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**EDU022 Students' preferences in solving accounting problems:
Framework-based approach vs prescriptive approach**

AUTHOR(S): Karen Odendaal Monash karen.odendaal@monash.edu
South Africa
Nico van der Merwe North-West nico.vandermerwe@nwu.ac.za
University

ABSTRACT:

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. 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. 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. 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. 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.

Key words: Accounting education; Conceptual teaching; Conceptual Framework; Framework-based approach; problem solving

INTRODUCTION

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 (Hodgdon *et al.*, 2011; Wells, 2011). As specific accounting guidance included in the detailed standards is seemingly becoming excessive (Barnett, 2000; FASSET, 2008; Gloeck, 2012; Hassall and Joyce, 2014; Lubbe, 2013; Marx & Van der Watt, 2013; Van der Merwe *et al.*, 2014; Venter & 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).

Literature acknowledges 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 and Schipper, 2008; Christensen, 2010; IFRS Foundation, 2010; IFRS Foundation, 2013; Wells, 2003; Wells, 2011). If these concepts need to be taught with regards to 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. The International Accounting Standards Boards (IASB), the regulatory body that issues IFRSs, recognises that in certain circumstances there could also be a difference between the CF and a specific standard. In the instance that a difference exists, the specific standard will prevail over the framework (IFRS Foundation, 2010). 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 areas where the CF is not underdeveloped or where the concepts are not inconsistent with the specific accounting guidance as discussed above, 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, 2017; IFRS Foundation, 2017b), 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 academics who can incorporate this approach in the professional education of accountants, government and professional 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 (rooted in educational pedagogies like constructivism), 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 & 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. A review of the literature (see below) has indicated very limited emphasis in this regard and studies to promote concepts based learning only started appearing from the twenty first century. 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. This could be particularly relevant for all accounting education institutions internationally, but also in practice when training professional accountants. Such an approach to focus on concepts, rather than detailed technical accounting, 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 understand 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.

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 & 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 & 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 & Schmulian, 2012; Flood, 2014; Hassall and Joyce, 2014; 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 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 & 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 & Anderson (2013) provide a summary, seen in Table I, 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. |

The two approaches however are not mutually exclusive. When comparing the different perspectives in the literature, the 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 (Kirschner *et al.*, 2006; Mayer, 2004). 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.

According to Lucas (2000) and Rodgers, Simons and Gabrielsson (2016), even though there has been a substantial amount of research in accounting education, little research in the field of learning preferences based on constructivism provides scope for further research relating to perceptions and views of education in accounting courses. According to Hassall and Joyce (2014), accounting education is still currently criticised for a large pedagogic approach on traditional lecture-based starting point focussing on technical content and professional accreditation. Quattrone (2000) agrees that although Piaget's constructivism pedagogy for knowledge creation through a framework has been the concern in other disciplines, there have not been much attention given to this in accounting research. This lack of research in the field of instructional guidance and its impact on cognitive learning in accounting education is also confirmed in more recent literature (Apostolou, Dorminey, Hassel and Rebele, 2017; Mostyn, 2012; Rodgers *et al.*, 2016; Stanley, 2012; Watty, 2010).

Various authors over a time period call for a change in accounting education in order for practitioners to challenge the demands they will be facing in an ever-changing work environment (Adler and Milne, 1997; Boyce *et al.*, 2001; Bolt-Lee and Foster, 2003; Diamond, 2005; Flood, 2014; Fouché, 2013; Hassall and Joyce, 2014; Hwang *et al.*, 2005; May *et al.*, 1996; Sharma, 1997; Wells, 2011). These authors mean that the reasons for change include that traditional accounting education practices does not adequately prepare students for the workplace, neither developing foundations for lifelong learning. Flood (2014) indicates that the spotlight on changes in accounting education came to the forefront in the 1980's in the United States of America. As early as 1997, Adler and Milne argued that the change necessitates more than just creating graduates who possess wider skills and competence. They performed a study, drawn from general education literature, that action-orientated learning task in accounting is preferred by students and is essential to lifelong learning. Further studies by Milne also indicates the advantage of using problem-based learning and case studies in accounting education (Hassall and Milne, 2004; Milne and McConnell, 2001; Rodgers *et al.*, 2016). Flood (2014) reports that lifelong learning could be obtained by multi-disciplinary knowledge base, a wide set of skills and competencies and understanding the nature of professionalism.

It appears that, as constructivism became 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. Diamond (2005) argues that accounting scandals like Enron have brought on the greatest necessity to consider the efficacy of accounting education to move towards interaction between the profession and education and away from pure technical and methodical training of students. Diamond (2005) contends that when accounting material is only covered to a limited extent (i.e. only focussing on the basics), together with a liberal arts undergraduate experience, it would provide students with a foundation for lifelong learning and capabilities to pursue

postgraduate or professional studies. [Hwang et al. \(2005\)](#) also concluded in their study that students exposed to cooperative learning approaches in accounting outperform students in traditional lecture format approaches. More recently, authors such as [Hodgdon et al. \(2011\)](#) and [Wells \(2011\)](#) also considered accounting education from a constructivist approach and 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](#)). With all these authors indicating the need for change and only a few studies indicating possible changes that could be implemented, [Fouché \(2013\)](#) still noted that the content of accounting education remained distinctly similar over the last few decades, and hence further research in the field are necessary. This paper investigates another possibility of incorporating change in the accounting educational sphere.

Although this study was performed in a South African context, its relevance to international accounting education cannot be denied. An international study on accounting education practices across the globe was not attempted in this study, but in the next paragraph a section is specifically included on accounting education in South Africa to provide the context for initiating the study. The findings however, as discussed later, can easily be internationalised.

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 & Schmulian, 2012](#); [Van der Merwe et al., 2014](#); [Van der Schyf, 2008](#)). In response to this, SAICA introduced a competency framework which also seems to incorporate more aspects of the constructivist philosophy by promoting lifelong learning ([SAICA, 2014](#)). In this study, it is recommended 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 presented 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 presented 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 ([Wells, 2011](#)) 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 & 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 & Kolodner, 1987; Novak, 2010).

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 & 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). Principles-based standards 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 & Jermakowicz, 2006; Bennett *et al.*, 2006; Benston *et al.*, 2006; Collins *et al.*, 2012; Nelson, 2003; Nobes, 2005; Schipper, 2003; Wüstemann & 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 fact that the study was conducted in South Africa does however not limit the findings to South Africa only, as IFRS is adopted in 126 jurisdictions internationally (which require IFRS for all or most listed companies and financial institutions in their capital markets), and a further 12 reporting jurisdictions permit the use of IFRS for some listed companies (IFRS Foundation, 2017a).

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 (Gore and Zimmerman, 2007; IFRS Foundation, 2010). 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 & 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 pedagogies 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 (by following a detailed guided approach) (Barac, 2014; Coetzee & Schmulian, 2012; Flood, 2014; Hassall and Joyce, 2014; Van der Merwe *et al.*, 2014), hence shift should focus to incorporating more constructivist approaches.

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

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 2016 IASB publication 'A guide through IFRS' consists of a total of 6 925 pages (41 reporting standards and 18 interpretations) ([IFRS Foundation, 2016](#)). 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, 2017b](#); [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.

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 & 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, 2013](#); [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 (for example divergent opinions existed in the treatment of share-based payment arrangements before IFRS 2 was issued).

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 \(2013\)](#), [Wells \(2013\)](#) and [Rodgers et al. \(2016\)](#), 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 objective of this study 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.

RESEARCH METHODOLOGY AND DESIGN

This study used an interpretive research design to explore the approach that students would take in solving accounting problems. According to [De Villiers and Fouché \(2015\)](#), researchers in accounting education have to apply a research methodology that is applicable and feasible in investigating the specific phenomenon. The research method will, therefore, depend on what the researcher wants to achieve with the study. No phenomenon has its own specific methodology for discovery and explanation - endless possibilities exist for the innovation of methods in accounting education research. According to [De Villiers and Fouché \(2015\)](#), researchers in the accounting education field should therefore attempt to investigate phenomena by means of using different research designs and combinations thereof.

This study 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. A quasi-experiment determines the impact of an intervention or experiment on the target audience or population it is administered to ([Campbell et al., 1963](#); [Shadish et al., 2002](#)). 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 & 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 on accounting problem-solving and not mainly to analyse quantitative measures, thus rather complementing the explorative, qualitative nature of the study, and not to perform any detailed quantitative analysis. 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. The research project in this dissertation has undergone ethical review. Ethical clearance has 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. Various measures were taken to ensure that ethical research was conducted, including but not limited to voluntary and anonymous participation.

Although the research phenomenon in this study, namely to determine the approach that students would take in solving accounting problems, could have been explored from a number of paradigms and methodologies, the authors decided that the research methods applied and discussed above, result in the best understanding of the observed phenomenon. Additional methods can be used to explore the phenomenon further or to explore different aspects and viewpoints relating to the research, i.e. interviews and focus groups. The researchers however only selected a combination of methods pertaining to the specific research paradigm. Additional research prospects relating to different research paradigms are discussed under the opportunities for further research in the conclusion section.

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.

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, 2017). 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 goes a long way to better understanding students' preference in their problem-solving approach.

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.

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).

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 | |
| <i>Prescriptive approach</i> | 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 |
| <i>CF approach</i> | 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 |
| <i>Mixed approach</i> | 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 |

Overall

In a final reflective question, a remarkable overall result was 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.

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 inclined towards a mixed approach.

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.

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 & Anderson, 2013](#); [Papert, 1980](#); [Steffe & 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.

Mixed approach

Although relatively new in the literature, the mixed approach is supported by authors such as [Barth \(2013\)](#), [Hodgdon et al. \(2011\)](#), [Rodgers et al. \(2016\)](#) 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. This supports the incorporation of more constructivist approaches like Ausubel's subsumption theory into accounting education which promotes that the most important factor influencing learning is what the student already knows, and this knowledge should inform further teaching practices.

Various studies described in the literature indicated that incorporating constructivist approaches in accounting courses are beneficial for students. [Stanley \(2012\)](#) found that integrating constructivist approaches like problem-based learning has been beneficial and effective. [Hassall and Joyce \(2014\)](#) reviewed constructivist and experiential learning approaches as catalyst for change in accounting education as it could be beneficial for students, teachers and the accounting profession in general. Lucas (2014) suggests the incorporation of less structured non-traditional classroom approaches in accounting courses. As early as 1997, [Adler and Milne](#) performed a study on which it was concluded that action-orientated learning task in accounting is preferred by students and are essential to lifelong learning. [Hassall and Milne \(2004\)](#) as well as [Milne and McConnell \(2001\)](#) also promotes the advantage of using problem-based learning and case studies in accounting education. [Hwang et al. \(2005\)](#) also concluded in their study that students exposed to cooperative learning approaches in accounting outperform students in traditional lecture format approaches.

Although various authors over decades promote and demonstrate the usefulness of incorporating constructivist approaches in accounting courses, the research in this field is by far not exhausted and hence the study in this paper investigated another possibility of incorporating change in the accounting educational sphere to include more constructivist approaches, but still keeping a balance between minimal and fully guided approaches. 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.

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.

Anecdotal evidence

The lecturer of the Accounting course received an email (reproduced below) from a student who 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 at 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.

TEACHING IMPLICATIONS

Recent literature indicates the benefits in accounting education by incorporating constructivist teaching pedagogies. This will consider students' knowledge and viewpoints into the learning process, promoting interaction with the students and supporting their learning based their current views and experience as the starting point for new learning. Through this process new learning takes place through mutual construction of knowledge,

making both the teacher and the student active players in the learning process. Learning has to be situated within the students' own experience and through this, learners feel positive that there can be different viewpoints to consider accounting transactions and that other students' experience might lead to learning accounting in different ways.

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 constructivist approach, as discussed in the literature is featuring importance here as it may alleviate some of the pressure to master all detailed knowledge and focus rather on the overarching concepts and creating new knowledge into the conceptual knowledge that already exist. 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 (similar to Ausubel's subsumption theory). 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.

Accounting educators might therefore revise certain assessment methods and curriculum design to incorporate student learning through their own knowledge and experience. By incorporating more constructivist approaches, accounting educators can develop learning environments that develop students to be able to develop as individuals and be positive role players in the accounting profession.

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. Literature also indicates that research is far from complete in respect to constructivist teaching approaches in accounting education, and further research can be performed in this area. By incorporating Ausubel's subsumption theory, there is a need to understand what students' existing knowledge is in different accounting courses and as they progress through tertiary education and how different teaching approaches influence their learning environments.

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 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.

REFERENCES

Ackermann, E. 2001. Piaget's constructivism, Papert's constructionism: What's the difference. *Future of learning group publication*, 5(3):438.

Adler, R.W. and Milne, M.J. 1997. Improving the quality of accounting students' learning through action-oriented learning tasks. *Accounting Education*, 6(3):191-215.

- Alexander, D. & Jermakowicz, E. 2006. A true and fair view of the principles/rules debate. *Abacus*, 42(2):132-164.
- Alfieri, L., Brooks, P.J., Aldrich, N.J. and Tenenbaum, H.R. 2011. Does discovery-based instruction enhance learning?. *Journal of Educational Psychology*, 103(1):1-18.
- Apostolou, B., Dorminey, J.W., Hassel, J.M., and Rebele, J.E. 2017. Accounting Education Literature Review. *Journal of Accounting Education*, 39:1-31
- Ausubel, D.P. 1962. A subsumption theory of meaningful verbal learning and retention. *The Journal of General Psychology*, 66(2):213-224.
- Bolt-Lee, C. and Foster, S. 2003. The core competency framework: A new element in the continuing call for accounting education change in the United States. *Accounting Education*, 12(1):33-47.
- Barac, K. 2014. A reflection on accounting within South Africa's higher education landscape, text of inaugural address delivered at University of Pretoria on 12 November 2013. http://repository.up.ac.za/bitstream/handle/2263/40376/barac_paper_2013.pdf?sequence=1&isAllowed=y Date of access: 24 March 2015.
- Barnett, R. 2000. University knowledge in an age of supercomplexity. *Higher Education*, 40(4):409-422.
- Barth, M.E. 2007. Standard-setting measurement issues and the relevance of research. *Accounting and Business Research*, 37(3):7-15.
- Barth, M.E. 2013. Conceptual Framework. IAAER (International Association for Accounting Education & Research). Paper presented at the Southern African Accounting Association conference 2013, Cape Town, South Africa, http://www.iaaer.org/pages/ifrs_resources Date of access: 11 July 2014.
- Barth, M.E. & Schipper, K. 2008. Financial Reporting Transparency. *Journal of Accounting, Auditing & Finance*, 23(2):173-190.
- Bennett, B., Bradbury, M. & Prangnell, H. 2006. Rules, principles and judgments in accounting standards. *Abacus*, 42(2):189-204.
- Benston, G.J., Bromwich, M. & Wagenhofer, A. 2006. Principles- versus rules-based accounting standards: the FASB's standard setting strategy. *Abacus*, 42(2):165-188.
- Berg, B.L. & Lune, H. 2004. Qualitative research methods for the social sciences. Pearson Boston.
- Bernstein, D., Clarke-Stewart, A., Penner, L., Roy, E. and Wickens, C. 2000. *Psychology (5th edn)*, Houghton Mifflin, Boston.

- Boud, D., Keogh, R. & Walker, D. 2013. Promoting reflection in learning A model. (In Edwards, R., Hanson, A. & Raggatt, P., eds. *Boundaries of adult learning*, p. 32-56).
- Boyce, G., Williams, S., Kelly, A. and Yee, H. 2001. Fostering deep and elaborative learning and generic (soft) skill development: the strategic use of case studies in accounting education. *Accounting education*, 10(1):37-60.
- Bromwich, M., Macve, R. and Sunder, S. 2010. Hicksian income in the conceptual framework. *Abacus*, 46(3): 348-76.
- Bruner, J.S. 1961. The act of discovery. *Harvard educational review*, 31:21-32
- Campbell, D.T., Stanley, J.C. & Gage, N.L. 1963. Experimental and quasi-experimental designs for research. Houghton Mifflin Boston.
- Christensen, J. 2010. Conceptual frameworks of accounting from an information perspective. *Accounting and Business Research*, 40(3):287-299.
- Coetzee, S.A. and Schmulian, A. 2012. A critical analysis of the pedagogical approach employed in an introductory course to IFRS. *Issues in Accounting Education*, 27(1): 83-100.
- Collins, D.L., Pasewark, W.R. & Riley, M.E. 2012. Financial Reporting Outcomes under Rules-Based and Principles-Based Accounting Standards. *Accounting Horizons*, 26(4):681-705.
- Creswell, J.W. and Clark, V.L.P. 2011. Designing and conducting mixed methods research (2nd edn). Sage Los Angeles.
- De Villiers, R.R. and Fouché, J.P. 2015. Philosophical Paradigms and Other Underpinnings of the Qualitative and Quantitative Research Methods: An Accounting Education Perspective. *J Soc Sci*, 43(2):125-142.
- Diamond, M. 2005. Accounting education, research and practice: After Enron, where do we go? *European Accounting Review*, 14(2):353-362.
- Durillo, J.J. and Nebro, A.J. 2011. jMetal: a Java framework for multi-objective optimization. *Advances in Engineering Software*, 42(10):760-771.
- FASSET. 2008. Survey of the financial and accounting services sector. http://www.fasset.org.za/downloads/sector_survey_final_20May2008.pdf Date of access: 26 September 2014.
- Flood, B. 2014. The case for change in accounting education. *The Routledge Companion to Accounting Education*: 81-101.
- Fosnot, C.T. 2013. Constructivism: Theory, perspectives, and practice. Teachers College Press, New York

Fouché, J.P. 2013. A Renewed Call for Change in Accounting Education Practices. *International Journal Education Practice*, 5(2):137-150.

Gloeck, D. 2012. Is the public sector getting a raw deal?, http://www.saiga.co.za/index_htm_files/1%20Editorial%20-%20Is%20the%20public%20sector%20getting%20a%20raw%20deal%20-%20Gloeck.pdf
Date of access: 26 September 2014.

Gomm, R., Hammersley, M. & Foster, P. 2000. Case study method: Key issues, key texts. London: Sage.

Gore, R. & Zimmerman, D. 2007. Building the Foundations of Financial Reporting: The Conceptual Framework. *The CPA Journal*, 77(8):30-34.

Grant Thornton 2017. Complex accounting matters. http://www.grantthornton.ca/services/complex_accounting Date of access: 11 June 2017.

Hassall, T. and Joyce, J. 2014. The use of experiential learning in accounting education. *The Routledge Companion to Accounting Education*: 376-398.

Hassall, T. and Milne, M.J. 2004. Using case studies in accounting education. *Accounting Education*, 13(2):135-138.

Herrington, J., Reeves, T.C. and Oliver, R. 2014. Authentic learning environments, in Spector, J.M. et al. (Eds.), *Handbook of research on educational communications and technology*, Springer, New York.

Hesketh, J. 2011. Accounting academics' multiple challenges: issues-driven learning offers a way forward. *South African Journal of Accounting Research*, 25(1):1-34.

Hines, R.D. 1989. Financial accounting knowledge, conceptual framework projects and the social construction of the accounting profession. *Accounting, Auditing & Accountability Journal*, 2(2).

Hodgdon, C., Hughes, S.B. & Street, D.L. 2011. Framework-based Teaching of IFRS Judgements. *Accounting Education*, 20(4):415-439.

IAAER (International Association for Accounting Education & Research). 2013. IFRS Resources. http://www.iaaer.org/pages/ifrs_resources Date of access: 11 July 2014.

Hwang, N.R., Lui, G. and Tong, M. 2005. An empirical test of cooperative learning in a passive learning environment. *Issues in Accounting Education*, 20(2):151-165.

IFRS Foundation (International Financial Reporting Standards Foundation). 2010. The Conceptual Framework for Financial Reporting. London: International Accounting Standards Board.

IFRS Foundation (International Financial Reporting Standards Foundation). 2013. IASB publishes a Discussion Paper on the Conceptual Framework. <http://www.ifrs.org/Alerts/ProjectUpdate/Pages/IASB-publishes-a-Discussion-Paper-on-the-Conceptual-Framework.aspx> Date of access: 19 December.

IFRS Foundation (International Financial Reporting Standards Foundation). 2016. International Financial Reporting Standards: A guide through IFRS. London: International Accounting Standards Board. (Part A and Part B).

IFRS Foundation (International Financial Reporting Standards Foundation). 2017a. Analysis of the IFRS jurisdiction profiles. <http://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/#analysis> Date of access: 14 June 2017.

IFRS Foundation (International Financial Reporting Standards Foundation). 2017b. Work plan. <http://www.ifrs.org/projects/work-plan/> Date of access: 11 June 2017.

Jamal, K., Bloomfield, R., Christensen, T.E., Colson, R.H., Moehrl, S., Ohlson, J., Penman, S., Stober, T., Sunder, S. & Watts, R.L. 2010. A Research-Based Perspective on the SEC's Proposed Rule-Roadmap for the Potential Use of Financial Statements Prepared in Accordance with International Financial Reporting Standards (IFRS) by U.S. Issuers. *Accounting Horizons*, 24(1):139-147.

Kirschner, P.A., Sweller, J. & Clark, R.E. 2006. Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational psychologist*, 41(2):75-86.

Kolodner, J.L. and Kolodner, R.M. 1987. Using experience in clinical problem solving: introduction and framework. *IEEE Transactions on Systems, Man and Cybernetics*, 17(3): 420-31.

Konte, M. 2013. Principle-Based Accounting Standards as the Norm. *Al-Madinah Management and Finance Science*, 2(1). <http://scholar.medi.u.edu.my/index.php/MFC/article/viewFile/12808/12416> Date of access: 18 December 2013.

Kundi, G.M. & Nawaz, A. 2010. From objectivism to social constructivism: The impacts of information and communication technologies (ICTs) on higher education. *Journal of Science and Technology Education Research*, 1(2):30-36.

Lee, H.S. and Anderson, J.R. 2013. Student learning: what has instruction got to do with it?, *Annual Review of Psychology*, 64:445-69.

Lucas, U. 2000. Worlds apart: students' experiences of learning introductory accounting. *Critical Perspectives on Accounting*, 11(4):479-504.

Lucas, U. and Mladenovic, R. (2014), "Perceptions of accounting", *The Routledge Companion to Accounting Education*, pp 125-143.

- Lubbe, I. 2013. Educating accounting professionals: development of a theoretical framework as a language of description of accounting knowledge production and its implications for accounting academics at South African universities. *South African Journal of Accounting Research*, 27(1):87-124.
- Marx, B. and Van der Watt, A. 2013. Sustainability in accounting education: an analysis of the teaching thereof at accredited South African universities. *South African Journal of Accounting Research*, 27(1):59-86.
- May, G.S., Windal, F.W. and Sylvestre, J. 1996. The need for change in accounting education: an educator survey. *Journal of accounting education*, 13(1):21-43.
- Mayer, R.E. 2004. Should there be a three-strikes rule against pure discovery learning? *American Psychologist*, 59(1):14.
- Merriam, S.B. 1998. *Qualitative Research and Case Study Applications in Education*. Revised and Expanded from "Case Study Research in Education". ERIC.
- Milne, M.J. and McConnell, P.J. 2001. Problem-based learning: a pedagogy for using case material in accounting education. *Accounting Education*, 10(1):61-82.
- Mostyn, G.R. 2012. Cognitive load theory: what it is, why it's important for accounting instruction and research. *Issues in Accounting Education*, 27(1): 227-45.
- Nelson, M.W. 2003. Behavioral evidence on the effects of principles- and rules-based standards. *Accounting Horizons*, 17(1):91-104.
- Nobes, C.W. 2005. Rules-Based Standards and the Lack of Principles in Accounting. *Accounting Horizons*, 19(1):25-34.
- Novak, J.D. 2010. *Learning, creating, and using knowledge: concept maps as facilitative tools in schools and corporations*, Routledge, London.
- Ostrom, E. 2011. Background on the institutional analysis and development framework. *Policy Studies Journal*, 39(1):7-27.
- Papert, S. 1980. *Mindstorms: Children, computers, and powerful ideas*. Basic Books, Inc.
- Piaget, J. 1976. *Piaget's theory*. Springer.
- Quattrone, P. 2000. Constructivism and accounting research: towards a trans-disciplinary perspective. *Accounting, Auditing & Accountability Journal*, 13(2):130-155.
- Rodgers, W., Simon, J., and Gabriellson, J. 2016. Combining experiential and conceptual learning in accounting education: A review with implications. *Management Learning*, 48(2):187-205.

SAICA (South African Institute of Chartered Accountants). 2014. Competency Framework. <https://www.saica.co.za/LearnersStudents/Examinations/Informationonwhatwillbeexamined/CompetencyFramework/tabid/780/language/en-ZA/Default.aspx> Access date: 14 June 2017.

SAICA (South African Institute of Chartered Accountants). 2017. Examinable Pronouncements. <https://www.saica.co.za/LearnersStudents/Examinations/Informationonwhatwillbeexamined/ExaminablePronouncements/tabid/488/language/en-ZA/Default.aspx> Access date: 14 June 2017.

Schipper, K. 2003. Principles-based accounting standards. *Accounting Horizons*, 17(1):61-72.

Shadish, W.R., Cook, T.D. & Campbell, D.T. 2002. Experimental and quasi-experimental designs for generalized causal inference. Wadsworth Cengage learning.

Stanley, T. and Marsden, S. 2012. Problem-based learning: Does accounting education need it? *Journal of Accounting Education*, 30(3):267-289.

Sharma, D.S. 1997. Accounting students' learning conceptions, approaches to learning, and the influence of the learning–teaching context on approaches to learning. *Accounting Education*, 6(2):125-146.

Steffe, L.P. & Gale, J.E. 1995. Constructivism in education. Lawrence Erlbaum Hillsdale, NJ.

Tweedie, D. 2007. Simplifying Global Accounting. Interview by: Pickard, G. *Journal of Accountancy*. <http://www.journalofaccountancy.com/NR/exeres/9E8A5F54-EBB9-4F91-A204-357A30C33E54.htm> Date of access: 18 December 2013.

Van der Merwe, N., McChlery, S. and Visser, S.S. 2014. Balancing academic and professional pedagogies: a comparative study of two accounting departments in South Africa and the UK. *Teaching in Higher Education*, 19(3):276-88.

Van der Schyf, D.B. 2008. Five recent developments' impact on the traditional academic culture of Departments of Accounting at South African universities. *Meditari Accountancy Research*, 16(2):1-12.

Venter, E.R. and De Villiers, C. 2013. The accounting profession's influence on academe: South African evidence. *Accounting, Auditing & Accountability Journal*, 26(8):1246-78.

Wadsworth, B.J. 1996. Piaget's theory of cognitive and affective development: Foundations of constructivism. Longman Publishing.

Watty, K., Jackson, M. and Yu, X. 2010. Students' approaches to assessment in accounting education: the unique student perspective. *Accounting Education: an international journal*, 19(3):219-234.

Wells, M. 2003. Forum: The Accounting Conceptual Framework Introduction. *Abacus*, 39(3):273-278.

Wells, M.J.C. 2011. Framework-based Approach to Teaching Principle-based Accounting Standards. *Accounting Education*, 20(4):303-316.

Wells, M.J.C. 2013. IFRS Foundation Education Initiative: goals, priorities, tasks completed. Paper presented at the EY (Ernst&Young) IFRS Conference, Russia, September 2013. [http://www.ey.com/Publication/vwLUAssets/EY-IFRSConference2013-IFRS-Foundation-Education-Initiative-EN/\\$FILE/EY-IFRSConference2013-IFRS-Foundation-Education-Initiative-EN.pdf](http://www.ey.com/Publication/vwLUAssets/EY-IFRSConference2013-IFRS-Foundation-Education-Initiative-EN/$FILE/EY-IFRSConference2013-IFRS-Foundation-Education-Initiative-EN.pdf) Date of access: 24 April 2014.

Wüstemann, J. & Wüstemann, S. 2010. Why Consistency of Accounting Standards Matters: A Contribution to the Rules-Versus-Principles Debate in Financial Reporting. *Abacus*, 46(1):1-27.