". The assignment assessed the ability of students to solve the problem contained in the scenario by using only the CF. The assignment should have created confidence in the students that it is possible to solve accounting problems by referring only to the CF. Through a combination of the students' experience of the assignment and data gathered via the questionnaire (refer to Section 4.3), the research aimed to determine which approach these students would use in future in solving accounting problems.

The assignment contained a complex accounting scenario relating to a structured finance deal between a bank and an entity wishing to obtain finance to acquire a property. The bank consequently structured the finance deal through two newly created entities using shares, debentures, discounting agreements and a lease in order to enable tax savings for both itself and the acquirer of the property.

Whilst referring only to guidance included in the CF, the assignment required the students to consider:

1. Whether the specially created trust should recognise an asset and a liability relating to their investment in debentures and their discounting agreement with the bank.
2. How the entity acquiring the property should account for its use of the property and the lease instalments payable.

Each question consisted of two requirements:

Question 1: Required the discussion of whether an asset should be recognised, as well as whether a liability should be recognised.

Question 2: Required the discussion of the accounting for the use of the property, as well as the accounting for the lease instalments payable.

The principles tested in the assignment were therefore whether students could determine, by referring only to the CF, whether an asset and liability should be recognised. As mentioned in Section 1, whilst most accounting problems can generally be solved by referring to a specific accounting standard, the same conclusion should be reached by referring only to the CF. The assignment did not require the solving of any aspect of the scenario where the CF is underdeveloped or where the specific accounting guidance is inconsistent with the CF.

The assignment was assessed and marked by the researcher, who is also the lecturer of the students that participated in the study. The assignment was marked with reference to a suggested solution that did not contain significant inherent subjectivity.

4.2 Participants

The assignment was administered to third-year Accounting students at a South African university (as a case study of this particular group of participants). The students were enrolled on the professional accounting pathway degree, which is accredited by SAICA. All SAICA-accredited universities have to comply with the same set of stringent accreditation criteria that guide the required competencies and knowledge list of CA(SA) students, as well as examinable pronouncements which guide the syllabus for undergraduate and postgraduate students studying towards becoming a CA(SA) (SAICA, 2014; SAICA, 2015). It is therefore submitted that, although there might be slight differences at various universities relating to students' exposure to topics, the profile of the Accounting students at most (if not all) universities would be similar to the students on which the

study was conducted. The study therefore represents a microcosm of a larger system and may indicate symptoms present within most Accounting courses at SAICA-accredited universities across the country (Gomm *et al.*, 2000).

The assignment was given to the students immediately after their lecture on the CF (which was the first lecture of the semester). These students would have also been taught the CF in Accounting during their first and second years of study. The CF is therefore emphasised throughout the students' studies. During their first third-year lecture (topic: CF), the importance of having detailed knowledge of the CF was emphasised once more.

In addition to the CF, specific accounting guidance dealing with the issues in the assignment was also available in the appropriate IFRS dealing with leases and financial instruments. Although students would have had access to the appropriate specific IFRS (in addition to the CF) dealing with the issues in the assignment, they would have been unfamiliar with the specific accounting guidance included in the appropriate IFRS governing the transactions (as motivated in the next paragraph); therefore the risk of specific guidance biasing their answers in terms of the CF would have been small.

By the time of the assignment, the third-year Accounting students might have already come across, and dealt with, some form of basic leases and financial instruments to a very limited extent; however, this limited exposure to these specific topics should not have resulted in them reaching a conclusion on the more complex issues in the assignment in terms of the specific guidance in the appropriate IFRS as opposed to the CF. At third-year level at the selected university, students would not have gained knowledge pertaining to specific recognition and derecognition rules in terms of the appropriate standard dealing with the financial instruments in the assignment. The third-year students would also not yet have dealt with the specific accounting treatment for leases during their first two years of study at this university. At third-year level, however, they should have had enough prior exposure to understand the basic economics of the transactions clearly.

4.3 Research methodology, data gathering and analysis

A review of relevant literature was conducted to determine educational theories applied in accounting education, the amount of instructional guidance to give to students during Accounting courses and research to identify to which extent frameworks have been used to solve complex problems, the advantages and disadvantages of using a framework-based approach and whether any studies have been performed in the field of accounting education. The literature review also identified possible factors that could influence a student's ability to solve a problem effectively, to determine if any of

these could have had an impact on the students' ability to complete the assignment successfully, as well as possible approaches to solving accounting problems.

The research design in this study was based on an interpretive research framework to explore the ability of students to solve complex accounting problems using only the CF. The research design also accommodated the exploration of the approach students will take in solving accounting problems. It incorporated a quasi-experimental nature (Campbell *et al.*, 1963; Shadish *et al.*, 2002) where an assignment was administered to third-year Accounting students requiring a specific method to solve accounting problems, and explored the self-reported impact of the experiment on students' likely future problem-solving behaviour.

This study used a form of a phenomenographic research methodology which is focused on an interpretivist paradigm and aimed to investigate the qualitatively different ways of describing, analysing and understanding how students experience something (Bowden & Walsh, 2000; Marton, 1981; Marton, 1986). Phenomenography aims to determine the different ways in which people experience the same phenomena and focuses on variation of research methods and analysis, as well as describing the perceptions of, in this case, both the students and the lecturer (Pang, 2003). A study focused within an interpretivist paradigm not only describes the phenomena, but also considers the reasons for the phenomena, as well as determines the factors that could influence the phenomena (Coetsee, 2011). As interpretive research is frequently viewed as more subjective, an essential principle for this approach is the use of different means to confirm the outcome of the research (Henning *et al.*, 2004). Scapens (2008) argues that accounting knowledge needs to expand, and this could be obtained through different research methods, including interpretive research. Through a phenomenographic interpretivist approach, this research can create knowledge about framework-based problem-solving that cannot objectively be verified using a positivist approach (Svensson, 1997). The validity of interpretive research is based on the appropriateness of the research design and how the data is analysed and explained in the research design process (Coetsee, 2011). Different research instruments can be used to interpret the data. Research instruments such as observation, questionnaires and case studies are often used in interpretive or qualitative research (Denzin, 2009; Henning *et al.*, 2004; Moll *et al.*, 2006). Sometimes more than one research instrument is used in combination, in order to formulate multiple perspectives on the phenomena (Henning *et al.*, 2004).

The current research study used primarily qualitative data analysis to analyse the students' ability to solve complex accounting problems using only the CF, as well as their preferred approach to solve such problems. The data analysis of the students' assignments was part of a wider methodology that includes triangulation. The validation of the overall research required that the analysis of the assignments be combined with other ways of data collection during the process. Qualitative data

analysis (Berg & Lune, 2004; Merriam, 1998) was used to determine the students' response to the assignment and its solution by observing their approach, results, interaction and feedback. The study also drew on field notes kept by the researcher to determine what could have impacted the students' results and ability to solve the problem and their likely problem-solving approach in future.

The data collected through the marking process was supplemented by a further research instrument in the form of a reflective questionnaire that was designed according to the principles identified during the literature review, in order to determine students' ability to solve complex accounting problems using the CF, the factors that could have influenced their ability, as well as their future approach to solving accounting problems. The questionnaire was roughly designed based on Polya's principles in the problem-solving process, namely understand the problem, devise a plan, carry out the plan and reflect (Polya, 1945). The questionnaire reflected on the students' perceptions of the assignment and the problem-solving process, rather than actual benefits and abilities derived. The purpose of the questionnaire was thus not to gather information and perform quantitative analysis only, but to discover information to complement the explorative, qualitative nature of this case study. This study therefore aimed to include variation in research instruments and to investigate the outcomes from different perspectives through analysis of student assignments, as well as their reflected perceptions. The research also analysed the phenomenon from the perspective of the students as well as the lecturer, in addition to considering problem-solving from a framework-based approach and from the perspective of the amount of guidance that needs to be included in education courses.

The students were given the questionnaire to complete during lecture time and after some reflection on the accounting issues addressed by the assignment in terms of the CF and the specific guidance. Section A of the questionnaire covered demographics and Section B covered feedback on the assignment dealing with factors related to the ability to solve the complex problem and approach to future problem-solving, on a 5-point Likert scale ranging from 1 = *Strongly agree* to 5 = *Strongly disagree*. The questionnaire was reviewed by various knowledgeable experts in research design in the accountancy and education fields to ensure the validity and completeness of the subject matter in relation to each different theme identified during the literature review. The students were able to complete the questionnaire during class time. The questionnaire was administered by an individual independent of the research study while the researcher was not present. Ethical clearance was obtained from the institutional ethical review board and students were informed that the questionnaire would be used for research purposes, but that its completion was voluntary and anonymous. The independent party emphasised that the lecturer (who is also the researcher) would in no way be able to identify who participated and that participation/non-participation would in no way influence their marks. The completed questionnaires were immediately returned to the independent party, safely stored and only handed to the researcher after final marks for the semester were released.

Ensuring validity and internal consistency was a fundamental attribute of this particular qualitative study. The researcher had to be sure that qualitative data and the way it was collected were consistent with the research objectives. The data collected through the marking of the assignments, observations, student feedback and the reflective questionnaire are directly related to the research objectives. Multiple, complementary instruments were also used. Both these factors ensured validity. In theory, the concept of validity requires relevance of data collected in relation to the facts that occurred (Fraenkel & Wallen, 1993; Johnson, 1997). Internal consistency required the marking of the assignments to be consistent and factual in order to describe the students' ability to solve the problem (Hsieh & Shannon, 2005; Sandelowski, 1986). All the assignments were marked by the lecturer, who consistently applied the same criteria in the marking process and content analysis. Internal consistency was a factor of credibility of the process described which permits the reader to fully understand the way in which the data in the assignments was analysed to afford him/her the possibility of independent analysis. Even though this research was focused in an interpretive paradigm, the research design and the methodology that were applied aimed to make the study replicable and therefore reliable.

5. Chapter overview

Chapter 1: Purpose, scope and course of the study

- The objective of this chapter was to discuss the background to framework-based teaching and its relevance in teaching Accounting in the modern classroom, with a focus on reasons for conducting this study.
- The problem statement was developed, from which research objectives were formulated.
- The research design and methodology were explained, namely an interpretive research design, which entailed qualitative data analysis of the assignment results and observation of the students' experience of the assignment, aided by a questionnaire to discover information to complement the interpretive nature of the research design and to address the research objectives.

Chapter 2: Students' ability to solve complex accounting problems using a framework-based approach

- In this chapter, relevant literature is reviewed in order to determine the extent to which frameworks have been used to solve complex problems, the advantages and disadvantages of using a framework-based approach and which factors could influence students' ability to solve complex accounting problems (to motivate which questions were included in the questionnaire).

- The results of the assignment are analysed and qualitative conclusions are drawn, and an empirical analysis is conducted that is explained and motivated in this chapter.
- Faithful to the interpretivist nature of the study, the results of the assignment and formal and informal feedback obtained are analysed, complemented by observations of the students' reaction to the assignment.
- The reflective questionnaire is analysed to determine how the results contribute to the observations in the interpretivist research paradigm.
- Conclusions are drawn based on the results and recommendations are made to improve accounting education practices.

Chapter 3: Students' preferences in solving accounting problems: Framework-based approach vs prescriptive approach

- In this chapter, all literature is reviewed that is relevant to the amount of instruction to be included in Accounting courses, the available approaches to solve complex accounting problems and the frame of reference for analysing problems.
- The research design and method are explained, being that the study was grounded in an interpretive research design using a quasi-experiment through an assignment to analyse the research problem.
- The students' problem-solving approaches are analysed from a qualitative perspective by drawing on observation, field notes and experience.
- The reflective questionnaire is analysed to determine how the results contribute to the conclusions drawn under the interpretivist research paradigm.
- The results obtained are analysed and explained, followed by conclusions and recommendations.

Chapter 4: Summary, conclusions and recommendations

- In this chapter, the study is summarised by presenting an overview of all main results, conclusions that are formed and a discussion of recommendations. The chapter also attempts to highlight the value of the study as a whole.
- All limitations of the study are highlighted and recommendations are made for possible future research that can build on this research study.

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CHAPTER 2 (ARTICLE 1):

STUDENTS' ABILITY TO SOLVE COMPLEX ACCOUNTING PROBLEMS USING A FRAMEWORK-BASED APPROACH

Title: Students' Ability to Solve Complex Accounting Problems using a Framework-based Approach

The reader is requested to take note of the following:

- This article has been submitted for publication to the following double-blind, peer-reviewed academic journal as follows:
 - Odendaal, K. & Van der Merwe, N. 2015. Students' Ability to Solve Complex Accounting Problems using a Framework-based Approach. *Accounting Education: An International Journal*, unpublished. (ISSN: 0963-9284 (Print), 1468-4489 (Online)).
- The article was researched and written by the first author as the candidate. The second author fulfilled a 'reviewer' function as the study leader. Weightings of contribution are estimated to be as follows:
 - * Odendaal, K. (90%)
 - * Van der Merwe, N. (10%)
- Confirmation of receipt of the article from *Accounting Education: An International Journal* has been received and is presented as part of **Annexure C1** on page **112**. The article was written in line with the journal's submission guidelines, which are included as part of **Annexure C2** on page **113**.

Abstract

Accounting transactions are becoming more complex, and more extensive accounting guidance is provided on a continuous basis. It is widely perceived that conceptual teaching of accounting contributes to effective problem-solving and ultimately lifelong learning. This framework-based approach is rooted in educational psychologies such as constructivism and Ausubel's subsumption theory. This study used an interpretive research design aimed at investigating the ability of students to solve complex accounting problems using only concepts underlying the Conceptual Framework. The importance of the study indicates the necessity of Accounting educators to enhance a conceptual understanding among students as a mechanism for problem-solving of accounting issues. The results indicate that the ability of students to solve accounting problems effectively using only the Conceptual Framework depends on the complexity of the scenario and the students' familiarity with the problem. The study indubitably promotes considerable emphasis on the importance of the Conceptual Framework in accounting education.

KEY WORDS: Ausubel's subsumption theory, accounting education, conceptual framework, conceptual teaching, constructivism, framework-based, problem-solving

1. Introduction

The accounting guidance included in the International Financial Reporting Standards (IFRS) is often perceived as being extensive and complex (Grant Thornton, 2014). This perception, coupled with the fact that the accounting guidance changes every so often (IFRS Foundation, 2013a), results in Accounting students, practitioners and educators regularly facing accounting problems that are complex and onerous to solve. In order to overcome the complexity, it is suggested that accounting problems, including complex problems, could also be solved in a less complex manner by referring to the basic accounting principles included in the Conceptual Framework for Financial Reporting (CF) (IFRS Foundation, 2010). The solution to the accounting problem should result in a similar answer had the detailed, complex accounting guidance been consulted.

This approach to solving accounting problems suggests that a detailed understanding of the CF could aid significantly in the application of accounting guidance to an accounting transaction, event or circumstance. Such an approach, being based on learning and applying fixed principles rather than detailed technical knowledge, is rooted in educational psychologies such as constructivism, perennialism and Ausubel's subsumption theory (refer to the next section of the paper). This paper should therefore be of interest to Accounting academics who can incorporate this approach in the professional education of accountants, as well as government and professional accountancy bodies

that aim to promote quality education of accountants. A review of recent literature indicates that there has been no significant exploration of the ability of Accounting students to solve complex accounting problems whilst referring only to the CF. However, literature on this topic in other subject areas shows that such an approach certainly has merit. General advantages of this approach are that a detailed knowledge and understanding of the framework aids in adding and organising knowledge to this framework, in addition to equipping individuals with the ability to adapt to change (Barth, 2007; Durillo & Nebro, 2011; Hesketh, 2011; Hines, 1989; Novak, 2010; Ostrom, 2011; Wells, 2011). Some of the major disadvantages are that information could be misinterpreted if detailed guidance and rules are not known and that no approach can ever be as effective as experience (Bromwich, Macve, & Sunder, 2010; Christensen, 2010; Hines, 1989; Kolodner & Kolodner, 1987; Novak, 2010). In respect of factors that can influence a person's ability to solve accounting problems, three themes emerge from the literature, being experience, knowledge and group work.

In view of the extensive, complex guidance contained in the IFRS, the problem that gave rise to the current study is that there is not enough emphasis on the use of the CF in solving complex accounting problems. Hence, the purpose of this study was to administer an assignment containing complex accounting problems to Accounting students at a particular South African university (as a case study) and to qualitatively assess (1) whether students have the ability to solve complex accounting problems by using only the CF; (2) the extent to which their ability is affected by any of the factors identified in the review of prior literature.

This study contributes to existing literature by offering insight into framework-based teaching as a basis to direct the way in which accounting education is guided at tertiary level. Since there appears to be exhaustion of Accounting students as a result of "syllabus overload" (Barnett, 2000; De Villiers & Venter, 2010; FASSET, 2008; Gloeck, 2012; Lubbe, 2013; Marx & Van der Watt, 2013; Van der Merwe, McChlery, & Visser, 2014), this study is important as it proposes an alternative way in which Accounting can be taught to enhance conceptual understanding and contribute to lifelong learning. Such an approach would also stand students in good stead when entering the profession as they should be better equipped to adapt to changing circumstances and deal with economic transactions.

In the next section the relevant educational theories on which this study was based, as well as relevant literature on students' ability to solve accounting problems are reviewed. This is followed by the research methodology, results and discussion. The conclusion, limitations and opportunities for future research are presented in the last section.

2. Education Theory Underpinning a Framework-based Teaching Approach

For educators there is no clear guidebook on what the single best way is to teach, and there is no universal explanation of how every student learns. Rather, there are a range of theories of how teaching and learning take place with their own background in a different psychological and epistemological tradition.

The theory of constructivism suggests that learners are not only passive recipients of information, but that they actively create knowledge through experience and by interpreting information given to them. Constructivism is a category of learning theory in which emphasis is placed on prior knowledge and building on this knowledge and experience of the learner (Fosnot, 2013; Kundi & Nawaz, 2010). Formalisation of this theory is generally attributed to Jean Piaget (Ackermann, 2001; Wadsworth, 1996), who focused on mechanisms by which knowledge is internalised by learners. Piaget (1976) suggested that learners construct new understanding from existing frameworks of knowledge through processes of accommodation and assimilation. This study incorporates Piaget's description of assimilation where individuals incorporate new experiences into an existing framework (Piaget, 1976). As this study focused on gaining an in-depth knowledge and understanding of the CF in Accounting, and building on this knowledge through new discussions that constantly refer to this framework, students can constantly assimilate the new knowledge gained with reference to the CF. This approach also incorporates aspects of perennialism, as proponents of this approach believe that the things that are deemed to be of everlasting pertinence should be taught (Wink, 2010). This approach suggests that understanding the most important aspects or principles of a topic develops a person's knowledge and skills. Detailed facts about the topic can change, but the overall understanding remains constant. Therefore, principles should be taught, not facts. In this regard, Ausubel (2000) also suggest a way to implement cognitive learning through the subsumption theory. This theory is built on a view similar to constructivism (and especially assimilation) and is based on the following two principles (Ausubel, 1962):

1. The most general ideas of a subject should be presented first and then progressively differentiated in terms of detail and specificity.
2. Instructional materials should attempt to integrate new material with previously presented information through comparisons and cross-referencing of new and old ideas.

The study reported on in this paper is based on the following principles:

1. The most general ideas in Accounting are presented to students first, i.e. the CF.
2. New material on the specific guidance in each accounting standard is then cross-referenced with the CF to build new knowledge with reference to the existing overarching CF knowledge. As new knowledge is built, horizontal, vertical and cross-links can be made to contribute to meaningful learning.

3. Literature Review

When solving a specific accounting problem, the first point of reference is usually a specific accounting standard dealing with the problem. As will be explained later, there is an argument that the same problem can be solved just as effectively by referring only to the CF or the fundamentals of a topic. There is not a vast amount of literature on problem-solving using an overarching framework; however, the researchers have found some interesting works in this area. Applying a framework to solve problems, as well as developing such frameworks, are encountered in various sciences, including the natural, social, formal and applied sciences, but most prevalently in the fields of engineering and information technology (Durillo & Nebro, 2011; Houska, Ferreau, & Diehl, 2011; Kummerle, Grisetti, Strasdat, Konolige, & Burgard, 2011; Lukasiewicz, Glaß, Reimann, & Teich, 2011; Ostrom, 2011; Xun & Land, 2004). In fact, Frensch and Funke (2014) have dedicated an entire book to complex problem-solving, different scholarly viewpoints and approaches to complex problem-solving (specifically comparing North American and European views). A large section in the book is devoted to a description of what a theoretical framework on complex problem-solving might look like. There have even been calls from researchers requiring the development of frameworks in the field of research and scholarly activity to allow for the successful completion of the research task (Baker & Bettner, 1997; Leshem & Trafford, 2007).

Although the field of accounting has a specific CF that directs the process of setting specific accounting standards and there has been increased focus on the CF in accounting education, it appears, by reviewing the literature, as if no exploration on solving accounting problems by using the CF has been conducted. Hines (1989) has emphasised, though, that accounting standard-setting boards responsible for producing accounting guidance should focus on CF projects as a means of creating and sustaining a formal knowledge base from which other standards derive. Hines' scholarly work interestingly brings to light that considerable focus on developing the conceptual principles on which accounting standards are based began mostly only in the mid-twentieth century (Hines, 1989). More recently, authors such as Hodgdon, Hughes, and Street (2011) and Wells (2011) have started to focus on framework-based teaching research, and urge Accounting educators to shift their paradigm to teach more conceptually as opposed to emphasising pure technical knowledge.

In contrast to the earlier discussions, it is ascertained from the literature that utilising a framework to support the development of a conclusion to a problem is not always the preferred way as it has some limitations. The advantages and disadvantages of using a framework to solve problems are summarised in the tables below.

Table 1. Advantages of a framework-based approach to problem-solving

Advantages	References
It is easier and more manageable to acquire detailed knowledge of only the overall framework, without having to know the specifics of the additional information.	Hines (1989) Wells (2011)
Once the framework is understood, specifics of additional information can change, and the person will be able to adapt	Durillo and Nebro (2011) Ostrom (2011) Wells (2011)
It contributes to understanding a concept over the long term	Kolodner and Riesbeck (2014)
By using the framework as a point of reference, new knowledge can more easily be organised into categories and new knowledge can be built onto the existing framework	Kolodner and Riesbeck (2014) Novak (2010) Durillo and Nebro (2011) Ostrom (2011) Houska et al. (2011)
This approach contributes to lifelong learning in the field	Hesketh (2011) Wells (2011) Novak (2010) Boyce, Williams, Kelly, and Yee (2001)

Table 2. Disadvantages of a framework-based approach to problem-solving

Disadvantages	References
In many cases, there appears to be a need for more detail and complex notions in the field of application	Kolodner and Riesbeck (2014) Ostrom (2011)
Without detailed knowledge, there could be misunderstanding and misinterpretation of concepts in the framework	Bromwich et al. (2010) Novak (2010)
The framework itself is often still evolving	Bromwich et al. (2010) Hines (1989) Dean and Clarke (2003) Hoffmann and Detzen (2013)
Framework concepts are sometimes arbitrary and difficult to understand on their own without context	Hines (1989) Christensen (2010)
The success of utilising the framework depends on prior knowledge of students	Xun and Land (2004)
Even though a framework may exist, problem-solving is still easier through experience	Kolodner and Kolodner (1987)

Christensen (2010) analysed how CFs in accounting contribute to the quality of corporate reporting and concludes that the role and content of a CF as a set of ground rules are useful in the regulation of financial reporting. In a review of Christensen's paper, Boyle (2010) indicates that the greatest potential of a CF is the provision of a sound basis for drafting accounting standards. Based on the value of the CF, it is therefore important to have a detailed knowledge and understanding of the CF. As the CF contributes significantly to reporting and is the basis on which all other standards are usually set, it certainly can also contribute significantly to problem-solving in accounting.

Since there have been no exploratory studies on solving accounting problems using only the CF, this study explored this area from the perspective of the ability of Accounting students to solve a complex accounting problem whilst referring only to the CF. The study also explored factors that could influence the students' ability to solve the accounting problems. The relevant literature is discussed below.

A study by Vernooij (1995) suggests that although information is available from other disciplines, limited educational research has been conducted on solving accounting problems specifically. Although considerable recent literature can be found on factors that influence Accounting marks in

general, a great deal of it focuses on demographics such as culture, language, gender and high school attended (Jackson, 2014; Paisey & Paisey, 2004). Although this study reports on some demographic information, it is not intended to analyse student results by comparing these demographical groupings. Whether the students have English as first language was, however, considered to some extent with regard to communication apprehension (see next section). Other studies focus on how prior Accounting courses, reading financial publications and work experience, as well as motivation, study habits, interventions and attitude can contribute to successful Accounting marks in general (Paisey & Paisey, 2004; Yousef, 2011; Yu, 2011). Literature that focuses exclusively on the factors that influence students' ability to solve problems, especially in Accounting, is scarce. However, by drawing on the limited literature in this regard, three main themes emerge which could potentially influence the ability of a student to solve a complex accounting problem by referring only to the CF. These are discussed in the paragraphs to follow.

The first theme is defined around the students' lack of experience with such problems using only the framework, together with their related comprehension of the problem and their communication apprehension. In his study, Vernooij (1995) explains that, in problem-solving, students prefer to refer to a similar problem they have encountered previously and apply a similar frame of reference. This is confirmed by ITS (2005) and Paupst (2012), who indicate that people often fail to solve problems effectively because they misinterpret the problem or use a method inappropriate to the specific problem. In addition to this, Liraz (2013) mentions that people find solutions to their problems by way of association to similarity. The ability of students to solve a problem effectively could therefore be influenced by their lack of experience in dealing with complex problems of a similar nature. In this regard, students may be unclear on what is required of them, causing them to spend additional time understanding a complex scenario. This theme is associated with the written communication apprehension of students. Accounting education researchers have reported high levels of communication apprehension for Accounting students (Arquero, Hassall, Joyce, & Donoso, 2007; Hassall, Arquero, Joyce, & Gonzalez, 2013; Joyce, Hassall, Montano, & Anes, 2006). Moreover, language barriers have been pointed out as a hindrance in complex problem-solving. Baldo et al. (2005) found a significant correlation between performance in a task and factors relating to language, such as comprehension. On the other hand, Coetzee, Schmulian, and Kotze (2014), in a study on South African students, found that non-English home language does not have a significant effect on communication apprehension, provided the instruction is received in English. The current study therefore investigated whether familiarity with the problem and the fact that English is not a student's first language have an impact on the student's ability to solve the problem.

The second factor that could influence a student's ability to solve a complex accounting problem is the lack of knowledge of the underlying concepts and principles of the CF. Prior studies indicate that a lack of core knowledge is problematic in Accounting courses, as well as in the profession (Brent &

Atkisson, 2011; Shuttleworth, 2014). This appeal to defeasibility is also evidenced in general by ITS (2005), Liraz (2013), Medlin (n.d.) and Paupst (2012), who all indicate that a lack of knowledge and understanding has an impact on effective problem-solving.

The third factor that was considered is group work. Several studies suggest that group work on assignments can contribute to greater success and that collaborative learning is an approach that students experience positively (Collett, 2000; De Jager & Bitzer, 2013; Hughes, 2007; Tempone & Martin, 1999). Such an approach, where two or more students learn or attempt to learn together, has been shown to be associated with improved pass rates and as such would enable them to solve complex problems collaboratively (Biggers, Yilmaz, & Sweat, 2009; Dillenbourg, 1999).

4. Background to Research Approach

4.1 The Assignment

In this study, third-year Accounting students were given a never-before-seen, individual-based assignment containing complex accounting problems which they had to solve using only concepts underlying the CF. The assignment contained a complex accounting scenario relating to a structured finance deal between a bank and an entity wishing to obtain finance to acquire a property. The bank consequently structured the finance deal through two newly created entities using trusts, shares, debentures, discounting agreements and a lease in order to enable tax savings for both itself and the acquirer of the property. The assignment was based on a real-life scenario from an entity in the financial services industry, but all actual names were replaced by random pseudonyms, e.g. "Entity A" and "Entity B". The assignment assessed the ability of students to solve the problem contained in the scenario by using only the CF. The aims of using complex, real-life examples are to encourage learners to think critically, analyse and use learning resources effectively, as well as develop effective communication skills and become lifelong learners.

The assignment was developed, assessed and marked by the principal researcher, who is also the lecturer, as well as the primary author of this paper. The assignment was marked with reference to a suggested solution that did not contain significant inherent subjectivity or ambiguities. The suggested solution addressed both the technical application of the concepts in the CF and pervasive skills.

The assignment required students to determine the accounting treatment of certain transactions whilst referring only to guidance included in the CF. Question 1 of the assignment related to a trust investing in debentures and then immediately ceding the right to receive the interest and principal payments of the debentures. Question 2 related to a lease of a building for 30 years in return for a

series of payments. Ownership of the building passed at the end of the lease term. The principles tested were whether students could determine, by referring only to the CF, whether an asset and liability should be recognised. Whilst most accounting problems can generally be solved by referring to a specific accounting standard, the same conclusion could also be reached by referring only to the CF.

The students were required to only address certain aspects of the CF, i.e. the objective of financial reporting, the qualitative characteristics and the recognition of elements (definition and recognition criteria) (IFRS Foundation, 2010). The assignment did not address issues relating to the reporting entity, measurement, presentation or disclosure. These areas are seen to be currently underdeveloped or outdated in the current CF (Barth, 2007, p. 14; Barth & Schipper, 2008, p. 188; Christensen, 2010; IFRS Foundation, 2013c; Wells, 2003, p. 278; Wells, 2011, p. 315). In addition to the CF, specific guidance dealing with the issues in the assignment could also be found in the appropriate IFRS dealing with leases (IAS 17) and financial instruments (IAS 32, IAS 39 and IFRS 9). The IFRS Foundation (2010) recognises that in a limited number of cases there might be a conflict between the CF and a specific IFRS and in these cases, the specific guidance in the appropriate IFRS would be used instead of the CF. The assignment did not require the solving of any aspect of the scenario where the CF is underdeveloped or where the specific accounting guidance is inconsistent with the CF.

Although students had access to the appropriate IFRS (in addition to the CF) dealing with the issues in this assignment, they were unfamiliar with the specific accounting guidance included in the appropriate IFRS governing the transactions. However, their knowledge should have been of such a nature that they should have been able to understand the economics of the transactions clearly.

The suggested solution to the assignment was developed interactively in class, after the assignments were handed in, and then discussed again after the marking was complete and the assignments were returned to the students. The issues identified in the accounting problem were revisited again during lectures later in the semester when the specific guidance of the appropriate standards dealing with leases and financial instruments was taught. Students then had time to reflect on the issues and the conclusions reached, both in terms of the CF and the specific guidance in the appropriate IFRS.

4.2 The Student Participants

The assignment was administered to the third-year Accounting students at a South African university. The majority of the students in this course were studying towards becoming a Chartered Accountant (South Africa) (CA(SA)), with only the minority wanting to follow a different route. The

assignment was given to the students immediately after their lecture on the CF (which was the first lecture for the semester). These students would have also come across the principles of the CF during their first- and second-year Accounting courses. The CF is therefore emphasised throughout the students' studies. In the students' third year of study, the CF is dealt with comprehensively during their first lecture of the year, as it forms the overarching construct on which the remainder of the topics throughout the year are based. During the CF lecture, the importance of having a detailed knowledge of the CF was emphasised again. This approach is based on Ausubel's subsumption theory where the general concepts of accounting are presented first and then new specific knowledge of accounting standards is progressively developed by referring back to the CF.

5. Research Methodology and Design

5.1 Research Design

The method applied in this study was based on an interpretive research design to explore the ability of students to solve complex accounting problems using only the CF. An experimental assignment was administered to third-year Accounting students and the results of the assignment were analysed as described in the next section. Through an interpretivist approach, this research can create knowledge about framework-based problem-solving that cannot objectively be verified using a positivist approach.

The current research study primarily used qualitative data analysis to analyse the students' ability to solve complex accounting problems using only the CF. Previously researched methods exist to determine a person's problem-solving skills for structured and unstructured questions, such as the Paragraph Completion Test, ACCT instrument and two linguistic measures of Idea Density and Grammatical Complexity (Jones & Davidson, 2007). However, none of these methods fit this study. The purpose of this study was not to assess the student's problem-solving ability on its own, but to simply employ a qualitative exploratory approach to determine their ability to solve a complex accounting problem by using only the CF. This study used a basic model for assessing their ability to solve the problem by using the CF on two levels:

1. The assignment was marked by the lecturer, who is also the primary researcher. The marking took place according to a suggested solution which did not contain much inherent uncertainty. The assignment and suggested solution did not have any identified ambiguities. The results of the assignment were then analysed to determine pass rates, averages and qualitative observations.

2. During the marking process, the lecturer performed a content analysis of the assignments to identify whether students principally reached the correct conclusion on the requirements of the assignment in terms of the CF.

The data analysis of the students' assignments was part of a wider methodology that included triangulation. The validation of the overall research required that the analysis of the assignments be combined with other ways of data collection during the process. Qualitative data analysis (Berg & Lune, 2004; Merriam, 1998) was used to determine the students' response to the assignment and its solution by observing their approach, results, interaction and feedback. The study also drew on field notes kept by the researcher to determine what could have impacted the students' results and ability to solve the problem.

The data collected through the marking process was supplemented by a further research instrument in the form of a reflective questionnaire that was designed according to the principles identified during the literature review. The questionnaire was roughly designed based on Polya's principles in the problem-solving process, namely understand the problem, devise a plan, carry out the plan and reflect (Polya, 1945). This process also reflects the principles of performance criteria for problem-solving skills by the American Accounting Association (n.d.). The purpose of the questionnaire was exclusively to gather information to discover data relating to the students' problem-solving process and to determine factors that could have influenced their ability and marks. The questionnaire reflected the students' perceptions on the assignment and problem-solving process, rather than actual benefits and abilities derived. The purpose of the questionnaire was thus not to perform quantitative analysis only, but to complement the explorative, qualitative nature of this study. The questionnaire was handed to the students after some reflection on the accounting issues addressed by the assignment in terms of the CF and the specific guidance. Section A of the questionnaire covered demographics and Section B covered feedback on the assignment dealing with factors related to the ability to solve the complex problem, on a 5-point Likert scale ranging from 1 = Strongly agree to 5 = Strongly disagree. The questionnaire was reviewed by various knowledgeable experts in research design in the accountancy and education fields to ensure the validity and completeness of the subject matter in relation to each different theme identified during the literature review.

The data collected through the marking of the assignments, observations, student feedback and the reflective questionnaire are directly related to the research objectives, which ensures validity. Internal consistency is ensured in that the marking of the assignments was consistent and factual in order to describe the students' ability to solve the problem.

5.2 *Characteristics of the Students on which the Study was conducted*

The study was conducted at a South African university and focused exclusively on the students at this particular university as a case study. This reinforced the qualitative, interpretive research design and allowed for deep analysis on a smaller scale to obtain rich data. A total number of 65 students enrolled for the third-year Accounting course at the university where the study was conducted in the year the assignment was administered, and 64 students completed and submitted the assignment. Of the students that completed the assignment, 44 students (68.75%) completed the questionnaire. The primary researcher believes the major reason for the difference between the number of students that completed the assignment and those that completed the questionnaire was non-attendance of the lecture on the day the questionnaire was administered.

The majority of students who completed the assignment and the questionnaire were enrolled on the professional accounting pathway degree which is accredited by the South African Institute of Chartered Accountants (SAICA). All SAICA-accredited universities have to comply with the same set of stringent accreditation criteria that guide the required competencies, standard of assessment and the knowledge list of CA(SA) students (SAICA, 2010, 2013). As explained, this study was conducted at only one of the SAICA-accredited universities in South Africa as a deep case study, and there could therefore be slight differences compared to students enrolled for third-year Accounting at other SAICA-accredited universities. However, the profile of the Accounting students and their exposure to accounting topics, including their difficulty levels and standard of assessment, would be similar at most SAICA-accredited universities. The study therefore represents a microcosm of a larger system (Gomm, Hammersley, & Foster, 2000) and may indicate symptoms present within most Accounting courses at SAICA-accredited universities across the country. Since the study was conducted at only one university, the extrapolation of results to the entire population of CA(SA) students in South Africa was not attempted; however, meaningful results were obtained from the specific selection which go a long way to better understanding students' ability to solve complex accounting problems by referring only to the CF. Thus, even though the study represents one case study, it has the added value of providing useful insights for other cases as well. The results could also be used as a basis for further research. Even though this research is focused in an interpretive paradigm, the research design and the methodology that were applied aimed to make the study replicable and therefore reliable.

6. Results

This section deals with the ability of students to solve complex accounting problems by using only the CF, and the extent to which their ability was affected by any of the factors described in the literature.

6.1 Participant Profile

The demographic detail of the students that participated in the study and completed the questionnaire is summarised in Figure 1.

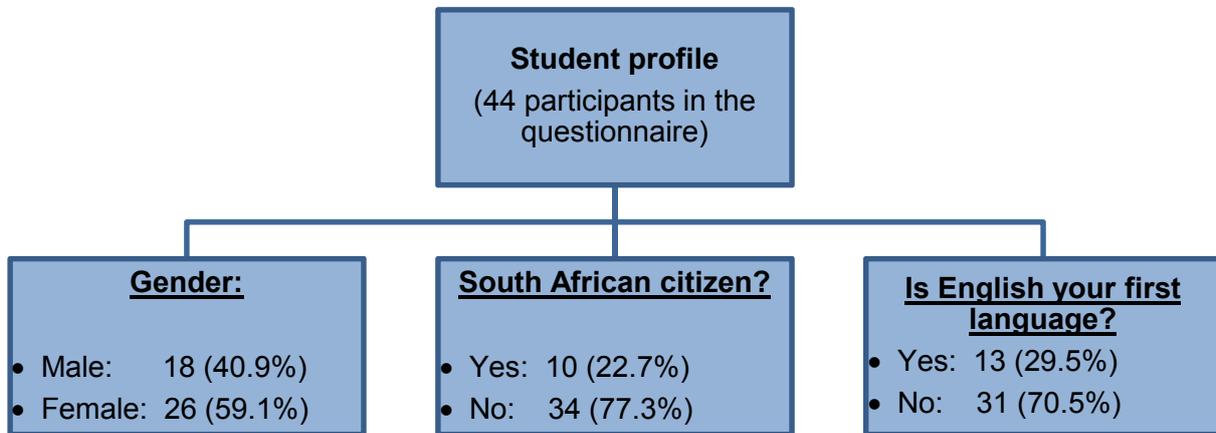


Figure 1. Demographic information on student participants

Although 70.5% of students indicated that English was not their first language, 100% of the students responded that English was their first language of preference for business. This university, even though based in South Africa, has a large cohort of African (other than South African) students studying at this university mostly on sponsorships.

6.2 Students' Ability to solve the Problems in the Assignment using only the CF

In assessing the ability of the students to solve the complex accounting problems by referring only to the CF, the results of the assignment are analysed as follows with regard to the two levels outlined in the methodology section:

6.2.1 Results of assignment

The overall pass rate for the assignment was 72.0% and the average mark for the assignment was 57.1%. Students seemed to be mostly indifferent in respect of the difficulty of the assignment. Based on the questionnaire results, 9.1% and 25.0% of students strongly agreed and agreed, respectively, that the assignment was difficult. Only 4.5% and 20.5% strongly disagreed and disagreed, respectively, that the assignment was difficult, whilst the remaining 38.6% gave a neutral response on the difficulty of the assignment.

6.2.2 Content analysis to determine the principle correctness of students' attempts

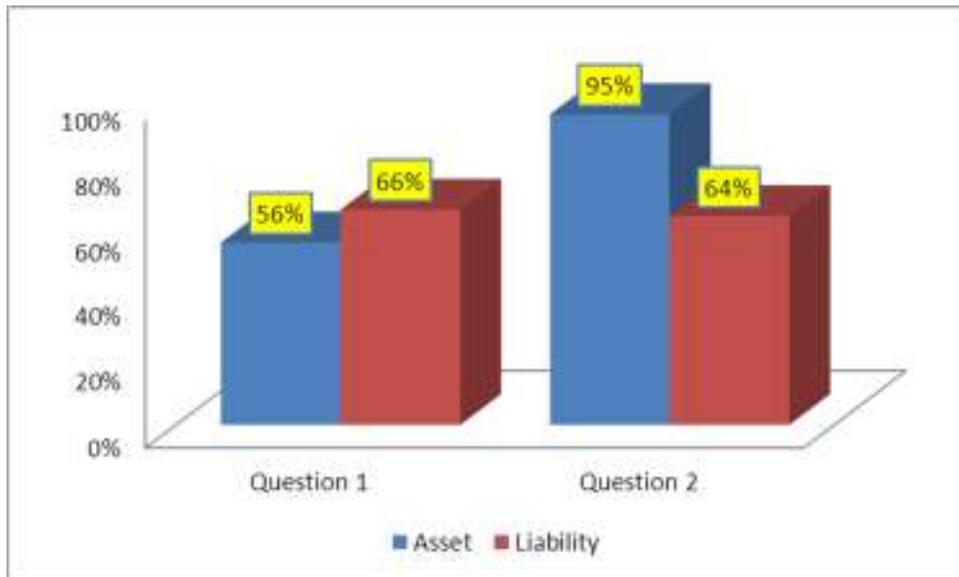


Figure 2. Extent of correct answers in principle

Figure 2 indicates the extent to which the students had the principles correct as to whether an asset and liability should be recognised. Question 1 of the assignment related to a trust investing in debentures and then immediately ceding the right to receive the interest and principal payments of the debentures. Figure 2 indicates that 56% of the students had the principle correct that no asset should have been recognised for question 1, whilst 66% had the principle correct that no liability should have been recognised for question 1. Question 2 related to a lease of a building for 30 years in return for a series of payments. Ownership of the building passed at the end of the lease term. The results for question 2 indicate that 95% of the students understood the principle that an asset had to be recognised for the use of the leased asset, but only 64% realised that a liability had to be recognised for the lease instalments payable.

6.3 Factors that could Influence Students' Ability to solve Accounting Problems

With regard to the factors that influenced the students' ability to solve the problems, the three major themes that have been identified from the literature were then applied to the study.

6.3.1 Lack of experience, comprehension and communication apprehension

Of the 44 students that completed the questionnaire, 16 and 18 students (77.3% in total) agreed and strongly agreed, respectively, that they had to spend additional time on the scenario to understand the structure of the finance deal. However, although a large majority of respondents felt uncomfortable with the difficult scenario, indicating that it was not familiar to them, 53.5% of the

respondents were still clear on what was required in the assignment, with a further 27.9% of students taking a neutral stance on this matter. Therefore, it appears as if students were clearer on what was required, but experienced more difficulty with the content of the scenario. With regard to the effect that language could have had on their communication comprehension and apprehension, 70.5% of students indicated that English was not their first language, yet 100% of the students responded that English was their first language of preference for business (and hence the language in which they studied Accounting).

6.3.2 Lack of underlying knowledge of the framework

Based on the students' perception of the knowledge required to complete the assignment, 70.5% of the students acknowledged that understanding was important as the lecture on the CF helped them to complete the assignment. However, Table 3 below provides an analysis of the students' responses with regard to their own knowledge, or lack thereof, in attempting the assignment.

Table 3. Students' underlying knowledge of the CF

	My knowledge of the CF was sufficient before I attempted the assignment	I needed to study additional literature before I could attempt the assignment
Strongly agree	3 (6.8%)	5 (11.6%)
Agree	16 (35.4%)	18 (41.9%)
Neutral	14 (31.8%)	12 (27.9%)
Disagree	9 (20.5%)	5 (11.6%)
Strongly disagree	1 (2.3%)	3 (7.0%)

6.3.3 Group work

Regarding group work, there seem to be varied and segregated opinions from the students. Eleven (25.0%) and ten (22.7%) students agreed and strongly agreed, respectively, that they would have preferred to work in a group, whilst only three (6.8%) students were neutral in this matter. Thirteen (29.5%) and seven (15.9%) students disagreed and strongly disagreed, respectively, that they would have preferred to work in a group. Table 4 indicates the students' preference to work in a group based on their experience of whether they found the assignment to be difficult. As there had been such a divided opinion on whether the students would have preferred to work in a group, the results were recoded so that those who responded "strongly agree" and "agree" were seen as students who would have preferred to work in a group. The students who responded "disagree" and "strongly disagree" were seen as students who would not have preferred to work in a group.

disagree” were seen as students who would not have preferred to work in a group. The three “neutral” students were excluded from the analysis in Table 4.

Table 4. Students’ preference for group work based on the difficulty of the assignment

	I found the assignment to be difficult	
	I would have preferred to work in a group	
	<u>Yes</u>	<u>No</u>
Strongly agree	3 (14.3%)	1 (5.0%)
Agree	7 (33.3%)	2 (10.0%)
Neutral	7 (33.3%)	10 (50.0%)
Disagree	4 (19.1%)	5 (25.0%)
Strongly disagree	0 (0.0%)	2 (10.0%)
Total	21	20

6.4 General Analysis

A further interesting result is that 86.7% of the students indicated that the assignment emphasised the importance of the CF in considering future accounting problems, with the remaining students being neutral on the matter. The assignment results and the above three factors or themes are interpreted in the discussion section that follows.

7. Discussion

The current study shows that the ability of the students to solve complex accounting problems appeared to be influenced by the complexity of the scenario and underlying questions. The students performed better when solving the problem in the scenario relating to the lease, compared to the problem relating to the complex finance structure. In all likelihood, students would have experienced the finance structure as complex and would plausibly not previously have come across a similar scenario to the one in the assignment. The scenario simulates a bank providing finance to an entity to acquire a property, but in the process creating two newly structured entities in the form of special purpose vehicles in order to obtain a predetermined output. The question related to a trust that invested in debentures, but then immediately ceded its right to receive all amounts of principal and interest to the bank. By the stage that the assignment was administered, students would reasonably not have been exposed to an analogous scenario, and consequently their performance in this section was inferior.

In the section dealing with the lease, a company obtained the right to use a property for a period of time in return for a series of payments. Ownership of the property passed to the lessee at the end of the lease term. The majority of students concluded correctly that the lessee should recognise an asset. The most likely explanation for this phenomenon is that the economic benefits obtained from the use of an item under a finance lease are specifically mentioned in the CF as an example of an asset (IFRS Foundation, 2010). In addition, a lease of an asset is most often used in introductory Accounting courses as an example of the “substance over form” principle where an asset should be recognised. It is therefore fair to accept that some of the students might have encountered this scenario before in their first or second year of study. Their performance in the question of whether the company had to recognise a liability for the lease payments was more mediocre. The requirement to make lease payments is also clearly mentioned in the CF as an example of a liability, similar to the economic benefits under the lease being mentioned as an example of an asset. However, this example is not used all that often in prior Accounting courses and the researcher thus interprets the lack of experience with a similar scenario as the reason why the results of the liability section were inferior.

7.1 Lack of Experience, Comprehension and Communication Apprehension

The literature revealed that a lack of experience with a problem could influence ability to solve the problem (ITS, 2005; Liraz, 2013; Paupst, 2012; Vernooij, 1995). However, this literature does not specifically refer to financial accounting problems and using only the CF. The current study suggests that unfamiliarity did have an impact on the students' ability to solve the problems. The students would most likely have performed much better had they seen a similar or fairly similar question or scenario before, and as Kolodner and Kolodner (1987) indicate, there is no better way to solve a problem than through experience. However, following a framework-based approach in teaching aims to equip students to adapt to changing circumstances throughout their careers and prepare them for new and unfamiliar situations.

With regard to language, the results indicate that 70.5% of students did not have English as their first language, but 100% preferred English as the first language for business use. All these students received their instruction in English, which appears to confirm the findings of Coetzee et al. (2014) that a home language other than English does not significantly affect apprehension.

7.2 Lack of Underlying Knowledge of the Framework

The majority of students found that the lecture on the CF added value to their attempt at the assignment and consequently agreed on the importance of underlying knowledge in solving a problem, as also suggested by the literature (Brent & Atkisson, 2011; Liraz, 2013;

Shuttleworth, 2014). The students were divided as to whether their knowledge of the CF was sufficient before they could attempt the assignment, although the majority did report that they had to study additional literature before they could attempt the assignment. As the assignment was administered in the first lecture of the year, the lecturer believes that the students could have performed better had they had the opportunity to build more knowledge throughout the year. As also suggested by Bromwich et al. (2010) and Novak (2010), there could be problems requiring detailed knowledge which could be misunderstood and misinterpreted if only analysed according to a framework-based approach. Hence, the lecturer also believes that more knowledge on accounting guidance dealing with the specific transactions could have resulted in better understanding and concluding on the correct principles.

7.3 Group Work

Although various studies indicate that group work could contribute to better results (Biggers et al., 2009; Collett, 2000; De Jager & Bitzer, 2013; Dillenbourg, 1999; Hughes, 2007; Tempone & Martin, 1999), this study seems to be segregated on the students' preference as to whether they would have preferred to work in a group. However, by assessing their preference to work in a group with reference to their experience of the difficulty of the assignment, it appears as if the students that agreed and strongly agreed that the assignment was difficult would rather have preferred to work in a group. This intuitively appears logical, as the students who found the assignment to be difficult might have found the group collaboration and multiple inputs valuable. Their ability to solve the problem could therefore have been enhanced had the assignment been a group assignment as opposed to an individual assignment.

7.4 General Analysis

The overall ability of students to solve accounting problems using the CF depends on familiarity with the problem and its complexity. The students' ability to solve the problems was predominantly influenced by the fact that a large component of the assignment was unfamiliar to them. The assignment intervention as a whole was received positively and the fact that such a large group of students (86.7%) grasped the importance of the CF in solving accounting problems reinforces the emphasis that should be placed on conceptual teaching as advocated by Hodgdon et al. (2011) and Wells (2011).

7.5 Interpreting Qualitative Observations

The overall pass rate for the assignment was 72.0% and the average for the assignment was 57.14%.

The lecturer observed that the following could have contributed to a lower average:

- Poor application of examination technique. Students discussed the definition of the asset, but either did not apply details of the scenario appropriately to the concepts of an asset, or did not discuss the recognition criteria.
- The students could have lacked proper motivation, enthusiasm and commitment in completing the assignment, as the results obtained for the assignment only contributed 10% towards their final mark for the semester.
- Since the lecture on the CF was the first lecture for the semester (and there are always a minimal number of late enrolments), a lower mark could have been as a result of not attending the CF lecture.

The lecturer further observed that the students were positive and enthusiastic about the project and interacted with their fellow students and the lecturer more than usual. Through verbal feedback from the students, the lecturer also observed that the students realised the importance of having a thorough embedded knowledge of the underlying concepts in the CF. This realisation is likely due to the emphasis placed on the CF during the lecture, and repetition of the principles during further lectures, tutorials, the assignment and feedback on the assignment. Students' general feedback about the unit offered during the semester was positive, and they indicated that they enjoyed the lectures and found the unit to be challenging, stimulating and interactive.

The structured finance part of the assignment was developed from a real-life scenario faced by a listed South African entity in the financial services sector. All the names of the entities used in the assignment were pseudonyms. This real-life scenario gave students a feel for a similar scenario that they might face in practice. This in turn might contribute to effective problem-solving in future and to lifelong learning as suggested by Wells (2011).

From a qualitative perspective, the researcher agrees with the literature regarding the advantages and disadvantages of using a framework in solving problems, and finding the optimal balance remains key in this instance. The specific accounting guidance should still be used to a large extent when facing accounting problems, but the CF can certainly make a major difference in interpreting new and revised accounting standards, problem-solving in circumstances where there is no specific guidance and corroborating the accounting guidance specific to a transaction, circumstance or event.

8. Teaching Implications

It is acknowledged that it is not always possible to solve an accounting problem by employing only the CF. The researcher also acknowledges that in certain instances it might be easier to refer to the specific guidance in a standard to solve an accounting problem. However, the CF plays an indispensable role in contributing to accounting standard-setting and problem-solving, being the overall construct on which all specific accounting guidance is based. The assignment intervention was undoubtedly experienced by the students as challenging, yet positive and it increased their engagement throughout the semester. The major focus on the CF also contributed to their understanding of the specific accounting treatment of transactions and organised their knowledge with reference to the concepts in the CF. The assignment furthermore emphasised the importance of the CF in considering all specific accounting guidance and also in problem-solving as evidenced by this study. It is therefore suggested that educators place considerable emphasis on the CF in their teaching curricula.

9. Conclusion

The objectives of this study were to determine whether students have the ability to solve complex accounting problems by using only the CF, and the extent to which their ability is affected by any of the factors identified in the review of the literature. An interpretive analysis was conducted in this study and the exploratory nature of the assignment results and the questionnaire always employed some kind of triangulation. The study identified general patterns of problem-solving according to a framework-based approach and constructed an overall comprehension of how the CF is important in the teaching and learning process, as well as for the accounting profession.

The results of this study suggest that the ability of students to solve accounting problems effectively by referring only to the CF depends on the complexity of the scenario and the students' familiarity with the problem. The assignment indubitably placed considerable emphasis on the importance of the CF in accounting education. This may be especially useful for educators of Accounting students in informing their teaching approach. The literature, enhanced by this study, conveys an important message for Accounting educators: A thorough embedded knowledge and understanding of the underlying concepts in the CF are essential since it could contribute to lifelong learning and the ability to formulate the appropriate accounting treatment for new events and transactions for which IFRS do not provide guidance (Barth, 2013; Schipper, 2003; Wells, 2011). This ability is useful when students enter the profession having to deal with voluminous, ever-changing, complex accounting guidance, as it also provides them with the ability to make appropriate judgements to apply IFRS with rigour and consistency.

Although the study focused on the interpretation of the results of only one South African university, the results could be of interest to other South African universities, as well as any university that teaches Accounting to undergraduate students. The study also provides a basis for further research at other institutions or for longitudinal studies. Further research could additionally be conducted to provide conceptual input to the respective accounting standards boards on areas where the current CF is underdeveloped and to assist the IFRS Education Initiative with providing framework-based teaching material (IFRS Foundation, 2013b).

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CHAPTER 3 (ARTICLE 2):

STUDENTS' PREFERENCES IN SOLVING ACCOUNTING PROBLEMS: FRAMEWORK-BASED APPROACH VS PRESCRIPTIVE APPROACH

Title: Students' preferences in solving accounting problems: Framework-based approach vs prescriptive approach

The reader is requested to take note of the following:

- This article has been submitted for publication to the following double-blind, peer-reviewed academic journal as follows:
 - Odendaal, K. & Van der Merwe, N. 2015. Students' preferences in solving accounting problems: Framework-based approach vs prescriptive approach. *Meditari Accountancy Research*, unpublished. (ISSN: 2049-372X).
- The article was researched and written by the first author as the candidate. The second author fulfilled a 'reviewer' function as the study leader. Weightings of contribution are estimated to be as follows:
 - * Odendaal, K. (90%)
 - * Van der Merwe, N. (10%)
- Confirmation of receipt of the article from *Meditari Accountancy Research* has been received and is presented as part of **Annexure D1** on page **115**. The article was written in line with the journal's submission guidelines, which are included as part of **Annexure D2** on page **116**.

Abstract

Purpose – The purpose of the study was to examine the impact of an assignment based on the Conceptual Framework for Financial Reporting (i.e. a framework-based assignment) on the preferred approach of students in solving future complex accounting problems.

Design/methodology/approach – This study used an interpretive research design through a quasi-experiment to determine the impact of a framework-based assignment administered to undergraduate students at a South African university on their problem-solving approach. Student perceptions were analysed and were aided by a related reflective questionnaire.

Findings – The results suggest that students' preference for solving accounting problems effectively tends towards a mixed approach, i.e. using a combination of the Conceptual Framework and specific accounting guidance. However, when faced with complex accounting problems for which specific guidance does not exist, students would be confident in using the Conceptual Framework to formulate appropriate accounting solutions.

Teaching implications – The study indicates the necessity for Accounting educators to focus on conceptual teaching in accounting education and to enhance conceptual understanding among students as a mechanism for solving accounting issues.

Originality/value – This paper distinctly contributes to accounting education literature by demonstrating the impact of a framework-based approach in Accounting courses on students' preferred problem-solving methods. The study provides insight that exposure to framework-based assessments influences students to use a more balanced approach in practice. The study also provides a replicable research design in which other Accounting educators can implement a similar assignment-based teaching approach.

Keywords – Accounting education; Conceptual teaching; Conceptual Framework; Framework-based approach; problem solving

Paper type – Research paper

1. Introduction

Recent studies suggest that in accounting education, much of the focus should be placed on the teaching of principles, rather than a rigorous set of rules (Hodgdon *et al.*, 2011; Wells, 2011). This paper focuses on accounting education from the perspective of International Financial Reporting Standards (IFRS). The primary principles on which IFRS are based are found in the Conceptual Framework for Financial Reporting (CF) (IFRS Foundation, 2010). The CF should be promoted in accounting education for the reason that, amongst other things, it contributes to lifelong learning (Wells, 2011). As specific accounting guidance included in the detailed standards is seemingly becoming excessive (Barnett, 2000; FASSET, 2008; Gloeck, 2012; Lubbe, 2013; Marx and Van der Watt, 2013; Van der Merwe *et al.*, 2014; Venter and De Villiers, 2013), focusing on the CF in accounting education equips students to adapt to changing accounting guidance and assists in formulating solutions to accounting problems for which no specific guidance exists (Wells, 2011). In areas where the CF is not underdeveloped or where the concepts are not inconsistent with the specific accounting guidance (Barth, 2007; Barth and Schipper, 2008; Christensen, 2010; IFRS Foundation, 2010; IFRS Foundation, 2013b; Wells, 2003; Wells, 2011), it is submitted that accounting problems could in fact be solved just as effectively by referring only to the CF. With the specific accounting guidance steadily increasing and accounting transactions and problems becoming more complex (Grant Thornton, 2014; IFRS Foundation, 2013a), the CF is useful in supporting the formulation of solutions to accounting problems. Unfortunately, in the experience of the authors as Accounting lecturers and the main author having been part of an accounting technical department at one of the Big Four audit firms, frequently the first point of reference in solving an accounting problem is the specific accounting guidance, its implementation guidance and basis for conclusions, and little regard is given to the CF.

In this study, complex accounting problems were given to third-year Accounting students to solve using only the CF. The problems related to areas where the CF was not underdeveloped or inconsistent with specific accounting guidance. By investigating the students' in-depth exposure to solve complex accounting problems using only the CF, the purpose of the study was to determine the problem-solving approach students would take in future when facing a complex accounting problem. Given the seemingly growing importance of framework-based teaching and the aid of the CF in accounting problem-solving, the outcome of this study should therefore be of interest to Accounting academics who can incorporate this approach in the professional education of accountants, government and professional accountancy bodies that aim to promote quality education of accountants, as well as for practitioners facing accounting problems daily.

The literature seems to indicate two opposing views in education, ranging from a minimally guided approach where students discover and learn through inquiry and experiments, to detailed instruction

where students are taught a discipline by fully explaining all concepts and detailed knowledge about a topic that students are required to learn. General advantages of the fully guided approach are that it provides all necessary material and explanations, but disadvantages are that material might be rote learned and that learning beyond the instruction given is discouraged (Boud *et al.*, 2013; Bruner, 1961; Kirschner *et al.*, 2006; Mayer, 2004; Papert, 1980; Steffe and Gale, 1995).

Given the two extreme ways of learning referred to in the previous paragraph, the authors propose finding a middle ground which incorporates both perspectives through a pedagogy of learning rooted in Ausubel's subsumption theory (refer to the next section of the paper) where learning takes place through overarching constructs and principles, rather than through having a detailed technical knowledge. Through the different continuums of learning, accounting problems can be solved by one of three methods, namely a prescriptive approach where the problem-solver only refers to the detailed instruction and guidance in the specific accounting standards, a CF approach where the problem-solver will only refer to the CF to solve the problem and a mixed approach where the problem is solved by understanding the economics of the transaction, applying the concepts of the CF to the transaction and supporting the solution with the detailed guidance in the standards.

In view of the extensive, complex guidance contained in IFRS, the problem that gave rise to the current study is that the use of the CF in solving complex accounting problems is not sufficiently emphasised in accounting education. Hence, the purpose of this study was to administer an assignment containing complex accounting problems to Accounting students at a particular South African university (as a case study) and to determine if students would prefer to take a CF approach to problem-solving or a prescriptive approach, or even find a middle ground with a mixed approach. This study contributes to the current literature on framework-based teaching by offering insight into the impact of this approach on students' future preferences in tackling accounting problems. This study is important as it could provide an alternative basis for guiding accounting education at tertiary level to enhance conceptual understanding and contribute to lifelong learning. Such an approach would also stand students in good stead when entering the profession as they should be prepared to contend with accounting problems in changing circumstances and see to the economics of the transactions.

In the next section the relevant educational theories on which this study was based, as well as relevant literature on approaches to problem-solving are reviewed. The section after that deals with the different approaches to accounting problem-solving based on factors identified in the literature. This is followed by an explanation of the research methodology, a presentation of the results and a discussion of the main findings. The conclusion, limitations and opportunities for future research are presented in the last section.

2. Theoretical framework

Constructivism is a theory, generally attributed to Jean Piaget, which suggests that learners actively create familiarity through experience based on prior knowledge, rather than just receiving passive information (Ackermann, 2001; Fosnot, 2013; Kundi and Nawaz, 2010; Piaget, 1976; Wadsworth, 1996). A constructivist teaching approach has been elaborated on in many forms and is incorporated in various teaching pedagogies such as discovery learning, problem-based learning, experiential learning and inquiry-based learning (Kirschner *et al.*, 2006; Mostyn, 2012) in which it is theorised that a learner is able to learn and discover new content through actual problems, inquiry and experiments, all whilst receiving little, if any, assistance (Boud *et al.*, 2013; Bruner, 1961; Papert, 1980; Steffe and Gale, 1995). Since constructivism became prevalent in the mid-twentieth century, there has been debate about the amount of instruction to be provided during teaching, ranging from pure unguided minimal instruction where students learn through experiments and construct their own knowledge based on minimal guidance provided, to providing direct and detailed instructional guidance required by the discipline where students should not be left to discover knowledge themselves.

Advocates of the minimally guided approach suggest that learning takes place by formulating knowledge through own inquiry/problem-solving, rather than by being provided with all the knowledge and information in a fully guided approach (the latter often incorporates a classroom-style approach). However, this construction of new knowledge can only take place if the learner has a background of prior learning in the discipline (Alfieri *et al.*, 2011; Bruner, 1961).

The experiment in this study was grounded in a constructivist minimally guided approach where students were required to solve a complex accounting problem by using limited guidance based on the CF and prior knowledge about the economics of accounting transactions or events. Through this method of problem-solving, the students create new knowledge about accounting transactions, events and circumstances both in terms of the CF and detailed accounting guidance acquired in reference to their knowledge of the CF.

Various authors note that there is little empirical evidence to support pure discovery learning (Alfieri *et al.*, 2011; Kirschner *et al.*, 2006; Mayer, 2004). These authors acknowledge that constructivist approaches may be beneficial, but an education style that focuses only on discovery learning is not only detrimental to students, but lacks structure in general (Mayer, 2004). These authors believe that students should be provided with information and knowledge that fully explains all concepts and the detailed knowledge about a discipline that students are required to learn. This fully guided approach has been criticised from an accounting perspective, especially in South Africa, as obtaining all

knowledge relating to the discipline is extremely challenging and does not necessarily result in students who can apply their knowledge to real-life examples (Barac, 2014; Coetzee and Schmulian, 2012; SAICA, 2014; Van der Schyf, 2008).

Kirschner *et al.* (2006) define learning as “as a change in long-term memory” and advocate that learning through fully guided instruction does change long-term memory. However, Kirschner *et al.* (2006) also cite Wickens (1992) (as cited in Bernstein *et al.* (2000)), who argues that fully guided approaches may produce very good performance during practice and assessments, but too much guidance which is just transferred to students in a guided environment may impair students’ ability later to retrieve correct responses from memory on their own. In contrast to the fully guided approach, Lee and Anderson (2013) suggest that constructivist approaches lead to better long-term retention, although the rate of learning might be slower. Kirschner *et al.* (2006) and Mayer (2004), however, both advocate that minimally guided approaches are much less effective than fully guided approaches as they do not support the cognitive processes required in learning. Herrington *et al.* (2014) identify a problem in the study by Kirschner *et al.* (2006) in that it focused largely on learning experiments performed in the short term and once-off, whilst not dealing adequately with long-term learning over, for example, an entire semester, or even lifelong learning. The constructivist therefore believes that, once the knowledge has been formulated by the learners themselves (rather than just obtaining it through instruction), it will lead to knowledge retention in long-term memory.

Authors such as Kirschner *et al.* (2006) and Mayer (2004) seem to disregard constructivist approaches in totality, although it appears as if other educators and authors find value in these approaches. Lee and Anderson (2013) provide a summary, seen in Table I, of the two continuums, showing the strengths and weaknesses of fully guided instruction.

Table I. Advantages and disadvantages of providing detailed instruction

Advantages	Disadvantages
<ul style="list-style-type: none"> • Provides all the explanations and correct solutions. 	<ul style="list-style-type: none"> • Solutions to problems may be rote learned and poorly remembered.
<ul style="list-style-type: none"> • Guides students to all necessary material to be learned. 	<ul style="list-style-type: none"> • Discourages learning that goes beyond the instruction.
<ul style="list-style-type: none"> • Guides students to critical elements in the examples. 	<ul style="list-style-type: none"> • Students do not understand the examples and just recreate them based on the detailed guidance.
<ul style="list-style-type: none"> • Time efficient by reducing time to search for information that might be irrelevant. 	<ul style="list-style-type: none"> • Processing all the detailed instruction can be onerous and impair comprehension.

When comparing the different perspectives in the literature, the current authors believe that there is definite merit in a minimal guided approach where students discover for themselves and learn through experience. Students learn from real-life problems and experience, and discovery of knowledge contributes to long-term memory. Fully guided instruction is useful in that it provides a frame of reference when dealing with problems in the future; however, in the experience of the authors this fully guided approach seems to be mostly useful for committing knowledge to short-term memory and to pass an exam, whilst students are generally not able to recall all the details later in life. The authors are of the opinion that some middle point is necessary in this spectrum between minimal and fully guided approaches, and that the ideal mix will vary for different courses and disciplines. An educator cannot rely purely on minimal instruction; however, educators should accentuate the importance of overall concepts that guide a discipline, enhanced by scaffolding techniques and feedback and guided by the details of a discipline, with reference to the overarching construct on which the discipline is based.

There is not much research in the field of instructional guidance and its impact on cognitive learning in accounting education (Mostyn, 2012). As constructivism has become more prevalent over the last few decades, it has been suggested in accounting education that the focus should be more on conceptual education and, through this, constructivist approaches should be enhanced. From an accounting education perspective, authors such as Hodgdon *et al.* (2011) and Wells (2011) believe that a sound knowledge of the underlying CF in accounting will lead to knowledge creation and contribute to lifelong learning. The constructivist pedagogy was promoted in the position statement of the Accounting Education Change Commission, created by the American Accounting Association in 1989, advocating “learning to learn” (Mostyn, 2012).

Accounting education in South Africa generally appears to be inclined towards fully guided instruction, but in recent years this has been placed under scrutiny as this focus on detail is geared to equip professional Accounting students to pass the Initial Test of Competence of the South African Institute of Chartered Accountants (SAICA). It often results in students not being equipped to think outside any parameters of only the guidance provided through the accounting instruction, hence resulting in an inability to solve unique problems (Barac, 2014; Coetzee and Schmulian, 2012; Van der Merwe *et al.*, 2014; Van der Schyf, 2008). In response to this, SAICA developed a new competency framework which also seems to incorporate more aspects of the constructivist philosophy by promoting lifelong learning (SAICA, 2014). In this study, the authors recommend that accounting education incorporate a constructivist approach through a philosophy similar to Ausubel’s subsumption theory. This theory suggests that cognitive learning takes place through presenting the general ideas of a subject first, and as new material and detail are presented, they are linked and cross-referenced to the overall general constructs which were introduced first (Ausubel, 1962).

Likewise, this study supports accounting education on the principle of presenting the most general ideas first, namely the CF. As new material is introduced on accounting specific guidance, it is referenced to existing knowledge of the overall concepts included in the CF to build new knowledge and result in meaningful learning through horizontal, vertical and cross-links to existing general knowledge. The authors refer to this method as a framework-based approach in accounting education. This study aimed to determine whether incorporating a framework-based approach in an Accounting course would impact on the accounting problem-solving preference of students in their accounting careers.

General advantages of a framework-based approach are that a detailed knowledge and understanding of the framework aids in adding and organising knowledge to this framework, in addition to equipping individuals with the ability to adapt to change (Barth, 2007; Durillo and Nebro, 2011; Hesketh, 2011; Hines, 1989; Novak, 2010; Ostrom, 2011; Wells, 2011). Some of the major disadvantages are that information could be misinterpreted if detailed guidance and rules are not known and that no approach can ever be as effective as experience (Bromwich *et al.*, 2010; Christensen, 2010; Hines, 1989; Kolodner and Kolodner, 1987; Novak, 2010).

3. Approach to learning accounting and problem-solving

IFRS are prepared by the International Accounting Standards Board (IASB) and are generally regarded as being principles-based (Alexander and Jermakowicz, 2006; Bennett *et al.*, 2006; Collins *et al.*, 2012; Hodgdon *et al.*, 2011; Jamal *et al.*, 2010; Konte, 2013; Nelson, 2003; Schipper, 2003; Wüstemann and Wüstemann, 2010). Principles-based standards largely do not consist of precise rules and require more judgements in their application. Specific accounting guidance is to a large extent based on the overall qualitative characteristics of financial reporting as set out in the CF (Alexander and Jermakowicz, 2006; Bennett *et al.*, 2006; Benston *et al.*, 2006; Collins *et al.*, 2012; Nelson, 2003; Nobes, 2005; Schipper, 2003; Wüstemann and Wüstemann, 2010). This study assumed the use of IFRS (which form the backbone of accounting education in South Africa) and used an experiment assuming that principles-based standards are applied in a given scenario.

The CF is a vital consideration in the development of principles-based accounting standards as it guides the process of standard-setting by providing the fundamental principles and foundation for detailed financial reporting standards. It assists the IASB with its process of developing new financial reporting standards and the review of existing standards to ensure that standards are based on consistent fundamental principles (Gore and Zimmerman, 2007; IFRS Foundation, 2010). An increased emphasis on principles has led to more recent constructivist literature suggesting that educators should focus on a conceptual approach to teaching IFRS, which equips students to exercise judgement and improves their ability to adapt to changes in accounting standards

(Tweedie, 2007; Wells, 2011). The conceptual approach to accounting education will inevitably place great emphasis on the CF as it enhances the understanding of the concepts underlying the accounting treatment of transactions, events and circumstances (Barth, 2013; Hodgdon *et al.*, 2011; IAAER, 2013; Schipper, 2003; Wells, 2011; Wells, 2013).

Based on the philosophies discussed in the theoretical framework, accounting education should also find a detailed balance between providing only minimal instructional guidance in an Accounting course versus fully guided, detailed instruction. In South Africa, Accounting courses have been criticised for their focus on passing the exam, rather than providing the students with a skill set necessary to prepare them for the working world (Barac, 2014; Coetzee and Schmulian, 2012; Van der Merwe *et al.*, 2014).

The following sections set out how students (and accounting practitioners) can go about solving accounting problems:

3.1 *Prescriptive approach*

In the experience of the authors, when solving a specific accounting problem, the first point of reference is usually the detailed specific accounting standard dealing with the problem (i.e. a prescriptive approach). In the view of the authors, the reason why many accountants usually refer to the detailed guidance first is that that is how they were taught. The detailed guidance, of course, also addresses any areas where the CF is underdeveloped and provides guidance where the detailed guidance is inconsistent with the CF. The detailed guidance also naturally provides more guidance (and examples of situations) of its application.

The setbacks of the prescriptive approach are threefold:

1. The 2014 IASB publication 'A guide through IFRS' consists of a total of 4 885 pages (41 reporting standards and 21 interpretations) (IFRS Foundation, 2014). Relatively detailed knowledge of this vast amount of guidance is necessary in order to use the detailed prescriptive approach to problem-solving.
2. Even if the problem-solver has adequate knowledge of the vast amount of detailed accounting guidance (or had adequate knowledge at some point, i.e. recently after they have successfully completed their studies), the IASB is constantly updating and changing the specific accounting guidance included in the standards (often to be more in line with the CF) (IFRS Foundation, 2013a; Tweedie, 2007). The problem-solver might therefore use outdated guidance to solve the problem as a certain period might have elapsed since he/she had adequate knowledge of all the accounting guidance.

3. In certain instances, transactions or events could occur that are not dealt with directly by one of the specific accounting standards, which may render detailed knowledge of the guidance of little value.

3.2 *CF approach*

An accounting problem could often be solved just as effectively by referring only to the CF, as it ultimately contains the overall concepts on which the detailed guidance is based. The CF guides the process of standard-setting by providing the fundamental principles and foundation for detailed financial reporting standards (Gore and Zimmerman, 2007; IFRS Foundation, 2010). The IASB recognises that in certain circumstances there could be a difference between the CF and a specific standard, in which instance the specific standard will prevail over the CF (IFRS Foundation, 2010). Detailed guidance is therefore necessary for areas where the CF is underdeveloped or unclear, or to provide guidance for specific industries and transactions. The inconsistencies and underdevelopment of the CF are not substantial, however, and will still diminish over time as accounting standards become more principles-based, and a new CF is in the pipeline (IFRS Foundation, 2013b; Tweedie, 2007).

The CF approach requires the use of only the CF in solving an accounting problem. This approach should be highly effective in areas where the CF is not underdeveloped or inconsistent with detailed accounting guidance. The advantage of the CF approach is that a detailed understanding of only 32 pages of accounting concepts is necessary in order to solve a range of accounting problems. The disadvantage is that some implementation and interpretation differences of these concepts are likely to arise if more detailed guidance is not available.

3.3 *Mixed approach*

As with the two extremes of minimal and fully guided instruction in accounting education, it is suggested that accounting problem-solvers should also find equilibrium in this continuum of the fully prescriptive versus the CF approach. The authors believe that, even in areas where the CF is consistent with accounting guidance, the notions in the CF are explained in a few paragraphs compared to a number of pages of specific guidance. Even though the use of specific guidance will naturally require more detail to be learned, it will inextricably lead to improved application of accounting concepts contained in the CF and eliminate any possible interpretive differences of the concepts in the CF. However, the “additional” learning required from using the detailed guidance should be easier if there is a constant link with the concepts in the CF. The specific guidance is undoubtedly necessary in problem-solving, but the CF is equally essential.

The advantages of utilising the CF in problem-solving are that a detailed understanding of the overall concepts could aid significantly in the interpretation of specific accounting guidance for transactions. It is therefore suggested that notions of the detailed guidance be used, aided by the application of concepts in the CF. The only instance where there will be a pure focus on specific guidance is where the CF is vague, underdeveloped or inconsistent with the specific guidance. The CF, on the other hand, will naturally be used in instances where no specific accounting guidance exists, or to aid in understanding the changes made to existing specific guidance.

The mixed approach is supported by authors such as Barth (2013) and Wells (2013), who propose certain steps in attempting an accounting problem which incorporates elements of the CF (such as identifying the economics of the transaction, which information is useful and can be faithfully represented, and identifying concepts relating to recognition, measurement, presentation and disclosure which are consistent with the CF), but also requires reference to specific accounting guidance (namely which IFRS are applicable and whether guidance is inconsistent with the CF). It is argued that the mixed approach incorporates the best of both ends of the spectrum and should therefore be the most advantageous, although it cannot eliminate all of the disadvantages of either extreme.

As the authors' objective was also to promote a mixed approach, the aim in this study was to determine which approach to problem-solving students would prefer after being exposed to a complex accounting problem in the form of an assignment where they were required to solve the problem by referring only to the CF.

4. Research methodology and design

This study used an interpretive research design to explore the approach that students would take in solving accounting problems. It incorporated a quasi-experimental nature (Campbell *et al.*, 1963; Shadish *et al.*, 2002) where an assignment requiring a specific method to solve accounting problems was administered to third-year Accounting students. The interpretive and quasi-experimental nature was necessary to possibly determine the causal impact of the assignment on the problem-solving approach of students when faced with complex accounting problems. Although aided by a questionnaire as a means of information gathering, the research was fundamentally qualitative in nature. Through an interpretivist approach, this research can create knowledge about accounting problem-solving that cannot objectively be verified using a positivist approach.

The study incorporated a wider methodology that included triangulation. The validation of the overall research required that the analysis of the assignments be combined with other ways of data

collection during the process. Qualitative data analysis (Berg and Lune, 2004; Merriam, 1998) was used to determine the students' response to the assignment and by observing their approach, results, interaction and feedback. The study also drew on field notes kept by the researcher to summarise student behaviour and interaction.

The observational and interpretive data was enhanced by a further research instrument in the form of a reflective questionnaire that was designed on the principles identified during the literature review. The questionnaire focused mainly on reflection by students after they received feedback on the assignment and after the specific accounting guidance that governed the transactions in the assignment was discussed with them. Such reflections revolved mainly around the approach the students would take to solve accounting problems in future. The purpose of the questionnaire was to gather information to gain insight into students' perceptions of accounting problem-solving and not mainly to analyse quantitative measures, thus complementing the explorative, qualitative nature of the study. Based on the literature, the questionnaire explored, on a 5-point Likert scale ranging from 1 = *Strongly agree* to 5 = *Strongly disagree*, the likely approach students would take in future accounting problem-solving, ranging from a purely prescriptive approach to a purely CF approach. The questionnaire was reviewed by various knowledgeable experts in research design in the accountancy and education fields to ensure the validity and completeness of the questions in relation to each different theme identified during the literature review. Even though this research was focused in an interpretive paradigm, the research design and the methodology aimed to make the study replicable and therefore reliable.

4.1 *The assignment*

An assignment was developed by the lecturer of a third-year Accounting course at a South African university. The assignment contained various complex accounting structures and problems relating to a structured finance deal between a bank and an entity wishing to obtain finance to acquire a property. As discussed in the literature, whilst most accounting problems can generally be solved by referring to a specific accounting standard, the same conclusion could also be reached by referring only to the CF. The assignment required students to solve the accounting problems using only concepts underlying the CF. The assignment was based on a real-life scenario from an entity in the financial services industry, but all actual names were replaced by random pseudonyms. The problems in the assignment did not relate to areas where the CF is underdeveloped or where the specific accounting guidance is inconsistent with the CF. The issues identified in the accounting problem were revisited again during lectures later in the Accounting course when the specific guidance for the appropriate standards dealing with the problems was taught. Students then had time to reflect on the issues and the conclusions reached, both in terms of the CF and the specific guidance in the appropriate IFRS.

4.2 *The student participants*

The assignment was administered to the third-year Accounting students at a South African university. The majority of the students in this course were studying towards becoming a Chartered Accountant (South Africa) (CA(SA)), with only the minority wanting to follow a different route. The study was focused exclusively on the students at this particular university as a case study, which reinforces the qualitative, interpretive research design and allows for deep analysis on a smaller scale to obtain rich data.

All SAICA-accredited universities have to comply with the same set of stringent accreditation criteria that guide the required competencies, standard of assessment and the knowledge list of CA(SA) students (SAICA, 2014; SAICA, 2015). Therefore, the profile of the Accounting students and their exposure to accounting topics, including their difficulty levels and standard of assessment, would be similar at most SAICA-accredited universities. The study therefore represents a microcosm of a larger system (Gomm *et al.*, 2000) and may indicate symptoms present within most Accounting courses at SAICA-accredited universities across the country. Although the study in this paper was conducted at only one university, its implications are by no means limited to this institution. The extrapolation of results to the entire population of CA(SA) students in South Africa was not attempted; however, meaningful results were obtained from the specific selection which go a long way to better understanding students' preference in their problem-solving approach.

5. **Results**

Following the participating students' exposure to the assignment in which they had to solve complex accounting problems using only the CF, and the Accounting educator placing great emphasis on the CF during the Accounting course, the likely approach students would take in solving future accounting problems is investigated in this section.

5.1 *Participant profile*

A total number of 65 students enrolled for the third-year Accounting course at the university where the study was conducted in the year the assignment was administered, and 64 students completed and submitted the assignment. Of the students that completed the assignment, 44 students (68.75%) completed the questionnaire. The lecturer believes the major reason for the difference between the number of students that completed the assignment and those that completed the questionnaire was non-attendance of the lecture on the day the questionnaire was administered. The demographic

detail of the students that participated in the study and completed the questionnaire is summarised in Table II.

Table II. Demographic information on student participants

Student profile (44 participants in the questionnaire)	Demographics		N	%
		Gender?	Male	18
		Female	26	59.1%
	Are you a South African citizen?	Yes	10	22.7%
		No	34	77.3%
	Is English your first language?	Yes	13	29.5%
		No	31	70.5%

The university at which the assignment was administered has a large intake of African (other than South African) students, explaining the high percentile of non-South African citizens. Although 70.5% of students indicated that English was not their first language, 100% of the students responded that English was their first language of preference for business (English is also the language of instruction used at the institution where the study was conducted).

5.2 Questionnaire feedback

As the research was interpretive in design, the results report the feedback from the questionnaire administered to gain insight into student approaches to accounting problem-solving. The results are reported for the prescriptive approach, CF approach and the mixed approach. Despite this being a qualitative study, selected descriptive statistics are included to enhance the understanding of the reader and to offer additional insight into the results discussed. In the reporting of percentages, the answers of “Strongly agreed” and “Agreed” were combined into an “Agreed” category. Answers of “Disagree” and “Strongly disagree” were combined into a “Disagreed” category. Answers not falling in either of these categories indicate that students took a neutral stance on the matter. The discussion following the results focuses, from a qualitative perspective, on the interpretation of the results, including lecturer observation of the students, assignment and course feedback and anecdotal evidence.

Table III. Feedback on the questionnaire results

Approach	Question	Results in percentages		Mean
		Agreed	Disagreed	
Prescriptive approach	I would have been able to resolve the problem quicker/easier if I knew the detail requirements of the specific standard governing the finance structure transaction	59.1%	2.3%	2.20
	I would rather use the specific guidance in the standards governing the transactions (as opposed to the Framework) to solve accounting problems in future	34.1%	15.9%	2.68
CF approach	I would feel comfortable to address future complex financial accounting problems by looking at the Framework only	47.8%	20.5%	2.55
	If there is a new transaction for which specific guidance in IFRS does not exist, I would have confidence to formulate the accounting treatment by using the Framework only	68.2%	6.8%	2.23
Mixed approach	I would use a combination of the Framework and specific guidance in the standards governing the transactions to solve accounting problems in future	81.1%	2.3%	1.77
	I believe an embedded knowledge of the concepts included in the Conceptual Framework will help me to solve accounting problems in the future	84.1%	2.3%	1.80

5.3 Overall

A remarkable overall result is that 86.7% of the students indicated that the assignment emphasised the importance of the CF in considering future accounting problems, with the remaining students being neutral on the matter. The assignment results and the above three approaches are interpreted in the discussion section that follows.

6. Discussion

During the Accounting course the CF was continuously emphasised. In addition, the students were exposed to the assignment early in the course requiring them to use only the CF to solve the accounting problems. As specific accounting transactions were dealt with later in the course, there was continuous reference to the overall concepts in the CF, as well as when the specific guidance of the transactions in the assignment was discussed. The students were therefore constantly made aware of the importance that the CF can play in understanding accounting transactions. As for the approach students will take in future when facing accounting problems, it appears as if students tended towards a mixed approach.

6.1 *Prescriptive approach*

In the student responses, 59.1% felt that they would have been able to resolve the problem in the assignment quicker or easier had they known the detailed requirements of the specific accounting guidance. This is understandable because guidance dealing directly with a transaction, event or circumstance will allow one to recall the specific accounting treatment, especially if the problem is familiar or similar to a problem that has been seen before. Kirschner *et al.* (2006) and Mayer (2004) advocate a fully guided prescriptive approach, but it appears that the specific cohort of students to which the assignment was administered were, in general, not necessarily in favour of this approach. One of the criticisms of the fully guided approach is that it is focused on short-term success rather than long-term memory retention (Herrington *et al.*, 2014). In this respect, even though the majority of students saw benefits in the speed and ease with which specific guidance can aid in solving problems, only 34.1% indicated that they would rather use specific guidance (as opposed to the CF) to solve future accounting problems, perhaps recognising that over the long term detailed knowledge might fade.

6.2 *CF approach*

A minimally guided approach has its roots in constructivism and supporters of this approach believe that students are able to learn by making their own associations through experiments, inquiry and problem-based learning whilst receiving little guidance (Boud *et al.*, 2013; Bruner, 1961; Lee and Anderson, 2013; Papert, 1980; Steffe and Gale, 1995). From the perspective of this study, the lecturer only provided students with concepts in the CF, with minimal other specific accounting guidance, before they were required to solve complex accounting problems. In this respect, Bruner (1961) and Alfieri *et al.* (2011) point out that construction of new knowledge through experimental approaches can only take place if the learner has a background of prior learning in the discipline. In addition to the CF, the assignment did require the students (who were in their third year of study) to

relate prior knowledge regarding economic transactions to the scenario. Given such a minimally guided approach, 47.8% of students indicated that they would feel comfortable addressing future problems through a similar approach (namely only referring to the CF with linkage to prior knowledge and experience). The majority of students therefore did not feel completely comfortable to be worthy accountants with a CF approach only, yet 68.2% still indicated that in the absence of specific guidance dealing with a transaction, they would have confidence to follow a CF approach.

6.3 *Mixed approach*

The mixed approach is supported by authors such as Barth (2013), Hodgdon *et al.* (2011) and Wells (2011), where a great deal of emphasis is placed on the foundational concepts in the CF, and specific accounting guidance is linked to the overall concepts. It appears as if participants preferred a mixed approach and that they would value education that enabled them to address accounting problems in this mixed manner. This is evident from the results indicating that 81.1% of students wished to use a combination of the CF and specific guidance to solve future accounting problems. These students valued the contribution of the CF emphasis in accounting education as 84.1% believed that a good embedded knowledge of the CF would aid to solve future accounting problems.

These results suggest that the assignment and its focus on the CF was meaningful, as students' problem-solving approach would probably predominantly focus on a prescriptive approach if emphasis is not placed on the CF during Accounting courses.

6.4 *General analysis*

The assignment intervention as a whole was received positively and the fact that 86.7% of students grasped the importance of the CF in solving accounting problems reinforces the emphasis that should be placed on conceptual teaching as advocated by Barth (2013), Hodgdon *et al.* (2011) and Wells (2011).

From a purely qualitative perspective, field notes kept by the lecturer and observations indicate that the students were initially surprised by the assignment as the structured finance deal was like nothing they had ever seen before and that they had to spend additional time understanding the scenario. However, they were excited about the project and even though it was an individual assignment, they appeared to interact more with their fellow students and lecturer. The lecturer believes that, through the assignment and the continuous emphasis on the CF throughout the course, the students realised the importance of having a thorough embedded knowledge of the underlying concepts in the CF. The general feedback by the students on the Accounting course was positive and they reported that the course was intellectually stimulating, yet challenging and interactive.

6.5 Anecdotal evidence

The lecturer of the Accounting course received an email (reproduced below) from a student who graduated at the end of 2013 and had been in the workplace for approximately 7 months at the date of the email:

“Dear xxx,

I just want to thank you for time and dedication in teaching us. I can't tell you how USEFUL knowledge of the conceptual framework is beyond school.

I was not the very brightest student but I am glad I listened to you and attempted all questions (Especially for Group accounting) as that gave me a good foundation.

Please do keep up the good work you are making a good impact on our lives as accounting students.

Thank you

Warm Regards”

(sic)

This email was received from a student that studied with the university in a year that the assignment was not administered. It shows that at least one student confirms the importance of the CF in accounting education and its significance for the workplace environment and even more so, the researchers believe, when exposed to a framework-based assignment during their studies.

7. Teaching implications

The CF supports accounting education from more than one perspective. As portrayed in the literature, students experience the amount of accounting guidance to be extensive and nearly impossible to master it all. The CF aids in teaching this voluminous amount of accounting guidance with reference to the overall concepts included in the CF. Using a framework-based approach in teaching therefore alleviates the need to “rote learn” all specific accounting guidance, but with the assistance of the Accounting educator, the students can organise their knowledge with reference to the CF and link it to concepts that they understand well and can relate to. By emphasising the CF, Accounting educators can also play a substantial role in developing the ability of students to make judgements which could be valuable to them once they enter the workplace and have to deal with unfamiliar and often complex transactions on a regular basis.

The results in this study might indicate that students who have been exposed to a framework-based assignment, or when the CF is emphasised during a course, tend to prefer a mixed approach in solving accounting problems. A mixed approach should be beneficial for the accounting profession, as these students should be able to adapt to amended specific accounting guidance and formulate opinions on new and revised standards and exposure drafts, as well as on previously unaccounted

for transactions and events. In accounting education it will be important to consider the fundamental question of balance, regarding how to provide enough structure to help students engage in problem-solving activities more deeply while not oversimplifying the process by giving them a step-by-step recipe.

8. Concluding remarks

The objective of this study was to determine the likely approach students will take in solving future accounting problems when faced with complex scenarios after they have been exposed to an assignment requiring them to solve complex accounting problems by referring only to the CF, i.e. whether the students will look to the CF, specific accounting standards, or a mixture of both. The study therefore sheds light on whether exposure to such an assignment may alter students' problem-solving preferences. The results of this study suggest that the participating students would likely employ a mixed approach when faced with complex accounting problems and that they would be comfortable in solving accounting problems using the CF when specific guidance does not exist. Although the assignment was administered at only one South African university, the results are relevant for Accounting educators globally, as a focus on the foundational concepts in accounting education can largely enhance students' ability to make judgements when entering the accounting profession.

This study corroborates recent literature advocating an approach in accounting education that focuses on the fundamental principles in Accounting courses. This study distinctly contributes to the relatively scarce accounting education literature on this topic by demonstrating the impact of a framework-based approach to teaching on students' preferred problem-solving approach. It also contributes by providing a replicable research design in which other Accounting educators who so desire can implement a similar assignment-based teaching approach. If students have experience in how to apply judgements through continuous use of the CF, this will aid these students to make appropriate judgements when dealing with complex transactions in practice.

A limitation of this study is that it was unable to unilaterally calibrate the benefits of integrating the framework-based assignment with students' professional accounting career choices. Further research could be conducted over a longer period to examine student responses to accounting problems once they have entered the profession. The study could also be expanded to include more Accounting courses at a South African and global level and to compare results with Accounting courses where emphasis is not placed on the CF. Further insight into student perceptions could also be obtained through interviews and focus groups. These additional research initiatives may provide additional insight into the incremental benefits of a framework-based approach to accounting education.

Regardless of its limitations, this study provides evidence of how a framework-based approach in at least one Accounting course impacted on students' responses to accounting problems and the considerable importance of the CF in the teaching approach. The research certainly also provides some indication of how such an approach would impact accounting education in general. As the accounting profession greatly contributes to the economy of any country, any research aiming to enhance the profession through the roots of its educational system carries merit.

9. References

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CHAPTER 4:
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

1. Introduction

Throughout this dissertation, it can be seen that there is a vast amount of accounting guidance governing accounting transactions and events (IFRS Foundation, 2014). In addition to this, numerous accounting transactions are complex and require more specialised skills from accounting professionals to address structured accounting problems (Grant Thornton, 2014; IFRS Foundation, 2015). This study has endeavoured to determine students' ability to solve complex accounting problems by referring only to the Conceptual Framework for Financial Reporting (CF), as well as the factors that could have influenced their ability to solve the problems. The study further investigated the preference in the problem-solving approach of students in facing future accounting problems, after being exposed to complex accounting problems in the form of an assignment requiring the students to solve the problems using only the CF. Third-year Accounting students at a South African university were given an individual-based assignment setting out complex finance structures and other accounting problems and the students were required to solve the accounting problems by referring only to the concepts included in the CF. The study was mainly qualitative in nature, aided by a questionnaire to discover information about the students' perceptions regarding problem-solving abilities and preferences. The interpretive research could yield better insights into the specific research problem than a positivist approach. The study incorporated various research instruments in order to enhance the validity of the research and resulted in some form of triangulation.

The study was grounded in educational philosophies such as constructivism (which advocates a teaching philosophy where students learn through active inquiry, experiments and problems and not merely by receiving information from the teacher) and specifically Ausubel's subsumption theory, which suggests that education should follow the principle of presenting the most general ideas first in order to create an overall framework of the discipline. Details of the discipline should then be presented in an attempt to integrate the new material with previous knowledge and the framework through cross-references and linkage of general and specific ideas (Ausubel, 1962). Based on this subsumption theory, this study suggested a framework-based approach to accounting education in which educators first present the overarching constructs and ideas of accounting with reference to the CF, after which they focus on details of specific accounting transactions and build onto the foundational concepts already taught. The teaching paradigm also needs to incorporate problems and experiments through which the students can construct their own knowledge, rather than being passive recipients of the educator's teaching style. This framework-based approach to teaching has come to the forefront in recent literature authored by Barth (2013), Hodgdon *et al.* (2011) and Wells (2011).

The assignment used in the study was grounded in the notion that, as discussed in Chapters 1, 2 and 3, accounting problems can be solved just as effectively by referring only to the CF, rather than the actual detailed specific accounting guidance included in all the International Financial Reporting Standards (IFRS). This is, however, dependent on the requirement that the problems relate to areas where the CF is not underdeveloped or inconsistent with the specific guidance included in IFRS.

Although the study in this dissertation was conducted at only one university, its implications are by no means limited to this institution. Extrapolation of results cannot be attempted due to the nature of the research design, but the results in this study are valuable and enhance accounting education literature in better understanding students' problem-solving abilities and their preferred problem-solving approach. The research is therefore valuable to any Accounting educator, as well as the institutional bodies guiding accounting education and its syllabi. It is hoped also that some of the findings will inspire other educational institutions to promote a framework-based approach in an innovative manner.

2. Overview of research method used

An individual-based assignment was administered to third-year Accounting students at a South African university. The assignment contained complex accounting problems requiring the students to solve the problems by referring only to the concepts included the CF. The students were enrolled on the professional accounting route geared towards preparing them for a Chartered Accountancy career path.

A review of the literature laid the foundation for identifying the educational theories associated with a framework-based approach, to understand how they link with accounting education and to identify the advocates, opponents, advantages and disadvantages of different approaches. The literature review further uncovered possible factors that could influence a student's ability to solve a problem effectively, as well as possible approaches to solving accounting problems. The literature also includes differing views on the amount of instruction that should be provided in education and the different approaches were summarised into three paradigms of teaching and problem-solving.

The research was focused within an interpretive paradigm to explore the ability of students to solve complex accounting problems using only the CF and the preferred approach students will take in solving accounting problems in future. Both articles in this study were grounded in this research design and incorporated a phenomenographic research methodology which aimed to investigate the qualitatively different ways of describing, analysing and understanding how students experienced a framework-based approach to teaching and assessment (Bowden & Walsh, 2000; Marton, 1981;

Marton, 1986). Students' responses and perceptions regarding complex problem-solving mechanisms were analysed mainly by means of qualitative data analysis (Berg & Lune, 2004; Merriam, 1998) through the lecturer observing the students' approach, results, interaction and feedback. The research design also incorporated a further research instrument in the form of a reflective questionnaire that was designed on the principles identified during the literature review, in order to determine students' ability to solve complex accounting problems using the CF, the factors that could have influenced their ability, as well as their preferred future approach to solving accounting problems. The purpose of the questionnaire was to gather further information to supplement the explorative, qualitative nature of this study. This study therefore aimed to include variation in research instruments and to investigate the outcomes from different perspectives through analysis of student assignments as well as their reflected perceptions, both from the perspective of the student and the lecturer.

3. Addressing research objectives

The research objectives identified in Chapter 1 were addressed in the two articles (namely Chapter 2 and Chapter 3) and a summary is included below in Figure 1:

Figure 1: Research objectives addressed

To expose students to one or more complex accounting problems and assess their ability to solve the complex accounting problem(s) by referring only to the CF (addressed in Chapter 2).



Students were given an individual-based assignment with complex accounting problems and were required to solve the problems using only the CF. Literature was also reviewed on the advantages and disadvantages of using a framework during the problem-solving process. The student results were quantitatively expressed, but qualitatively analysed with regard to average marks and pass rates. Content analysis was conducted on their assignments to determine their ability to conceptually conclude on the correct principle. It was found that students' ability to solve complex accounting problems using only the CF depends on the complexity of and familiarity with the specific problems. Based on the content analysis it was found that students could generally draw conceptual conclusions better in the areas that were less complex and did not include difficult structures, or in the areas where the students might have seen or heard about a similar transaction before.

As a secondary objective, the researcher also considered factors that could have influenced the students' ability to solve the complex problem(s) (addressed in Chapter 2).



A literature study was performed on factors that could influence students' problem-solving ability and a questionnaire was compiled based on items identified during the literature review. This research objective was assessed through qualitative measures, like observation of student feedback and participation and obtaining information through the questionnaire. It was found that students believed that appropriate knowledge, complexity of the scenario, familiarity with the problem and experience could all influence their ability to solve an accounting problem. Students who found the assignment to be difficult would have preferred to work in a group. Students were positive and enthusiastic about the project and the large majority recognised the importance of the CF in accounting education and problem-solving.

To determine what approach a student will take when faced with a future complex accounting problem, i.e. whether the student will look to the CF, specific accounting standards, or a mixture of both (addressed in Chapter 3).



A literature study was conducted on the amount of instruction provided in accounting education, as well as the different approaches to problem-solving, and a questionnaire was compiled based on items identified during this review of literature. The research objective was assessed through qualitative measures, like observation of student feedback and participation and obtaining information on students' perceptions of accounting problem-solving through utilising the questionnaire. It was found that participating students tended to prefer a mixed approach to solve accounting problems involving a combination of the CF and specific guidance in addressing accounting issues. The students also felt confident to address problems by applying only the CF if specific accounting guidance does not exist.

4. Summary of the main results and conclusions

4.1 Students' ability to solve complex accounting problems using only the CF

Literature indicates that there are different advantages and disadvantages to using a framework of a discipline to solve problems. Studies in disciplines other than accounting have shown that general advantages of using a framework in problem-solving are that a detailed knowledge and understanding of the framework aids in organising and adding knowledge to this framework, in addition to equipping individuals with the ability to adapt to change. General disadvantages are that information could be misinterpreted if detailed guidance and rules are not known and no approach can ever be as effective as experience (Hines, 1989; Kolodner & Kolodner, 1987; Kolodner & Riesbeck, 2014; Ostrom, 2011; Wells, 2011). There appears to have been no exploratory studies on solving accounting-specific problems using only the CF. Hence this area was explored (see Chapter 2) from the perspective of the ability of Accounting students to solve a complex accounting problem whilst referring only to the CF, as well as factors that could influence students' ability to solve the accounting problems (which were generally identified as complexity of the problem and knowledge; experience and familiarity with specific problems, and group work) (Biggers *et al.*, 2009; Brent & Atkisson, 2011; Dillenbourg, 1999; Liraz, 2013; Paupst, 2012; Shuttleworth, 2014).

The results of this study were analysed on two levels:

- 1) Student assignments: The average results of the assignments were analysed, and a content analysis was conducted on the students' suggested solutions to the assignments in respect of conceptual understanding.
- 2) Factors were identified that could have influenced the problem-solving ability through questions pertaining to issues identified in the literature review.

The main results and conclusions are summarised below in respect of these two analyses:

- 1) The overall pass rate for the assignment was 72.0% and the average mark for the assignment was 57.1%. Students seemed to have had mostly varied opinions on the difficulty of the assignment, with approximately one-third of students indicating that it was difficult, one-third indicating that it was not difficult and the remaining students being neutral on the matter. In respect of the content analysis, the results indicate that students could draw conceptual conclusions better in the areas (like the lease) that were less complex and did not include difficult structures, or in the areas where the students might have seen or heard about a similar transaction before.
- 2) Regarding the factors that could have influenced the students' ability to solve the problem, the results indicate that students' ability is influenced by a lack of experience and that students prefer to be faced with problems similar to those encountered before, as they would be more familiar with the problem-solving procedure. The fact that 70.5% of participating students did not have English as their first language (although their instruction and assessments were in English) does not appear to have had a real influence.

With regard to complexity and knowledge, the majority of students reported that they needed to study additional material before attempting the assignment. The study concluded that additional information on accounting guidance dealing with the specific transactions could have resulted in a better understanding and the ability to conclude on the correct principles.

In respect of group work, the students were divided on whether they thought working in a group would have aided their overall ability to solve the problem more easily using only the CF; however, a logic result was observed in that students who generally found the assignment to be difficult indicated that they would have preferred to rather work in a group (as opposed to individually).

From a qualitative perspective, the researcher agrees with the literature regarding the advantages and disadvantages of using a framework in solving problems and finding the optimal balance remains key in this instance. The specific accounting guidance should still to a large extent be used when faced with accounting problems, but the CF can certainly aid significantly in interpreting new and revised accounting standards, problem-solving in circumstances where there is no specific guidance and in corroborating specific accounting guidance.

4.2 Students' preference in solving accounting problems

The literature identified that there are various paradigms in respect of the amount of instruction that should be provided during the education of students. A fully guided approach to education promotes that educators should provide students with all instructional materials of a discipline. A minimally guided approach, on the other hand, suggests that educators should provide minimal guidance to students through instruction, and that these students will learn through their own experience, experiments and assimilation and will relate all knowledge gained to prior knowledge in the discipline. From an accounting education perspective, this study summarised three approaches to accounting education and problem-solving:

- A prescriptive approach where fully instructional guidance is given to students and this will be used as the basis to solve accounting problems.
- A CF approach where minimal guidance is provided to students and they are required to formulate their own knowledge and solve problems by the overall foundational concepts of the CF.
- A mixed approach in which equilibrium between the first two approaches is sought and which is based on Ausubel's subsumption theory where overall guidance is provided, and new information is linked and referenced to overall and prior knowledge. Students will also be able to discover new knowledge on their own and make their own references to prior learning. In this approach, students will solve accounting problems by utilising the overall CF and specific guidance, referencing their knowledge to grounding concepts and generating their own knowledge and experience through this process.

After students were exposed to an assignment requiring them to solve problems by referring only to the CF, their perceptions on accounting problem-solving and their preferred future approach were assessed.

4.2.1 Prescriptive approach

Kirschner *et al.* (2006) and Mayer (2004) advocate a fully guided prescriptive approach. Although the majority (59.1%) of students felt that they would have been able to solve the historical problem in the assignment more easily had they known the detailed knowledge, just more than one-third (34.1%) of students indicated that they would want to refer to specific guidance (as opposed to the CF) to solve future accounting problems. This perhaps supports Herrington *et al.* (2014), who indicate that a prescriptive approach is not beneficial in the long term.

4.2.2 CF approach

The minimally guided approach is not entirely ideal for a generally regarded technical discipline like accounting; however, students still seemed to prefer this approach to a fully guided approach as almost half (47.8%) indicated that they would feel comfortable solving accounting problems through a CF approach only. If students possess sufficient prior knowledge about the discipline, they can, as per Bruner (1961) and Alfieri *et al.* (2011), create new knowledge through experimental approaches. As students gain experience in making judgements using the CF, they will be able to do this with more rigour and precision in future based on prior knowledge and experience. After only one experience of a framework-based assignment, 68.2% of students already felt confident using the CF in instances where specific guidance might be lacking.

4.2.3 Mixed approach

From the results it appears as if students overwhelmingly would prefer a mixed approach, as suggested by authors such as Barth (2013), Hodgdon *et al.* (2011) and Wells (2011). This is evident from the results indicating that 81.1% of students wished to use a combination of the CF and specific guidance to solve future accounting problems. These students valued the contribution of the CF in accounting education as 84.1% believed that a good embedded knowledge of the CF would aid to solve future accounting problems.

The results play a role in accounting education research through the quasi-experiment determining the impact of the assignment on students' future preferences. As the students valued a mixed approach, this study suggests that accounting education should incorporate a mixed method into teaching that will facilitate problem-solving in this manner.

5. Recommendations

This study was conducted at one South African university only; however, the findings and recommendations can be applied to other institutions that teach Accounting programmes. The study was also directed towards students on the Chartered Accountant (South Africa) (CA(SA)) pathway, but the researcher believes that the recommendations can be applied to Accounting courses included in other programmes not specifically focused on the CA route, as well as to accounting education programmes at other institutions across the world (i.e. the recommendations are not limited to South Africa only). The ultimate conclusion that a framework-based approach to accounting education is valuable is not only limited to the university where the study was conducted, but could be a valuable proposition for all Accounting programmes. Also, even though the study was focused on accounting education from an IFRS perspective, the conclusions and recommendations can equally be applied to other generally accepted accounting principles. The reader does need to take into account, though, that the recommendations stem from a study in which participants came from one South African university only and, although the conclusions complement recent literature suggesting a similar approach, the results cannot be extrapolated to include a wider population. However, as motivated, the contribution is still valuable to a wider audience than the one university where the study was conducted. The contribution has to some extent already been proven in a South African context, as the first part of the study was presented at the Southern African Accounting Association Teaching & Learning Conference in December 2014 as a full paper, which won the Best Paper Award at this conference. With this in mind, the recommendations stated in the previous chapters are reiterated below.

Based on the results of this study, it is recommended that accounting education incorporate a constructivist teaching, learning and assessment approach through a philosophy similar to Ausubel's subsumption theory. This theory suggests that cognitive learning takes place through presenting the general ideas of a subject first, and as new material and detail are introduced, they are linked and cross-referenced to the overall general constructs which were presented first. This will result in Accounting educators placing a great deal of emphasis on the CF during teaching and constantly linking specific accounting guidance to the CF through cross-references. This should also somewhat address the problem identified with accounting education in South Africa, specifically that it has been criticised for relying too heavily on a fully guided approach, which results in an inability to solve unique problems in the long term (Barac, 2014; Coetzee & Schmulian, 2012; Van der Merwe *et al.*, 2014; Van der Schyf, 2008).

Taking all the above into account, an important message arises from this dissertation: A thorough embedded knowledge and understanding of the underlying concepts in the CF are essential since this could contribute to lifelong learning and the ability to formulate the appropriate accounting

treatment for new events and transactions for which IFRS do not provide guidance (Barth, 2013; Schipper, 2003; Wells, 2011). This ability is useful when students enter the profession and have to deal with voluminous, ever-changing, complex accounting guidance, as it also provides them with the ability to make appropriate judgements to apply IFRS with rigour and consistency. The more students get exposure to and practise how to apply judgements (specifically with reference to the foundational principles rooted in the CF), the more they will be able to do this with ease in future.

Since the participating students recognised the importance of the CF in accounting education and accounting problem-solving due to the considerable focus that the educator placed on it during the Accounting course, it is also recommended that other educators do not simply brush off the CF as a quick introduction to Accounting courses and subsequently fail to mention and make reference to it. Framework-based teaching appears to be largely beneficial to the students and, in the long term, to the accounting profession.

6. Concluding reflection

Given the vast amount of accounting guidance included in the standards and the fact that the specific accounting guidance changes ever so often (IFRS Foundation, 2015), this research is valuable and practical as it endorses recent literature which suggests that accounting education should incorporate a framework-based approach. The study approached this problem mainly from the viewpoint of a single institution, but utilised a comprehensive approach to explore it from many perspectives. The conclusions could be very valuable to any institution that teaches an Accounting programme, whether it is on a professional accounting pathway or not, in South Africa or not, or whether the syllabus is IFRS or not.

From the findings it can be concluded that the ability of students to solve accounting problems effectively by referring only to the CF depends on the complexity of the scenario and the students' familiarity with the problem. The assignment undoubtedly placed considerable emphasis on the importance of the CF in accounting education. This may be especially useful for educators of Accounting students in informing their teaching approach. A conclusion that can perhaps be drawn is that, if Accounting educators place a great deal of emphasis on the CF and guide students on how to make judgements on a regular basis with regard to the overall concepts in the CF, this will inevitably lead to students gaining experience and being able to make those judgements and apply the CF concepts more appropriately in future.

After being exposed to a framework-based assignment, the study clearly indicates that the students found value in the CF and believed that an embedded knowledge of the concepts in the CF will aid in solving accounting problems. Furthermore, when faced with an accounting problem, students will

likely not jump to a conclusion by referring to the specific guidance only, but will include CF considerations in formulating their suggested solutions to real-life problems. Through the emphasis on the CF, students appear to have confidence in using the CF in solving problems, especially in areas where specific guidance is lacking; this confidence will also likely result in the ability and eagerness to comment on International Accounting Standards Board (IASB) projects, discussion papers and exposure drafts, or to become involved in the activities of the IFRS Education Initiative in providing framework-based teaching material.

7. Limitations of this study

Like any other, the study within this dissertation is not without limitations, which are identified below:

- The study and questionnaire were limited to one South African university, and the participants consisted only of the group of third-year students in the year in which the study was conducted. The results are therefore not generalisable to Accounting courses in general, but are still meaningful for other Accounting programmes.
- When the study was performed, the CF in existence during that year was used. At the conclusion of this study, a discussion paper was released by the IASB for a revised, more comprehensive CF (which would address certain limitations of the current CF). However, at the conclusion of the current study, it was uncertain when the IASB was expected to release the revised CF.
- This study addressed the research objectives only from the perspective of Accounting courses that present IFRS. However, the recommendations can most likely be equally applied to other generally accepted accounting principles.
- This study was limited to the extent that the assignment only included two accounting problems (requiring two subsections of each to be solved). Students' ability to solve the complex accounting problems might have been different had they been faced with a different or greater number of accounting problems.
- Although the questionnaire was reviewed by various knowledgeable experts in research design in the accountancy and education fields to ensure the validity and completeness of the subject matter in relation to the literature, the study was not purely quantitative in nature and hence not based on an approved, tested construct. As the purpose of the questionnaire was to complement the interpretive nature of the study, this limitation is mitigated.

8. Areas for future research

Areas for further research include the following:

- As the results of the study and the questionnaire focused largely on students' perceptions, further research could be conducted through interviews and focus groups to determine more reasons for certain of the student perceptions. More questions could also be asked on actual benefits derived.
- A similar study could be conducted at other universities in South Africa or on a global level and results could be compared with current results. Different accounting problems could also be included and the ability of students could be assessed based on the complexity of and familiarity with accounting problems.
- Longitudinal studies could be performed by repeating the study in following years and comparing results.
- As the second part of the study focused on students' preferred problem-solving approach after being exposed to complex accounting problems required to be solved using only the CF, another study could be performed to determine students' preferences if they had not been exposed to a similar assignment; hence to determine if the exposure to the framework-based problems influences their future preference.
- Based on items identified during the literature review, further studies could be conducted on all factors that could influence students' ability to solve problems or the effect of the fully and minimally guided approaches where students have solid background knowledge of the discipline.

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ANNEXURES

ANNEXURE A: ASSIGNMENT GIVEN TO STUDENTS AS PART OF THE STUDY

SCENARIO

Background

Entity B is a manufacturing entity that wishes to obtain finance from Bank A in order to obtain a property for its new plant. For various reasons, including tax benefits for both Bank A and Entity B, Bank A proposed a structured finance deal in order for Entity B to obtain the property.

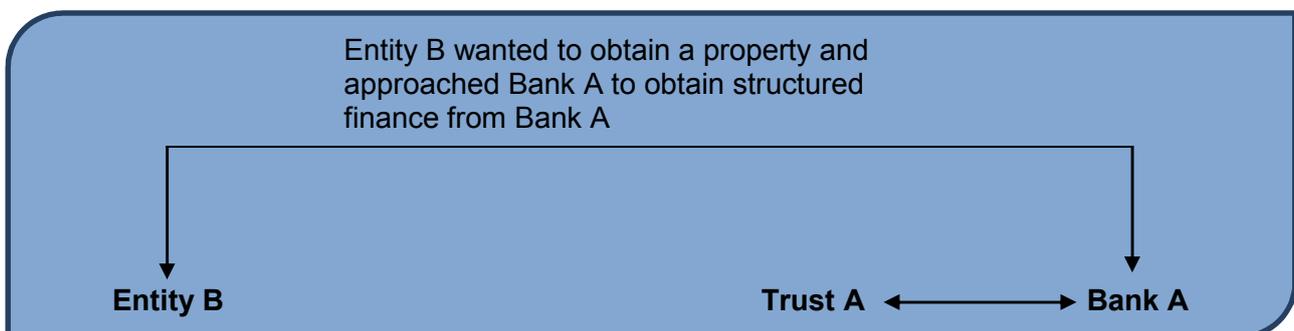
The 4 entities that forms part of the structured finance deal are as follows:

- Bank A
- Trust A that was specifically established for the benefit of Bank A
- Property Entity A
- Entity B.

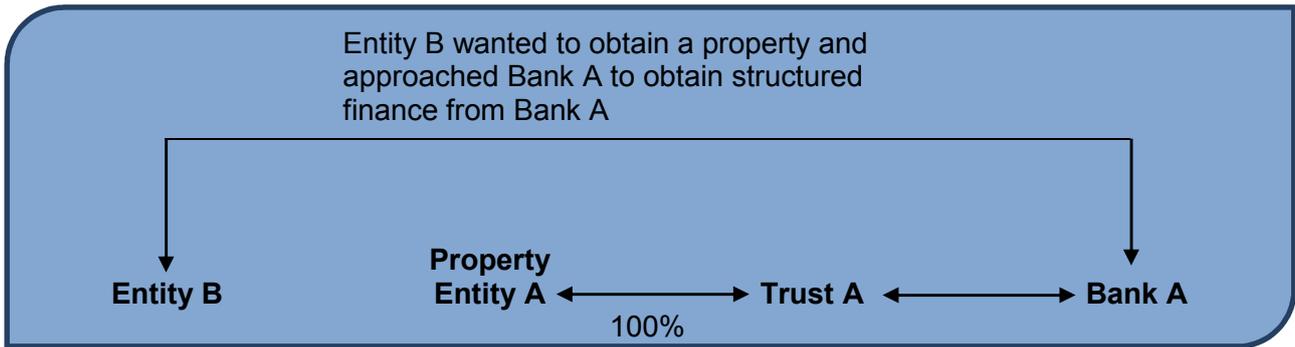
All the “A” entities are related, Entity “B” is a third party. Entity B wanted to obtain finance from Bank A.

Bank A proposed a structured finance deal, which was implemented as follows:

- Trust A was established on 5 December 2011 specifically for the benefit of Bank A and for the purpose of the structured finance deal.



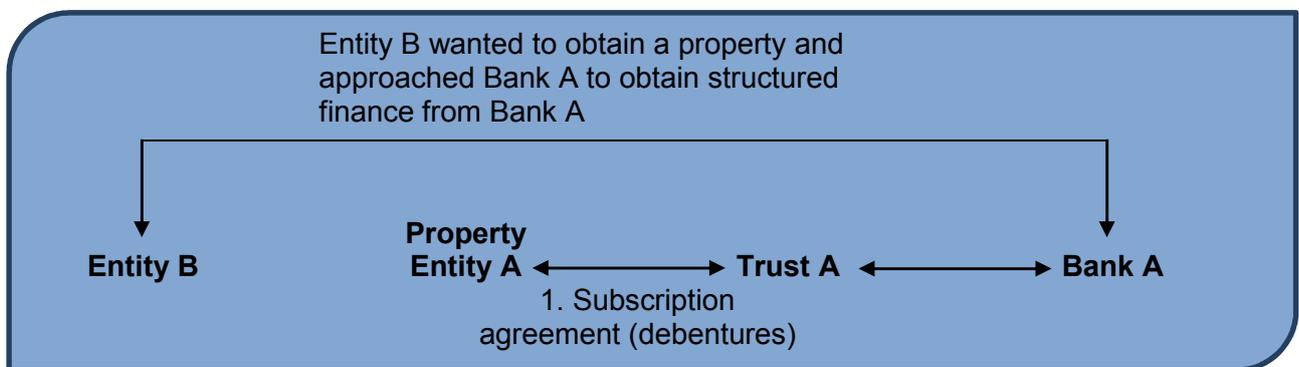
- Trust A acquired all the issued ordinary shares in Property Entity A on 1 January 2012.



Structured finance deal:

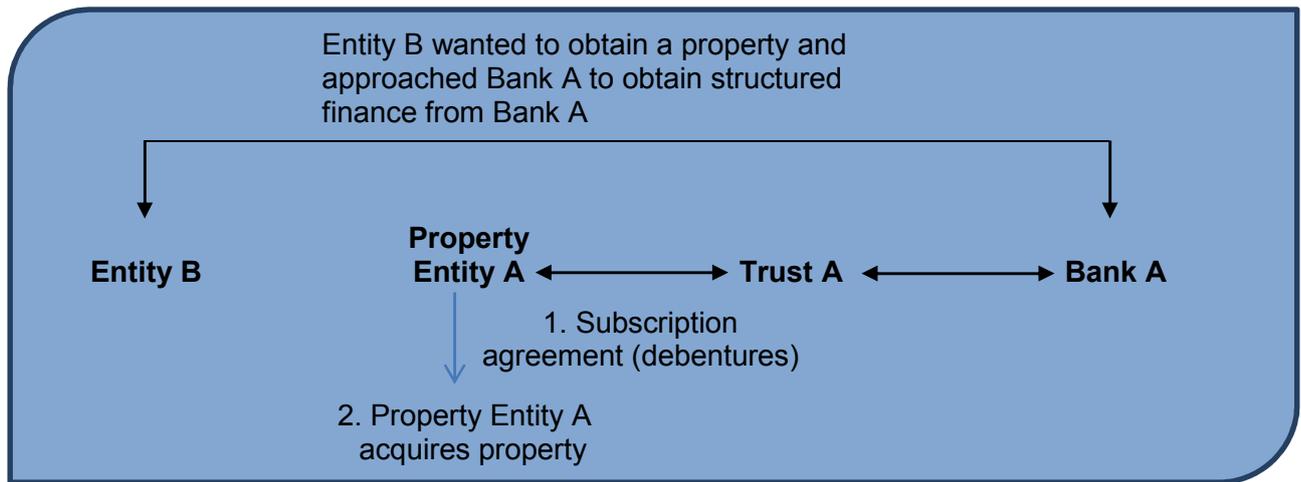
Step 1:

- Property Entity A issued redeemable debentures on 1 January 2012. The principal amount and interest on the debentures are settled in 6-monthly instalments over 30 years. Trust A subscribed to ALL the debentures issued by Property Entity A amounting to **R6 700 000**.
 - The debentures pay interest semi-annually in advance at a coupon rate of 10% per annum, escalating at 8% per annum from 1 January 2013.



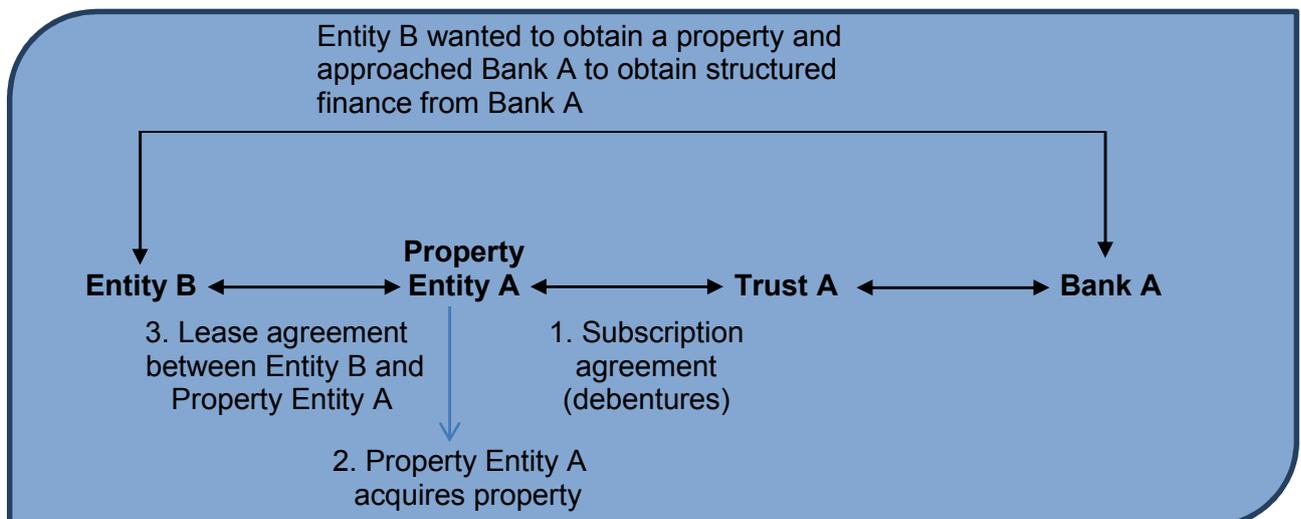
Step 2:

- With the proceeds of the debenture issue, Property Entity A acquired a property on 1 January 2012 according to the specifications of Entity B.



Step 3:

3. Property Entity A and Entity B enters into a lease agreement relating to the property acquired by Property Entity A:
 - 3.1 Lease period: 30 years from 1 January 2012. Ownership transfers to Entity B at the end of the lease term.
 - 3.2 Rentals: Lease rentals shall be payable semi-annually in advance on the 1st day of each period from Entity B to Property Entity A. Lease rentals escalate at 8% per annum from 1 January 2013.
 - 3.3 Insurance: The tenant shall take out, with the lessor as policy holder and beneficiary, comprehensive insurance against loss, damage or destruction by fire, theft, flood, civil or political insurrection or riot.



Step 4:

4. As security for payment of all amounts owing in terms of the debenture agreement, Property Entity A ceded unto and in favour of Trust A, its right to receive the rentals payable by Entity B in respect of the lease between Property Entity A and Entity B.

(Please note that the rental amounts payable by Entity B over the next 30 years in terms of the lease agreement with Property Entity A, equal the amount of debenture instalments payable semi-annually over the next 30 years in terms of the debenture agreement).

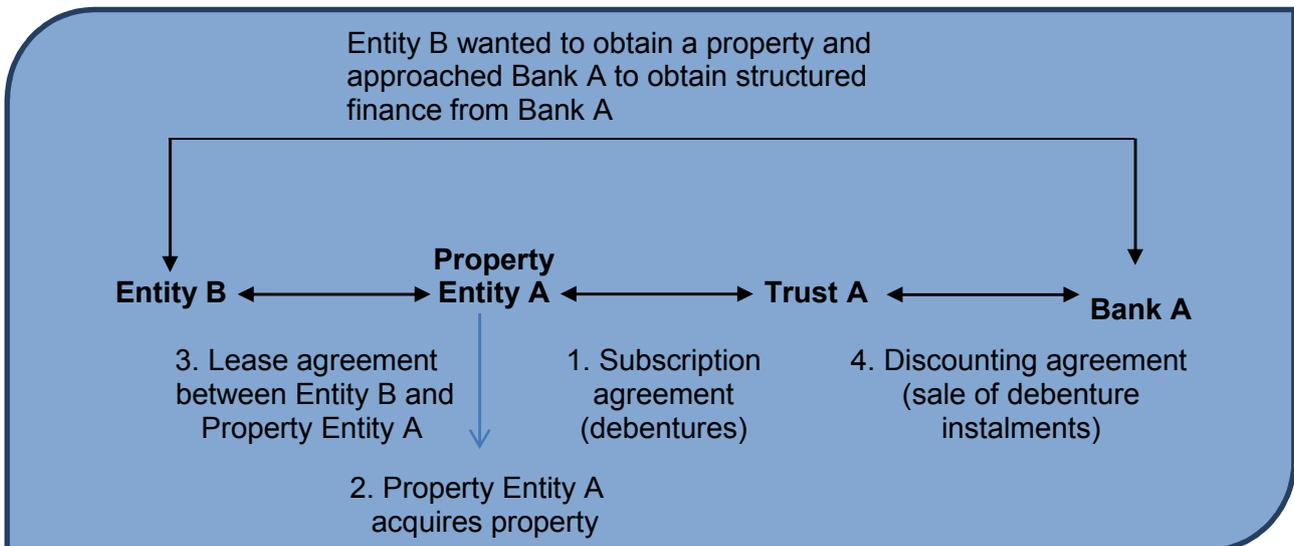
On the same effective date (1 January 2012), Trust A sold unto Bank A its contractual rights to receive the debenture instalment (interest and principle) payments from Property Entity A in connection with the debenture agreement. This sale happened in the form of the delivery of debenture instalment certificates issued by Property Entity A, which means that Bank A will be entitled to the debenture instalment payments directly from Property Entity A.

4.1 The price in respect of the debenture instalment certificates paid by Bank A was an amount equal to **R6 700 000**. All risk and benefit in and to the debenture instalment certificates passed from the Trust A to Bank A on the delivery.

4.2 Trust A undertakes to procure that Property Entity A cedes and pledges all its right, title and interest in and to all receivables in terms of the lease agreement between Property Entity A and Entity B to Bank A. All parties to this transaction are in agreement regarding this cession.

4.3 In the event of any of the debenture instalment certificates being dishonoured, Bank A shall have the right to proceed directly to Entity B in terms of the cession referred above.

4.4 Trust A does not have a bank account and does not receive any payment or make any payment, Trust A is therefore only a conduit



The legal cash in- and outflows of the different entities are as follows:

	Entity B	Property Entity A	Trust A	Bank A
Step 1		+R6.7m	-R6.7m	
Step 1		- debenture instalments*	+debenture instalments*	
Step 2		-R6.7m (acquires property)		
Step 3	- lease pmts*	+ lease pmts*		
Step 4			+R6.7m	-R6.7m
Step 4			- debenture instalments*	+debenture instalments*

* The lease payment amounts are equal to the debenture instalment amounts

Net effect	Obtains use and ownership of property	Nil	Nil	Advances R6.7m for which instalments ("interest"&"principal") are received
Net effect	Makes lease payments			Receives instalments

Other information

All entities in the scenario have a 31 December year-end.

Ignore the implications of taxation and deferred taxation in this scenario.

No calculations or journal entries required.

Required

1. In the **individual** (as opposed to group) annual financial statements of **Trust A**, the financial manager sent the following memo to you, the financial accountant:

“Trust A acquired an investment in debentures on 1 January 2012 from its subsidiary Property Entity A. On the same date Trust A sold its contractual rights to receive the interest and principal cash flows on these debentures to Bank A (a related party).

For the acquisition of the investment in debentures, Trust A should recognise an asset at R6 700 000 and account for interest income as debenture instalments are due.

For the sale of the debenture instalment certificates to Bank A (sale of the right to receive the contractual cash flows on the debenture), Trust A should recognise a liability at R6 700 000. Interest expense should be recognised as debenture instalments are due.

For the year ended 31 December 2012, Trust A should therefore account for an asset (investment in debentures) and liability (liability to pay over the debenture instalments to Bank A). Interest income and interest expense should be accounted for accordingly”

Write a technical accounting opinion to the financial manager in which you discuss, with reasons, whether you agree with him as the financial manager of Trust A. In your answer, refer only to guidance included in the Conceptual Framework. (25)

2. Your close friend works as an assistant accountant at **Entity B**. Your friend has always thought that you understood Financial Accounting better than him. Your friend has asked your advice on how Entity B should account for the use of the property and rentals payable in terms of the lease contract with Property Entity A.

Explain to your friend, with reasons, how Entity B should account for the use of the property and the lease instalments payable for the year ended 31 December 2012. In your answer, refer only to guidance included in the Conceptual Framework. (15)

SUGGESTED SOLUTION

Required 1

Technical opinion

From: Financial accountant

To: Financial manager

Date: 14 March 2012

Re: Accounting opinion on the treatment in Trust A's financial records.

(Presentation marks) ✓✓

Dear Sir

I have been asked to provide a technical accounting opinion on the accounting treatment in Trust A's individual financial statements relating to its:

- Investment in debentures issued by Property Entity A
- Obligation to pay over the debenture instalments to Bank A

In considering the accounting treatment of a transaction, one always has to consider the principle of substance over form. ✓

The legal form of the structured finance deal is 4 separate legal entities entering into legal transactions and contracts, each contracting in its own name; however the substance of the transaction is as follows: ✓

The net effect of the transaction:

Bank A advances R6.7 million cash. In return, Bank A receives interest and principal payments.

Entity B obtains use of a property for their plant of which ownership eventually passes. Instead of obtaining financing directly from Bank A and making repayments on a loan, Entity B obtained the right of use of the property in return for rental payments. These rental payments equates to what the instalment on a direct loan of R6 700 000 would have been to obtain the property directly.

Bank A therefore effectively provided finance in order for Entity B to obtain the right of use of a property of which ownership eventually passes. The rental payments equate to the loan instalments that would have been necessary if Bank A provided R6 700 000 financing to Entity B. In substance, Bank A therefore provided finance and Entity B obtains a property and needs to make instalments which are in substance a repayment of financing. Both entities are therefore in the same position as what they would have been if Bank A provided financing directly to Entity B. The net cash flows in Property Entity A and Trust A are zero and in substance nothing happens in these entities for accounting purposes, they are only conduits to obtain tax benefits (from a legal perspective) for Bank A and Entity B. ✓✓

In preparing financial statements, the financial information needs to comply with the qualitative characteristics as set out in the Conceptual Framework. One of the fundamental qualitative characteristics is that information should be faithfully represented, of which it should be neutral (without bias). The preparation should therefore not specifically only follow a perhaps biased opinion of the financial manager. ✓✓

In considering whether Trust A should create an asset for the investment in debentures, it should be considered if the item meets the definition and recognition criteria of an asset. ✓

“An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity.”

In applying the definition of an asset:

Resource: Trust A has invested in a compulsory convertible debenture of which the return on investment is the receipt of debenture instalments. That is the future economic benefits flowing from the asset. ✓

Controlled: Trust A however sold these future economic benefits (debenture instalments) to Bank A so that in reality Trust A does not have any rights in these benefits anymore. Trust A therefore does not control the future economic benefits that will flow from the asset. Paragraph 4.8 of the Conceptual Framework states that *“the future economic benefit embodied in an asset is the potential to contribute, directly or indirectly, to the flow of cash and cash equivalents to the enterprise”*. Although the convertible debentures do result in the flow of cash (debenture instalments), Trust A does not have the rights to those cash flows (the cash will not flow to Trust A). Trust A therefore also does not restrict other’s access to these benefits as Bank A will receive these benefits. ✓✓

Past event: The past event is the contractual entering of the debenture agreement on 1 January 2012. ✓

Future economic benefits expected to flow: Trust A does not expect the flow of future economic benefits as the return of the investment in debentures will flow to Bank A and not Trust A. ✓

Conclusion: The investment in debentures therefore does not meet the definition of an asset and should not be recognised as an asset in Trust A's financial statements. ✓

(Marks also awarded if students concluded an asset should be recognised, but then that it should immediately be derecognised upon sale of debenture instalments to Bank A).

In considering whether Trust A should create a liability for the discounting (sale) agreement of the debenture instalments to Banks A, it should be considered if the item meets the definition and recognition criteria of a liability. ✓

“A liability is a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits.”

In applying the definition of a liability:

Present obligation: Trust A has sold their contractual right to receive the debenture instalments on their investment in debentures to Bank A (transferring all risks and rewards to Bank A – therefore selling the full return on the asset). This means that the debenture instalments (return on investment) have to be paid over to Bank A. Trust A however does not receive the instalments on the debentures and then have to pay it over Bank A. Bank A has no recourse against Trust A in the event that any debenture instalment payment is dishonoured. Trust A therefore does not have an obligation to settle any amount which will result in an outflow of economic benefits. ✓✓

Paragraph 4.15 of the Conceptual Framework states that *“an obligation is a duty or responsibility to act or perform in a certain way”*. Trust A does not have any duty or responsibility to make payments to Bank A, neither to follow up from Property Entity A or Entity B about any outstanding payments. They therefore have no obligation. ✓

Past event: The sale of the debenture certificates on 1 January 2012. ✓

Outflow of benefits: Since Bank A has no recourse against Trust A, there will be no outflow of economic benefits in any event. ✓

Conclusion: Trust A therefore should not have a liability recognised in their financial statement as a result of the discounting (sale) agreement. ✓

With regards to the interest income:

“Income is increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants.”

Trust A does not receive any inflow/increases in economic benefits through a cash payment of the debenture instalment from Property Entity A (as the payments are directly made to Bank A). There is therefore no increase in equity and no interest income to recognise. ✓

With regards to the interest expense:

“Expenses are decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity participants.”

Trust A does not have any outflow/decreases in economic benefits through the cash payment of debenture instalment to Bank A (as Bank A receives the payments directly from Entity B). There is therefore no decrease in equity and no interest expense to recognise. ✓

Overall Conclusion: Trust A should not recognise an asset or a liability in their financial statements for 2012 and onwards. Trust A should also not recognise any interest income or interest expense arising from the debentures or discounting agreement. ✓ Trust A should however disclose all the relevant details relating to the substance of the transaction faithfully to its users. ✓

I therefore do not agree with the financial manager of Trust A in his opinion to create an asset and a liability for Trust A. ✓

If you have any questions, please do not hesitate to contact me.

Kind regards

Financial Accountant

Maximum (25)

Required 2

It is clear from the lease agreement that Entity B is in substance exposed to the risks and rewards associated with ownership of the leased property as they will be using the property for the first 30 years in the manner intended by them and reaping all the benefits of the use. Entity B is further responsible for insuring the building during this period. Ownership passes at the end of the lease term. Entity B is therefore exposed to the significant risks and rewards of the property over its economic life – this means that they are, in substance, in the same position as they would have been if they purchased the property directly on 1 January 2012. ✓✓

Accounting treatment for the use of the property:

Recognition

“An asset is a resource controlled by the enterprise due to a past entitling event from which future economic benefits are expected to flow to an entity.”

Resource: The property appears to be a resource of Entity B as it creates the opportunity for Entity B to gain access to future economic benefits in the form of using the property for its plant to manufacture items which could be sold or to operate from. ✓

Controlled: The property appears to be controlled by Entity B as Entity B will have the sole use of the property during the first 30 years per the lease agreement and thereafter when ownership passes. ✓

Entity B can also restrict other’s access to the benefits by restricting them to the property. Access to the property will be protected in terms of the lease agreement and ownership. ✓

Past event: The past “entitling” event of this resource is the signing of and entering into the lease agreement which entitles Entity B to use the property for its plant. This event took place on 1 January 2012 (before the reporting date) and is therefore regarded to be a past event. ✓

Future economic benefits expected to flow: Entity B will be able to use the property in their production process which will result in benefit for Entity B. The property therefore indirectly contributes to the inflow of benefits. Since Entity B is willing to pay to obtain use of the property, it is more likely than not that benefits will flow in. ✓

Conclusion: The leased property therefore meets the definition of an asset in terms of the framework and will be recognised as such, subject to both recognition criteria being met.

The transaction appears to meet the recognition criteria in terms of the framework, as:

- it appears probable (i.e. “more likely than not”) that future economic benefits will flow to Entity B by the use of the property in the production process; it is also more likely than not that the output of the production process will yield benefits for Entity B; ✓ and
- the value of the property can be measured reliably by means of reference to the information in the lease agreement (R6 700 000) and the instalments are specified in the agreement. ✓

Due to the definition of an asset, as well as the recognition criteria being satisfied, the leased property should therefore be recognised as an asset in the statement of financial position of Entity B at the date of commencement the lease agreement (1 January 2012). ✓

Measurement

The property will be measured initially at its cost price and should be depreciated through profit or loss (or impaired) over the period which best reflects the pattern of benefits earned from the property. ✓

Presentation and disclosure

The property will be presented as a non-current asset and all relevant information should be faithfully disclosed in accordance with the standards governing the transaction. ✓

Accounting treatment for the lease instalments

Recognition

“A liability is a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits.”

Present obligation: Entity B has in terms of the lease agreement, and in terms of the substance of the transaction discussed above, entered into a financing arrangement to obtain the use of a property. This creates a present obligation with Entity B to make lease payments (instalments) over the period of the lease. ✓

Past event: The entering into the lease contract, which in substance, is similar to a financing arrangement. ✓

Outflow of benefits: Entity B will have to make payments of the lease instalments which will be an outflow of cash ✓

Conclusion: The lease instalments to be paid therefore meet the definition of a liability in terms of the framework and will be recognised as such, subject to both recognition criteria being met.

The transaction appears to meet the recognition criteria in terms of the framework, as:

- it appears probable (i.e. “more likely than not”) that future economic benefits will flow from Entity B by making lease instalments; ✓ and
- the amount can be measured reliably by means of reference to the information in the lease agreement (R6 700 000) and the instalments are specified in the agreement. ✓

Due to the definition of a liability as well as the recognition criteria being satisfied, the present value of the lease instalments should therefore be recognised as a liability in the statement of financial position of Entity B at the date of commencement the lease agreement (1 January 2012). ✓

Measurement, Presentation and Disclosure

The liability will be measured initially and subsequently as specified in the standards governing leases, interest expense (at an effective interest rate) should be recognised as instalments are paid. ✓ The liability will be presented as a non-current liability, except for the capital portion which is due within 12 months, which should be presented as a current liability. All relevant information relating to the liability should be disclosed faithfully in accordance with the standards governing the transaction. ✓

Maximum (15)

ANNEXURE B:
QUESTIONNAIRE FOR STUDENTS WHO HAVE COMPLETED THE
ASSIGNMENT



Explanatory Statement

This information sheet is for you to keep.

My name is Karen Odendaal and I am a lecturer in the Department of Business and Economics at Monash University. I am a permanent staff member of Monash South Africa, a campus of Monash University Australia.

You are invited to take part in this study. Please read this Explanatory Statement in full before making a decision.

Why were you chosen for this research?

Since you have completed a work assignment as part of your accounting third year unit, you were chosen to provide feedback on the assignment and your approach through completing the questionnaire.

The aim/purpose of the research

The aim of this study and the questionnaire is designed to obtain feedback on your approach to solve complex accounting problems.

Possible benefits

The results from this survey will be used to determine the most common approach students will use to solve accounting problems when they enter in the workforce. It should also emphasise the importance of solving accounting problems with you and your approach to these in future.

What does the research involve?

The study involves a questionnaire to obtain feedback on your experience of the assignment and your future approach to solving accounting problems.

How much time will the research take?

The questionnaire should take no more than 15 minutes of your time. Your co-operation is appreciated.

Inconvenience/discomfort

Taking part in this survey is completely **voluntary and anonymous**. The questionnaire consists of two sections, a demographics section and feedback about the assignment. There is no potential risk/ inconvenience to you in completing the questionnaire. In order to reduce possible coercion, your participation in the research will safely be kept independent from your lecturer until after the unit results have been submitted. Your lecturer will not have any insights into the responses or participation of the questionnaires until after the submission of the unit results.

You can withdraw from the research

Being in this study is voluntary and you are under no obligation to consent to participation. You do not need to complete all, or any of, the questions. The questionnaires are anonymous; therefore it will not be possible to withdraw the data once submitted.

Confidentiality

Your data will be kept confidential. Only the researcher will have access to this data. Since the questionnaire is anonymous, you will not be identified in any way.

Storage of data

Data collected will be stored in accordance with Monash University regulations, kept on University premises, in a locked filing cabinet for 5 years. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

Use of data for other purposes

Your data may possibly be used for other future research projects, for example to make comparisons if a similar study is performed in following years. Because the data is anonymous, nobody will be named or be identified in any way. The data will remain confidential.

Results

Thank you for taking the time to complete this survey. Should you have any questions or if you would like to be informed of the aggregate research finding, please contact Karen Odendaal on 011 950 4303 or karen.odendaal@monash.edu.

<p>If you would like to contact the researchers about any aspect of this study, please contact the Chief Investigator. The chief investigator is also a staff member of Monash South Africa:</p>	<p>If you have a complaint concerning the manner in which this research is being conducted, please contact:</p>
<p>Chief Investigator Karen Odendaal karen.odendaal@monash.edu +27(0) 11 950 4303</p>	<p>Research Coordinator Office of the Deputy Pro Vice-Chancellor: Research Monash South Africa Building F, office F1.25 Tel: + 27 11 950 4143 Fax: +27 11 950-4133 Email: muhrec@monash.edu</p>

Thank you.

Karen Odendaal

Taking part in this survey is completely voluntary and anonymous. The questionnaire consists of two sections, a demographics section and feedback about the assignment. The questionnaire should take no more than 15 minutes of your time. Your co-operation is appreciated.

When evaluating a question, please answer the question from your own perspective. Place an X in the appropriate box where applicable.

Demographics

	CTA/CA	CIMA	ACCA	Other	None
After obtaining my degree, I plan to study further					
	Male	Female			
Gender					
	Yes	No			
Are you a South African citizen?					
	Yes	No			
Is English your 1st language?					
	Yes	No			
Is English your 1st language of preference for business?					

Assignment feedback

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Cannot say
About the design of the assignment						
I found the assignment to be difficult						
I was clear on what was required in the assignment						
I had to spend additional time on the scenario to understand the structure of the finance deal						
While completing the assignment						
I would have preferred to work in a group (as opposed to individual assignment)						
The lecture on the Framework helped me to complete the assignment						
The lecturer's general comments (to the entire class) based on questions received from students on the assignment, helped me to complete the assignment						
My knowledge of the Framework was sufficient before I started with the assignment						
I needed to study additional literature in the text book/elsewhere before I could attempt the assignment						
The assignment emphasised the importance of the Framework for considering future accounting problems						
After feedback on the assignment (in class discussion)						
I would have been able to resolve the problem quicker/easier if I knew the detail requirements of the specific standard governing the finance structure transaction						
I would feel comfortable to address future complex financial accounting problems by looking at the Framework only						
I would rather use the specific guidance in the standards governing the transactions (as opposed to the Framework) to solve accounting problems in future						
I would use a combination of the Framework and specific guidance in the standards governing the transactions to solve accounting problems in future						
If there is a new transaction for which specific guidance in IFRS does not exist, I would have confidence to formulate the accounting treatment by using the Framework only						
I believe an embedded knowledge of the concepts included in the Conceptual Framework will help me to solve accounting problems in the future						

ANNEXURE C1:
**CONFIRMATION OF SUBMISSION OF ARTICLE 1: ACCOUNTING
EDUCATION: AN INTERNATIONAL JOURNAL**

2/3/2015

ScholarOne Manuscripts



Accounting Education: an international journal

**Submission
Confirmation**

Thank you for submitting your manuscript to *Accounting Education: an international journal*.

Manuscript ID: RAED-2015-0020

Title: Students' Ability to Solve Complex Accounting Problems using a Framework-based Approach

Authors: Odendaal, Karen
van der Merwe, Nico

Date Submitted: 03-Feb-2015



Karen Odendaal <karen.odendaal@monash.edu>

Accounting Education: an international journal - Manuscript ID RAED-2015-0020 has been submitted online

ae_editor@btinternet.com <ae_editor@btinternet.com>
To: karen.odendaal@monash.edu

3 February 2015 at 21:31

03-Feb-2015

Dear Ms Karen Odendaal,

Your manuscript entitled "Students' Ability to Solve Complex Accounting Problems using a Framework-based Approach" has been successfully submitted online and is presently being given full consideration for publication in *Accounting Education: an international journal*.

Your manuscript ID is RAED-2015-0020.

Please mention the above manuscript ID in all future correspondence or when calling the office for questions. If there are any changes in your street address or e-mail address, please log in to ScholarOne Manuscripts at <https://mc.manuscriptcentral.com/raed> and edit your user information as appropriate.

You can also view the status of your manuscript at any time by checking your Author Centre after logging in to <https://mc.manuscriptcentral.com/raed>.

Thank you for submitting your manuscript to *Accounting Education: an international journal*.

Best Regards,
Editorial Office, *Accounting Education: an international journal*
ae_editor@btinternet.com

ANNEXURE C2:

AUTHOR GUIDELINES FOR ARTICLE 1: ACCOUNTING EDUCATION: AN INTERNATIONAL JOURNAL

Instructions for authors



Accounting Education: an international journal considers all manuscripts on the strict condition that

- the manuscript is your own original work, and does not duplicate any other previously published work, including your own previously published work.
- the manuscript has been submitted only to *Accounting Education: an international journal*; it is not under consideration or peer review or accepted for publication or in press or published elsewhere.
- the manuscript contains nothing that is abusive, defamatory, libellous, obscene, fraudulent, or illegal.

Manuscript preparation

1. General guidelines

Please read the guidance from the Editor before submitting your manuscript to *Accounting Education: an international journal*.

- Manuscripts are accepted in English and should be single-spaced with a generous margin (at least 2.5 cm) at each edge of each page. Any consistent spelling and punctuation styles may be used. Please use single quotation marks, except where 'a quotation is "within" a quotation'. Long quotations of 40 words or more should be indented without quotation marks.
- Manuscripts should be compiled in the following order: title page (including Acknowledgements as well as Funding and grant-awarding bodies); abstract; keywords; main text; acknowledgements; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
- Abstracts of 150 words are required for all manuscripts submitted. The abstract and title must be included on the first page of the manuscript.
- Each manuscript should have 4 to 6 keywords. JEL codes can also be included if supplied.
- An anonymised copy of any instrument used for data collection should be provided as an appendix to the manuscript.
- Search engine optimization (SEO) is a means of making your article more visible to anyone who might be looking for it. Please consult our guidance here.
- Section headings should be concise and different heading levels clearly distinguished.
- Notes, if used, should be kept to a minimum. Please supply these as footnotes using the notes function within Word (they will automatically be converted to endnotes during the production process). Note text should also be single-spaced.
- Mathematics should only be used if this contributes significantly to the clarity and economy of presentation, or is essential to the argument of a manuscript. Whenever possible authors should put mathematics in an appendix. The conclusions of articles using mathematics should be summarized in a form that is intelligible to non-mathematical readers of the journal.
- Authors should prepare and upload a complete anonymised text to be sent to referees, though all authors of a manuscript should include their full names, affiliations, postal addresses, telephone numbers and email addresses on the separate title page of the manuscript. One author should be identified as the corresponding author. Please give the affiliation where the research was conducted. If any of the named co-authors moves affiliation during the peer review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after the manuscript is accepted. Please note that the email address of the corresponding author will normally be displayed in the article PDF (depending on the journal style) and the online article.

- All persons who have a reasonable claim to authorship must be named in the manuscript as co-authors; the corresponding author must be authorized by all co-authors to act as an agent on their behalf in all matters pertaining to publication of the manuscript, and the order of names should be agreed by all authors.
- Biographical notes on contributors are not required for this journal.
- Please supply all details required by any funding and grant-awarding bodies as an Acknowledgement on the title page of the manuscript, in a separate paragraph, as follows:
 - *For single agency grants:* "This work was supported by the [Funding Agency] under Grant [number xxxx]."
 - *For multiple agency grants:* "This work was supported by the [Funding Agency 1] under Grant [number xxxx]; [Funding Agency 2] under Grant [number xxxx]; and [Funding Agency 3] under Grant [number xxxx]."
- Authors must also incorporate a Disclosure Statement which will acknowledge any financial interest or benefit they have arising from the direct applications of their research.
- For all manuscripts non-discriminatory language is mandatory. Sexist or racist terms must not be used.
- Authors must adhere to SI units. Units are not italicised.
- When using a word which is or is asserted to be a proprietary term or trade mark, authors must use the symbol ® or TM.
- Authors must not embed equations or image files within their manuscript.

2. Style guidelines

Please note: this journal is now using Taylor & Francis standard APA reference style, full guide available.

3. Figures

- Please provide the highest quality figure format possible. Please be sure that all imported scanned material is scanned at the appropriate resolution: 1200 dpi for line art, 600 dpi for grayscale and 300 dpi for colour.
- Figures must be saved separate to text. Please do not embed figures in the manuscript file.
- Files should be saved as one of the following formats: TIFF (tagged image file format), PostScript or EPS (encapsulated PostScript), and should contain all the necessary font information and the source file of the application (e.g. CorelDraw/Mac, CorelDraw/PC).
- All figures must be numbered in the order in which they appear in the manuscript (e.g. Figure 1, Figure 2). In multi-part figures, each part should be labelled (e.g. Figure 1(a), Figure 1(b)).
- Figure captions must be saved separately, as part of the file containing the complete text of the manuscript, and numbered correspondingly.
- The filename for a graphic should be descriptive of the graphic, e.g. Figure1, Figure2a.

Last updated: 31 October 2014



Visit our Author Services website for further resources and guides to the complete publication process and beyond.

ANNEXURE D1:

CONFIRMATION OF SUBMISSION OF ARTICLE 2: MEDITARI ACCOUNTANCY RESEARCH

4/22/2015

ScholarOne Manuscripts



Meditari Accountancy Research

Submission Confirmation

Please click the "Return to Dashboard" button below to view your submitted manuscript OR click the link "Log Out" at the upper right side of the screen to log out of your account.

Thank you for submitting your manuscript to *Meditari Accountancy Research*.

Manuscript ID: MEDAR-04-2015-0022

Title: Students' preferences in solving accounting problems: Framework-based approach vs prescriptive approach

Authors: Odendaal, Karen
van der Merwe, Nico

Date Submitted: 22-Apr-2015



Karen Odendaal <karen.odendaal@monash.edu>

Meditari Accountancy Research - Manuscript ID MEDAR-04-2015-0022

1 message

cdev@aut.ac.nz <cdev@aut.ac.nz>
To: karen.odendaal@monash.edu

22 April 2015 at 17:56

22-Apr-2015

Dear Ms. Odendaal,

Your manuscript entitled "Students' preferences in solving accounting problems: Framework-based approach vs prescriptive approach" has been successfully submitted online and is presently being given full consideration for publication in the *Meditari Accountancy Research*.

Your manuscript ID is MEDAR-04-2015-0022.

Please mention the above manuscript ID in all future correspondence or when calling the office for questions. If there are any changes in your street address or e-mail address, please log in to ScholarOne Manuscripts at <https://mc.manuscriptcentral.com/medar> and edit your user information as appropriate.

You can also view the status of your manuscript at any time by checking your Author Centre after logging in to <https://mc.manuscriptcentral.com/medar>.

Please note that Emerald requires you to clear permission to re-use any material not created by you. If there are permissions outstanding, please upload these when you submit your revision or send directly to Emerald if your paper is accepted immediately. Emerald is unable to publish your paper with permissions outstanding.

Thank you for submitting your manuscript to the *Meditari Accountancy Research*,

Yours sincerely,
Meditari Accountancy Research Editorial Office

ANNEXURE D2:

AUTHOR GUIDELINES FOR ARTICLE 2: MEDITARI ACCOUNTANCY RESEARCH

Manuscript requirements

Please prepare your manuscript before submission, using the following guidelines:

Format	Article files should be provided in Microsoft Word format. LaTeX files can be used if an accompanying PDF document is provided. PDF as a sole file type is not accepted, a PDF must be accompanied by the source file. Acceptable figure file types are listed further below.
Article Length	Articles should be between 6000 and 9000 words in length. This includes all text including references and appendices. Please allow 280 words for each figure or table.
Article Title	A title of not more than eight words should be provided.
Author details	<p>All contributing authors names should be added to the ScholarOne submission, and their names arranged in the correct order for publication.</p> <ul style="list-style-type: none"> • Correct email addresses should be supplied for each author in their separate author accounts • The full name of each author must be present in their author account in the exact format they should appear for publication, including or excluding any middle names or initials as required • The affiliation of each contributing author should be correct in their individual author account. The affiliation listed should be where they were based at the time that the research for the paper was conducted
Biographies and acknowledgements	Authors who wish to include these items should save them together in an MS Word file to be uploaded with the submission. If they are to be included, a brief professional biography of not more than 100 words should be supplied for each named author.
Research funding	Authors must declare all sources of external research funding in their article and a statement to this effect should appear in the Acknowledgements section. Authors should describe the role of the funder or financial sponsor in the entire research process, from study design to submission.
Structured Abstract	<p>Authors must supply a structured abstract in their submission, set out under 4-7 sub-headings (see our "How to... write an abstract" guide for practical help and guidance):</p> <ul style="list-style-type: none"> • Purpose (mandatory) • Design/methodology/approach (mandatory) • Findings (mandatory) • Research limitations/implications (if applicable) • Practical implications (if applicable) • Social implications (if applicable) • Originality/value (mandatory) <p>Maximum is 250 words in total (including keywords and article classification, see below).</p> <p>Authors should avoid the use of personal pronouns within the structured</p>

abstract and body of the paper (e.g. "this paper investigates..." is correct, "I investigate..." is incorrect).

Keywords

Authors should provide appropriate and short keywords in the ScholarOne submission that encapsulate the principal topics of the paper (see the How to... ensure your article is highly downloaded guide for practical help and guidance on choosing search-engine friendly keywords). The maximum number of keywords is 12.

Whilst Emerald will endeavour to use submitted keywords in the published version, all keywords are subject to approval by Emerald's in house editorial team and may be replaced by a matching term to ensure consistency.

Article Classification

Authors must categorize their paper as part of the ScholarOne submission process. The category which most closely describes their paper should be selected from the list below.

Research paper. This category covers papers which report on any type of research undertaken by the author(s). The research may involve the construction or testing of a model or framework, action research, testing of data, market research or surveys, empirical, scientific or clinical research.

Viewpoint. Any paper, where content is dependent on the author's opinion and interpretation, should be included in this category; this also includes journalistic pieces.

Technical paper. Describes and evaluates technical products, processes or services.

Conceptual paper. These papers will not be based on research but will develop hypotheses. The papers are likely to be discursive and will cover philosophical discussions and comparative studies of others' work and thinking.

Case study. Case studies describe actual interventions or experiences within organizations. They may well be subjective and will not generally report on research. A description of a legal case or a hypothetical case study used as a teaching exercise would also fit into this category.

Literature review. It is expected that all types of paper cite any relevant literature so this category should only be used if the main purpose of the paper is to annotate and/or critique the literature in a particular subject area. It may be a selective bibliography providing advice on information sources or it may be comprehensive in that the paper's aim is to cover the main contributors to the development of a topic and explore their different views.

General review. This category covers those papers which provide an overview or historical examination of some concept, technique or phenomenon. The papers are likely to be more descriptive or instructional ("how to" papers) than discursive.

Headings

Headings must be concise, with a clear indication of the distinction between the hierarchy of headings.

The preferred format is for first level headings to be presented in bold format and subsequent sub-headings to be presented in medium italics.

Notes/Endnotes	Notes or Endnotes should be used only if absolutely necessary and must be identified in the text by consecutive numbers, enclosed in square brackets and listed at the end of the article.
Figures	<p>All Figures (charts, diagrams, line drawings, web pages/screenshots, and photographic images) should be submitted in electronic form.</p> <p>All Figures should be of high quality, legible and numbered consecutively with arabic numerals. Graphics may be supplied in colour to facilitate their appearance on the online database.</p> <ul style="list-style-type: none"> • Figures created in MS Word, MS PowerPoint, MS Excel, Illustrator should be supplied in their native formats. Electronic figures created in other applications should be copied from the origination software and pasted into a blank MS Word document or saved and imported into an MS Word document or alternatively create a .pdf file from the origination software. • Figures which cannot be supplied as above are acceptable in the standard image formats which are: .pdf, .ai, and .eps. If you are unable to supply graphics in these formats then please ensure they are .tif, .jpeg, or .bmp at a resolution of at least 300dpi and at least 10cm wide. • To prepare web pages/screenshots simultaneously press the "Alt" and "Print screen" keys on the keyboard, open a blank Microsoft Word document and simultaneously press "Ctrl" and "V" to paste the image. (Capture all the contents/windows on the computer screen to paste into MS Word, by simultaneously pressing "Ctrl" and "Print screen".) • Photographic images should be submitted electronically and of high quality. They should be saved as .tif or .jpeg files at a resolution of at least 300dpi and at least 10cm wide. Digital camera settings should be set at the highest resolution/quality possible.
Tables	<p>Tables should be typed and included in a separate file to the main body of the article. The position of each table should be clearly labelled in the body text of article with corresponding labels being clearly shown in the separate file.</p> <p>Ensure that any superscripts or asterisks are shown next to the relevant items and have corresponding explanations displayed as footnotes to the table, figure or plate.</p>
References	<p>References to other publications must be in Harvard style and carefully checked for completeness, accuracy and consistency. This is very important in an electronic environment because it enables your readers to exploit the Reference Linking facility on the database and link back to the works you have cited through CrossRef.</p> <p>You should cite publications in the text: (Adams, 2006) using the first named author's name or (Adams and Brown, 2006) citing both names of two, or (Adams <i>et al.</i>, 2006), when there are three or more authors. At the end of the paper a reference list in alphabetical order should be supplied:</p>
<i>For books</i>	<p>Surname, Initials (year), <i>Title of Book</i>, Publisher, Place of publication.</p> <p>e.g. Harrow, R. (2005), <i>No Place to Hide</i>, Simon & Schuster, New York, NY.</p>

<p><i>For book chapters</i></p>	<p>Surname, Initials (year), "Chapter title", Editor's Surname, Initials, <i>Title of Book</i>, Publisher, Place of publication, pages.</p> <p>e.g. Calabrese, F.A. (2005), "The early pathways: theory to practice – a continuum", in Stankosky, M. (Ed.), <i>Creating the Discipline of Knowledge Management</i>, Elsevier, New York, NY, pp. 15-20.</p>
<p><i>For journals</i></p>	<p>Surname, Initials (year), "Title of article", <i>Journal Name</i>, volume, number, pages.</p> <p>e.g. Capizzi, M.T. and Ferguson, R. (2005), "Loyalty trends for the twenty-first century", <i>Journal of Consumer Marketing</i>, Vol. 22 No. 2, pp. 72-80.</p>
<p><i>For published conference proceedings</i></p>	<p>Surname, Initials (year of publication), "Title of paper", in Surname, Initials (Ed.), <i>Title of published proceeding which may include place and date(s) held</i>, Publisher, Place of publication, Page numbers.</p> <p>e.g. Jakkilinki, R., Georgievski, M. and Sharda, N. (2007), "Connecting destinations with an ontology-based e-tourism planner", in <i>Information and communication technologies in tourism 2007 proceedings of the international conference in Ljubljana, Slovenia, 2007</i>, Springer-Verlag, Vienna, pp. 12-32.</p>
<p><i>For unpublished conference proceedings</i></p>	<p>Surname, Initials (year), "Title of paper", paper presented at Name of Conference, date of conference, place of conference, available at: URL if freely available on the internet (accessed date).</p> <p>e.g. Aumueller, D. (2005), "Semantic authoring and retrieval within a wiki", paper presented at the European Semantic Web Conference (ESWC), 29 May-1 June, Heraklion, Crete, available at:http://dbs.uni-leipzig.de/file/aumueller05wiksar.pdf (accessed 20 February 2007).</p>
<p><i>For working papers</i></p>	<p>Surname, Initials (year), "Title of article", working paper [number if available], Institution or organization, Place of organization, date.</p> <p>e.g. Moizer, P. (2003), "How published academic research can inform policy decisions: the case of mandatory rotation of audit appointments", working paper, Leeds University Business School, University of Leeds, Leeds, 28 March.</p>
<p><i>For encyclopedia entries (with no author or editor)</i></p>	<p><i>Title of Encyclopedia</i> (year) "Title of entry", volume, edition, Title of Encyclopedia, Publisher, Place of publication, pages.</p> <p>e.g. <i>Encyclopaedia Britannica</i> (1926) "Psychology of culture contact", Vol. 1, 13th ed., Encyclopaedia Britannica, London and New York, NY, pp. 765-71.</p> <p>(For authored entries please refer to book chapter guidelines above)</p>
<p><i>For newspaper articles (authored)</i></p>	<p>Surname, Initials (year), "Article title", <i>Newspaper</i>, date, pages.</p> <p>e.g. Smith, A. (2008), "Money for old rope", <i>Daily News</i>, 21 January, pp. 1, 3-4.</p>
<p><i>For newspaper articles (non-authored)</i></p>	<p><i>Newspaper</i> (year), "Article title", date, pages.</p> <p>e.g. <i>Daily News</i> (2008), "Small change", 2 February, p. 7.</p>

For archival or other unpublished sources

Surname, Initials, (year), "Title of document", Unpublished Manuscript, collection name, inventory record, name of archive, location of archive.

e.g. Litman, S. (1902), "Mechanism & Technique of Commerce", Unpublished Manuscript, Simon Litman Papers, Record series 9/5/29 Box 3, University of Illinois Archives, Urbana-Champaign, IL.

For electronic sources

If available online, the full URL should be supplied at the end of the reference, as well as a date that the resource was accessed.

e.g. Castle, B. (2005), "Introduction to web services for remote portlets", available at: <http://www-128.ibm.com/developerworks/library/ws-wsrp/> (accessed 12 November 2007).

Standalone URLs, i.e. without an author or date, should be included either within parentheses within the main text, or preferably set as a note (roman numeral within square brackets within text followed by the full URL address at the end of the paper).



**ANNEXURE E:
ETHICAL CLEARANCE LETTER FROM NORTH-WEST UNIVERSITY**



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: <http://www.nwu.ac.za>

Mrs K Odendaal
PO Box 1411
HONEYDEW
2040

WorkWell Research Unit
Tel: 018 299-1389
Fax: 087 231-5396
Email: 10937803@nwu.ac.za

8 September 2014

ETHICAL CLEARANCE

This letter serves to confirm that the research project of Karen Odendaal, with the title "*Applying a framework-based approach to teach complex problem-solving to accounting students*" has undergone ethical review. The proposal was presented at a Faculty Research Meeting and accepted. The Faculty Research Meeting assigned the project number EMS14/08/19-01/01. This acceptance deems the proposed research as being of minimal risk, granted that all requirements of anonymity, confidentiality and informed consent are met. This letter should form part of your dissertation manuscript submitted for examination purposes.

Yours sincerely

Prof J Pienaar

Director: Research

ANNEXURE F: ETHICAL CLEARANCE LETTER FROM MONASH UNIVERSITY



Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date: 24 April 2012
Project Number: CF12/0940 – 2012000428
Project Title: Using a Framework-based approach to solve complex accounting problems
Chief Investigator: Ms Karen Odendaal
Approved: From: 24 April 2012 To: 24 April 2017

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

A handwritten signature in black ink that reads "Ben Canny".

Professor Ben Canny
Chair, MUHREC

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton
Telephone +61 3 9905 5400 Facsimile +61 3 9905 3831
Email muhrec@monash.edu www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

- END -