



CHAPTER 11:

The application of the SOLO Taxonomy for evaluating the cognitive levels of assessment in an introductory Financial Accounting module

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Abstract

There is wide consensus that assessment is critical to the learning process. In terms of introductory financial accounting modules, universities predominantly use the revised Bloom's taxonomy to demonstrate an approximate cognitive demand level for their financial accounting summative assessments. This process remains largely subjective, since the widespread use of a verb to indicate a Bloom level is not particularly suited to financial accounting, where one verb may imply different levels. This pertinent issue, together with a gap in the literature that addresses the issue, led to the primary objective of this chapter, i.e. to provide a framework for the application of the SOLO taxonomy in evaluating the standard of summative assessment of an introductory professional financial accounting module. The research objectives and data (being financial accounting examinations) led to a methodological choice of mixed-methods research, with the qualitative research design being dominant. The qualitative design type is a document analysis specifically set in an interpretative paradigm, mainly relying on the technique of thematic analysis. The quantitative part of the study (that underpins this chapter), utilises content analysis and basic descriptive statistics as part of an overall pragmatic approach. The results of the study

showed that the fundamental concepts of financial accounting (such as recognition, measurement, etc.) as well as the applicable topics (including assets, liabilities, etc.) can be used as a proxy for the cognitive demand induced by the assessment tasks. The combination of these concepts and topics, together with the requirement (or lack thereof) of material relational activity or extended abstract, can then be used to set a SOLO level for an assessment task. The SOLO level of an assessment task may also be materially disrupted (or even set) by the themes of “time allowed”, “layout” or “conventional wisdom”. A framework, which includes examples of assessment tasks as evaluated through the SOLO taxonomy, is given as the final product of the research. This framework will be valuable in enhancing the objectivity of such assessment.

Keywords: Accounting education, assessment, SOLO taxonomy

Introduction and background

There is wide consensus that assessment is a centre pillar of the learning process (Brown, 2001, p. 4). A major reason for assessment’s prominence is that it fundamentally affects students’ behaviour during the teaching and learning process (Biggs & Tang, 2007, p. 169).

Furthermore, important standard-setting bodies such as the South African Qualifications Authority (SAQA, 2014, pp. 11-12) and the International Accounting Education Standards Board (IAESB, 2019, p. 79) are in agreement as to the importance of assessment as well as the principles underlying good assessment. These principles are summarised as: fairness, validity, reliability, practicability, equity, transparency, and sufficiency within professional accounting education programmes. All these principles can be collectively noted as “credible assessment” (SAQA, 2001, p. 16).

Credibility of assessment is also recognised by higher education institutions (HEIs) in South Africa through their various assessment policies (Central University of Technology [CUT], 2016, p. 3; North-West University [NWU],

2011, p. 1). Review of these policies shows that, in order to aid the implementation of principles of credible assessment, documents are provided to evaluate the assessment tasks itself (CUT, 2016, p. 57; NWU, 2011, p. 1). These documents are typically identified by descriptions such as “Questionnaire on the quality of assessment papers” (CUT, 2016, p. 57), “Moderator’s report” (NWU, 2012) or “Report by external examiner” (University of Zululand [UNIZULU], 2015), etc. It is noted that these reports universally utilise the revised Bloom’s taxonomy (Anderson et al., 2001) to evaluate the appropriateness of the cognitive demands (i.e. the level) of the assessment.

Biggs and Tang (2007) acknowledge that Anderson and Krathwohl’s revision of Bloom’s taxonomy was an improvement, but that it still has some shortcomings such as that under the verbs of “‘understanding’ you can find ‘identify’, ‘discuss’ and ‘explain’, which [can] represent three different [cognitive] levels” (p.80). They therefore advocate their structure of the observed learning outcome (SOLO) taxonomy as an alternative to the revised Bloom’s taxonomy (Biggs & Tang, 2007, p. 80). Ramsden (as cited in Biggs & Tang, 2007) agrees and emphasises the “extraordinary practical utility” (p. xvi) of the SOLO taxonomy and views it as “the assessment apparatus of choice” (p. xvi).

Motivation of the study underpinning the chapter

Researchers typically used Bloom’s taxonomy and the revised Bloom’s taxonomy to evaluate the cognitive level (demand) of learning outcomes, student responses and/or assessment. Examples include Williams’ or Lakshmi’s (as cited in Van Rooyen, 2016, p. 95) work on learning outcomes. It is, however, due to the nature of a Financial Accounting 1 examination, no easy task to evaluate the assessment to determine a level of cognitive

demand required. The major reason for this difficulty in evaluating a Financial Accounting 1 examination's level is that, in line with Biggs and Tang's (2007, p. 80) observation noted above, for an assessment of Financial Accounting 1, verbs that indicate assessment tasks, such as "remember", "apply" or "evaluate", which are usually associated with the revised Bloom's taxonomy, may imply different cognitive demands within a context that can differ significantly for each assessment task, even if the same verb occurs.

Literature (refer below) on the SOLO taxonomy suggested it may well provide a *more* objective and defensible way to evaluate a summative assessment task.

Other research on SOLO

There is a gap in the literature that deals with *all* of i) the SOLO taxonomy, ii) assessment and iii) financial accounting. Therefore, the literature was considered if at least two of these three core components were present in a study. For purposes of relevance, impact and conciseness, the literature found to be closest to the study that underpins this chapter ("this study") in terms of the topic is discussed. None of the scholars, however, focused on the exact topic of this study, although their work was considered as part of the process of meeting the research objectives.

The study by Lucas and Mladenovic (2009) also investigates issues around the topics of SOLO and introductory financial accounting, and is the literature found to be the closest to this study in terms of the topic.

Lucas and Mladenovic (2009, p. 263) point out that they agree with prior research that shows that students under stress tend to revert to a lower level of cognitive response. The experience of the authors, in line with Biggs and Tang (2007, p. 199), shows that the issue of time allowed to complete an assessment task is inherently such a stressor. The time allocation for each

examination's assessment tasks is therefore investigated in the sections below.

Lucas and Mladenovic's (2009, p. 277) overall conclusion is that the understandings evidenced by the majority of introductory financial accounting students may not meet the expectations within higher education and they therefore suggest that there should be interventions to support changes in teaching and learning approaches, including assessment.

The study of Newton and Martin (2013) was found to be second most relevant in terms of this study's topic. The overall results of Newton and Martin's (2013, p. 88) study confirm the relationship between deep learning and improved performance at higher levels of cognitive complexity and that alternative assessment strategies may be valuable tools with which to evaluate learning at increasing levels of cognitive complexity.

Newton and Martin's (2013, p. 88) study also shows that i) examiners, in using SOLO with assessment, should carefully consider the *design of the assessment tasks* so as to accommodate a range of levels of responses as appropriate (Newton & Martin, 2013, p. 88) and ii) that the design of assessments can be used as a tool to encourage students to operate at higher cognitive levels.

Further academic articles indicated a point of saturation in terms of the literature in that they all cover the various iterations of using the SOLO taxonomy to evaluate students' *responses*, students' *learning* or *learning outcomes*.

The context of the study

This study is accepted as being cross-discipline (i.e. accounting and education). It is therefore clarified that the study is concerned with the measuring and aiding of fair and appropriate assessment for a student who is starting an accounting qualification (i.e. for Financial Accounting 1) and that

this qualification is primarily influenced by international accounting standards (currently known as International Financial Reporting Standards or IFRS), professional bodies and government regulations (e.g. SAQA's). Although this study encompasses theory of education as a discipline, the main aim and focus are on financial accounting as a professional discipline within a higher education context.

It should also be mentioned that the term “introductory” in the study’s (and chapter’s) title refers to a financial accounting module pitched at i) the South African National Qualifications Framework (NQF) level 5 in terms of ii) a financial accounting programme that may typically lead to a professional designation.

Problem statement

The above described background and motivation show: i) the need for credible assessment, as well as ii) the practical utility of the SOLO as a valuable tool of analysis. Although literature strongly supports these notions, there is a clear gap in the literature in that the application of the SOLO taxonomy to evaluate the *level of assessment* of Financial Accounting 1 written examinations (as a form of summative assessment) has not been explored.

As part of the aforementioned, there is also the pertinent issue that for an assessment of Financial Accounting 1, the use of verbs that are associated with the revised Bloom’s taxonomy does not readily assist in evaluating the level of such assessment tasks.

The research problem can consequently be summarised by the following questions:

- How can the SOLO taxonomy be applied in order to evaluate the level of assessment of a Financial Accounting 1 summative assessment?

- What are typical themes and their influence on the standard or level of a Financial Accounting 1 summative assessment that can be identified if the SOLO taxonomy is applied as a tool of analysis?

Objectives of the study

Deriving from the research problem and questions, the following objectives have been formulated for the study:

The primary objective of the study is to provide a framework for the application of the SOLO taxonomy in evaluating the standard of summative assessment of a Financial Accounting 1 module.

In order to achieve the primary objective, the following secondary objectives were formulated for the study:

- To document, as part of the proposed framework, typical Financial Accounting 1 summative assessment tasks with analysis through the SOLO taxonomy.
- To determine, by analysis through the SOLO taxonomy, typical themes that have an influence on the standard or level of a Financial Accounting 1 summative assessment.
- To synthesise the insight gained through the study into a framework that can guide the application of the SOLO taxonomy in evaluating the standard of summative assessment of a Financial Accounting 1 module.

On the SOLO taxonomy

Pamela Hook (2015, p. 1), who is a leading authority in classroom teaching in New Zealand, states that the SOLO taxonomy began as an evidence-based model by university academics Biggs and Collis in Australia in the late 1970s (Hook, 2015, p. 6). Biggs and Tang (2007, p.81) confirm that SOLO was based on research of student learning itself, which they see as an advantage over

the Bloom and the revised Bloom's taxonomies. The SOLO taxonomy also features prominently on Biggs' (2022) online blog. Biggs and Tang (2007, p. 21) acknowledge that the SOLO taxonomy is partly rooted in the theory and work of pioneering psychologist Jean Piaget.

The SOLO taxonomy provides a systematic way of describing how a learner's performance grows in complexity when mastering many academic tasks (Biggs & Tang, 2007, p. 76). Biggs and Tang (2007, p. 76) state that the SOLO taxonomy was, among others, built on the premise that "understanding" (i.e. the cognitive process) is something that develops gradually, becoming more structured and articulated as it develops. Biggs and Tang (2007, p. 76) therefore developed SOLO on the premise that as students learn, the outcome of their learning should display increasing structural complexity, and consequently SOLO is structured in levels.

Summarising and synthesising from Biggs and Tang (2007, pp. 77-79) and Hook (2015, p. 5), SOLO's levels are described below. Biggs and Tang (2007, p. 77-79) also suggest some (not all) verbs as words that typically *indicate* (but still needs careful consideration) a level of the SOLO taxonomy and that can aid in determining the level of a learning outcome or assessment task. As explained above, these verbs on their own may still be too generic for evaluating an introductory financial accounting assessment.

- *Pre-structural*: A response that is "missing the point". The response is irrelevant, which shows a lack of understanding. It should be noted that the response can be sophisticated utilising "elaborate tautology", but since it is irrelevant, it misses the point. Hook (2015) summarises this level as one where the "learner" has "no idea" (p.5). *Examples of verbs* (Biggs & Tang, 2007, p. 80): There are no verbs that are specifically linked to this level, since this level points to irrelevant responses and a total lack of understanding.

Further comment: Although it would be surprising to find an assessment task requiring such a response, it is submitted that an assessment task that is not aligned to any stated or implied intended learning outcome (ILO) can be seen as pre-structural since it encourages an irrelevant response in terms of the qualification as a whole.

- *Unistructural:* For this level, the quantity of knowledge required increases, but not the qualitative level of understanding. Responses typically deal with terminology. Responses deal with one concept, superficially and in isolation. Hook (2015) summarises this level as one where the “learner” has “one idea” (p. 5). This level can therefore also be described as being one-dimensional.

Examples of verbs (Biggs & Tang, 2007, p. 80): Identify, define, label, match, name.

Further comment: One should not by default dismiss this level as bad or useless. It may well be appropriate depending on the context of learning, e.g. one needs to memorise a letter in the alphabet before one can differentiate it from other letters.

- *Multi-structural:* Student responses (or the assessment tasks’ required responses) deal with several concepts (i.e. more than one), but which are unrelated. The increase in level is still quantitative in nature. Hook (2015) summarises this level as one where the “learner” has “several ideas” (p. 5). This level can also be described as being two-dimensional.

Examples of verbs (Biggs & Tang, 2007, p. 80): Classify, describe, report, discuss, illustrate, select, narrate.

Further comment: This level is an important building block to the higher levels. Learning outcomes or assessment tasks that are structured around this level can be seen as foundational in nature.

- *Relational*: Biggs and Tang (2007, p. 76) state that the SOLO levels initially increase quantitatively (amount of detail) and then qualitatively (integration of detail into a structural pattern). This level marks the defining point where the qualitative phase becomes paramount. In other words, it is the level where the aim is the *deepening of understanding* as opposed to the mere *increase in knowledge* (Biggs & Tang, 2007, p. 79). In this level, student responses (or the assessment tasks' required responses) deal with several concepts and the response is able to show how these concepts *relate* to each other as well as to a topic as a whole. Hook (2015) summarises this level as one where the "learner" has "related ideas" (p. 5). This level therefore also entails the integration of different subjects' matter, e.g. financial accounting and taxation.

Examples of verbs (Biggs & Tang, 2007, p. 80): Apply, integrate, analyse, explain, predict, conclude, summarise (précis), review, make a case, construct, review and rewrite, examine, translate, paraphrase, solve a problem.

Further comment: Since this level deals with at least two concepts and their relation, it can be described as being three-dimensional in nature. An important point in this level is that for a professional discipline such as financial accounting, the ability to relate concepts means that knowledge becomes functioning as opposed to just being declared. Biggs and Tang (2007, p. 73), who note the work of Leinhardt et al. (1995) as well as Entwistle and Entwistle (1997), tellingly state that would-be professionals are trained in universities to label, differentiate, elaborate and justify, when what they need out in the field is to execute, apply and prioritise. This statement suggests another reason why the SOLO level of an assessment needs to be carefully considered.

- *Extended abstract:* According to Biggs and Tang (2007, p. 78), in this level student responses (or the assessment tasks' required responses) go beyond what has been given. The coherent whole is conceptualised at a higher level of abstraction and is applied to new and broader domains. An extended abstract response includes what would be a breakthrough response, giving a perspective that changes what we think. In essence, this level of cognitive demand is the ability to solve the problems not encountered before. Hook (2015) summarises this level as one where the "learner" has "extended ideas" (p. 5) by going beyond the subject and making links to other concepts. This level can therefore also be described as being four-dimensional, since concepts that are new or not obviously related are now also linked to the familiar concepts.

Examples of verbs (Biggs & Tang, 2007, p. 80): theorise, hypothesise, generalise, reflect, generate, create, solve from first principles.

Further comment: This level is valuable in that new knowledge is typically created here and it demonstrates an adaptability towards problem-solving. It shows the ability to deal with the unknown or unforeseen. However, one should guard in over-emphasising this level or considering it to necessarily be of more worth than the other SOLO levels. Biggs and Tang (2007, p. 78) note that today's extended abstract is tomorrow's relational, as new knowledge becomes conventional wisdom. It therefore follows that each person's application of the extended abstract will be different according to their experience and training. The issue in terms of a professional environment such as around financial accounting, is that there is not necessarily the need or resources such as time or funding available to apply extended abstract reasoning. Although it is quite logical that a

professional should be able to think on her feet, one would not want the professional person to reinvent the wheel either.

Biggs and Tang (2007, p. 79) also make it clear that each SOLO level incorporates the previous levels and is therefore a foundation (or scaffold) on which further learning is built (or demonstrated in the case of an assessment). This resonates with a well-known teaching strategy of building on the known to help explain the unknown.

Theoretical framework

In this section the theoretical frame of reference, that guided the study is briefly explained. In light of the research problem and objectives, it can be seen that this study is in essence one of describing “a way” of “how to”. The study is set in an ontological stance of multiple and subjective realities since a solution will be proposed (founded in research), but it is acknowledged that there can be other solutions and interpretations. It is submitted that as long as the study is credible, this stance does not detract from the value of the research.

In line with its ontological stance, the study involves the authors as the main research participants as opposed to being objective observers. This epistemological stance is therefore one of “anti-positivism” (Cohen et al., 2011, p. 6). In terms of this study, the epistemology was further refined as one of “interpretivism”, since documents were analysed and interpreted through the lens of the SOLO taxonomy. It is also clear from the study’s research problem and questions that the data are predominantly qualitative in nature and would be interpreted to obtain meaning. The study was therefore firstly framed in the interpretivist paradigm. It is, however, argued below that a smaller (and secondary) but material part of the study led to the authors eventually drawing on an overarching philosophy of pragmatism.

Pragmatism reconciles the use of a range of methods (e.g. quantitative, qualitative and mixed methods), theories and strategies with the aim of contributing practical solutions that inform future practice (Saunders et al., 2016, p. 143). Therefore, the authors did not wish to limit the possibilities of the research methods and data analysis to the assumptions accepted under the interpretative paradigm, since, i) the study included some quantitative data and ii) the data analysis process of the study (as described below) would entail some quantitative techniques. The quantitative data and analysis were secondary, basic and relatively small in scope, but are important enough so that overall the study was set in the pragmatic paradigm as materially underpinned by the interpretative paradigm.

It can also be seen throughout Biggs and Tang's (2007) work that the SOLO taxonomy is inextricably tied to, and flows from, their theory of constructive alignment (Biggs & Tang, 2007, pp. 50-62). This specific theory therefore also underpins this study.

Methodology

Approach to theory development

The dominant approach for the study was an inductive approach with a secondary abductive approach. The main reason for this is that observations (the studying of the financial accounting exams) were transformed through analysis (which includes interpretation of the assessment tasks in terms of the SOLO taxonomy) into more general themes. At the same time, a small but material secondary deductive approach was also followed, where the themes were considered against the different exams in order to test applicability and to test whether further evidence supports the themes. This secondary process has the benefit of raising the study's validity and credibility. This abductive approach fits with a pragmatic paradigm that frames the study.

Research design

It is acknowledged that the study is primarily qualitative in nature. The data collected, for example, mainly consist of written text in the form of Financial Accounting 1 exams. However, the main reason that the study is considered mixed methods is that the financial accounting exams also state the number of marks and time allowed as numeric (quantitative) data which, although vastly less in scope compared to the textual data (qualitative data), is still useful and entails that the study is one of mixed-methods research. A secondary but important consideration is that during the analytical phase of the study, the technique of quantitative content analysis formed a small but important part of addressing the research questions.

The authors' approach of the qualitative research part of the study being much broader in scope than the quantitative research part is in line with Saunders et al.'s (2016, p. 172) view that under mixed-methods research, the different approaches can be utilised in an unequal way so that one methodology has a dominant role, while the other plays a supporting role as determined by the purpose of the research project.

The quantitative design type for the study is driven by three types of quantitative data. These are: i) the number of marks that each exam question counts; ii) the time allowed per assessment task; and iii) the quantitative data derived from the content analysis process, which can include the amount of time per assessment task or the number of pages of reading material or other frequencies as discovered. The aim was to utilise this limited but potentially influential quantitative data to *support* the qualitative themes emanating. Therefore, the design type that was used entailed basic descriptive statistics. The approach used for the study was (in line with Saunders et al. (2016, p. 527)) focused on the two aspects of description, namely i) the central tendency and ii) the dispersion.

The qualitative design type that was chosen, in light of the study's research questions and data, was the document analysis design type as defined by Bowen (2009, p. 27).

Data collection and analysis

Three techniques to analyse the examinations were applied, being mainly thematic analysis (based on guidance in Bowen (2009, p. 32)), quantitative content analysis (Saunders et al., 2016, p. 608) as well as a form of textual analysis (as per Mouton (2013, p. 167)). De Vos et al.'s (2018, p. 381) useful practical steps concerning the execution of a document analysis were broadly followed. These steps included the formulation of research questions, collection of the documents, data familiarity, coding and analysis.

Target population and sampling frame

The target population comprised final summative financial accounting examinations pitched at NQF level 5 as part of a financial accounting qualification that may eventually lead to any professional accounting designation. This is a typical first-year accounting module, also known as "Financial Accounting 1". A review of the Bachelor's degrees registered with SAQA as specialising in financial accounting confirmed the aforementioned (SAQA, 2017).

These summative examinations are set as those from the 26 public universities (Universities South Africa [USAf], 2020) in South Africa, since i) the authors' experience stems from being employed at a public university, currently the North-West University, and ii) the authors' are aiming the study's contribution toward public universities.

Based on discussions with the custodians (the universities) of these examinations, it was noted that most of them felt more comfortable to provide documents from years prior, primarily since the documents would

then already be in the public domain and no accusations of data leaks could be made against them. They also felt that they could then provide moderated and tested documents that better reflect their assessment practices. In line with an ethical approach, the authors therefore accepted final Financial Accounting 1 examinations from 2016 and from one university who was only prepared to provide 2015's exams. Later on, one university sent a 2018 examination, which was also accepted. The differences between the examinations' ages are not a concern for the study and should not be seen to reduce the validity of the study, since a review (and experience) dictated that foundational financial accounting as a subject stays relatively unchanged in its core concepts (e.g. dealing with debtors, creditors, bank and cash, fixed assets, etc.) and that the findings of the study in terms of the dataset (examinations) and the SOLO taxonomy will be transferable even to newer datasets, because the primary question is one of "how to" apply the SOLO taxonomy in order to evaluate the level of assessment of a Financial Accounting 1 exam.

Sample method

The sample method for the study is firstly categorised as non-probability sampling (Cohen et al., 2011, p. 155) since per the research objectives and design there is no objective that is aimed at statistical generalisability. It is important to note that as is expected from a qualitative inductive approach, inferences and generalisations in terms of broader themes can still be made (Onwuegbuzie & Leach as cited in Cohen et al., 2011, p. 161). For this study, the applicable non-probability sampling method chosen was purposive sampling, since it was decided (to enhance credibility and applicability) to build in a form of representativeness by purposively selecting some of the universities with larger student numbers, as well as universities from different provinces and different types (distance, technology and traditional

contact universities). The study also incorporated a small degree of “convenience sampling” since the sample of universities whose examinations were analysed were based on the universities to which the authors had access (i.e. universities willing to assist).

Sample size

Onwuegbuzie and Leeach’s (as cited in Cohen et al., 2011, p. 162) two main recommendations for a sample of qualitative data were applied to the study. Firstly, a large enough sample was set so that “thick” or “rich” descriptions could be made. Secondly, the sample size was set to achieve data saturation. The aforementioned was based on the authors’ experience as well as a preliminary review noting that the Financial Accounting 1 examinations contain more than one question (assessment task) and are quite descriptive, similar to being mini-case studies and also that the examinations almost universally assess the same fundamental topics (such as debtors, creditors, cash and fixed assets, which indicate a point of data saturation in the sense of accounting topics).

In light of the above, financial accounting summative assessments (exams) of seven universities were analysed. These universities are listed in no particular order and do not correspond to the labels that will be applied in the analysis section of this chapter. The universities were:

- Central University of Technology
- North-West University
- University of the Free State
- University of Johannesburg
- University of South Africa
- University of the Witwatersrand
- University of Zululand

The sample size was sufficient to achieve the research objectives.

The process of coding

The process of coding broadly entailed the following:

- A combination of computer-assisted qualitative data analysis software (CAQDAS) in the form of Atlas.ti as well as a manual process were used to code the data.
- Since the financial accounting examinations follow a very similar and traditional layout (see Figure 1 under theme 2 below), the assessment tasks, which are the “required” part of the examination, were carefully analysed in terms of the SOLO taxonomy, by among other things considering the verbs used in these assessment tasks. The analysis revolved around what the assessment task really demanded in light of the information given and the SOLO taxonomy. The assessment tasks were then labelled under a SOLO level (*a priori* code) together with the type of assessment task (which represented a code derived from the data).
- During the analysis, concepts that seem to pertain to the same phenomenon were grouped under a code that ultimately fed into a theme. De Vos et al. (2018) refer to this process as “discovering categories” (p. 411). These codes were further analysed in light of their effect (or lack of effect) on the SOLO level of the examinations.
- The literature around SOLO (see above) was also used to deduce codes for testing against the data, as well as to induce ideas (observations) and to generate codes or themes that were applicable to the data.

Credibility and validity

For the study, the view was taken that credibility and validity (focusing on transferability and usability) should be considered throughout every phase of the study. The aim was that the study should be of practical use. Reliance was mostly placed on the rigorous description of the research design, context and methods as recommended by Saunders et al. (2016, p. 206). Further examples of where credibility and validity were enhanced include that other scholars' work was considered, that there was careful consideration and framing of the study under accepted philosophical assumptions and the fact that the data of the study were non-reactive.

Ethical foundation of the research

The principle of "do no harm to participants" (Cohen et al., 2011, p. 542) was strictly followed. Even though there was no human participation and the research data were in the public domain, the authors still adhered to the principles of voluntary participation, confidentiality, delinking of data and protection of data. Ethical clearance was obtained for the study that lead to this chapter.

Results, findings, and discussion

At the start of the data analysis process, the content analysis technique was chosen, since it aided the authors in becoming more familiar with the data as well as immediately demonstrating any strange occurrences (e.g. words that one would not necessarily expect in a Financial Accounting 1 examination).

Content analysis applied in support of the thematic analysis

The content analysis was applied as a process of “quantifying” some qualitative data. In terms of the study, it entailed that, at a basic level, the number of times a word occurred (frequency) were analysed. Tables 1 and 2 were the first products of this content analysis with the results discussed below. The second part of the content analysis, namely the “number of pages of reading material”, is incorporated into Table 3, which comprises the quantitative part of the study as was analysed using basic descriptive statistics.

Table 1: An illustration of the word frequency of the examinations

Word	Total	%
year	120	2.56%
statement	96	2.05%
financial	91	1.94%
may	86	1.83%
account	84	1.79%

Table 2: An illustration of the word frequency of the examinations’ assessment tasks

Word	Total	%
prepare	56	2.00%
statement	49	1.75%
marks	47	1.68%
required	42	1.50%
question	40	1.43%

Table 1 was created by importing the seven universities’ Financial Accounting 1 examinations into the Atlas.ti CAQDAS software. The software was then

used to count the number of times a certain word was used. Table 1 is an extract from the full table created by the software and it shows the frequency of each word from highest to lowest, as well as the particular word's frequency as a percentage of the total number of unique words. Although Table 1 visually only provides an extract (as suggested by the Atlas.ti the software), the frequency of all words were considered during analysis.

Table 2 was created following the same procedure and settings as for Table 1, but with the difference that only the assessment tasks as represented by the "Required" part (see Figure 1 under theme 2 below) were imported into Atlas.ti. Tables 1 and 2 therefore also contain some words that overlap such as the word "statement".

The analysis supported by Table 1 was done within the context of the authors' experience as accountants and lecturers. In Table 1, it can be seen that the word "year" is most frequent with months' names, e.g. "May" also being materially used. This is consistent with financial accounting being a period-driven discipline, e.g. yearly reporting. The analysis showed that the exams kept to the topics around financial accounting and did not contain any unexpected occurrences such prevalent spelling mistakes.

Furthermore, it was seen that financial accounting, as expressed through the exams, is concerned with:

- business types (e.g. the words "ltd" or "partnerships")
- financial statements (e.g. the words "statement" or "financial" "position")
- supporting records (e.g. "general" "ledger" or "journal")
- the typical topics or elements found in a financial accounting system. These include "bank" and "cash"; "assets" such as "debtors", "furniture", "equipment" and "inventory"; "liabilities"; "shares" and "capital"; "income", "expenses" and "profit" etc.

The manifestation of these items is not a surprise since they are part and parcel of a typical Financial Accounting 1 curriculum. These items also form part of the fundamental concepts of accounting (as included in the discussion below) and are also found throughout IFRS (International Accounting Standards Board [IASB], 2018).

Moving on to Table 2, the standout word is “prepare”. This is the verb that was materially used (in frequency) to state the assessment tasks, and is not a surprise since it incorporates most of the tasks of a real-life financial account, e.g. preparing the journal entries or financial statements. What Table 2 therefore supports is the research problem, in that it is not easy to use the verb “prepare” to classify a financial accounting assessment task on the revised Bloom’s taxonomy. Other verbs that were used, albeit much less frequently, include “calculate” (19 times), “discuss” (10 times) and “disclose” (once). These verbs have the same implication in terms of the revised Bloom’s taxonomy as “prepare”.

The remaining words that comprise Table 2 share the analysis that was given for Table 1, but it is apt to mention again that the words “question”, “required”, “marks” and “minutes” refer to the layout of the exams (see theme 2 and Figure 1) as well as issues of time and grading.

Based on i) Tables 1 and 2, ii) the review of the exams, and iii) the authors’ experience, it can be seen that the financial accounting exams and the assessment tasks all tie up to what is defined here as the “fundamental concepts of accounting”. IFRSs (IASB, 2018) are also directly structured around these fundamental concepts. These concepts will assist in evaluating the SOLO level of the assessment task (as shown in the sections that follow). The aforementioned process as well as relevant literature (Cloete & Marimuthu, 2015:1; IASB, 2018) brought the following main *concepts* (regarding financial accounting) to the fore:

Financial Accounting being i) a process or system of ii) identifying and gathering, iii) recognising and recording, iv) measuring, v) summarising and classifying, vi) presentation and disclosure of business transactions and financial information that ultimately feed into financial statements that state the business' performance and financial position and that vii) enable interpretation of the above.

Analysis of assessment tasks and the emanating themes

Theme 1: Time allowed for the assessment tasks

The first theme that was immediately obvious as a repeating pattern across all the examinations is the “time allowed for the assessment tasks”, as shown in Table 3.

It was noted above that time stress tends to make students revert to a lower level of cognitive response, which by analogy means that the students may operate at a lower SOLO level than what was intended or expected by the assessment task.

In analysing Table 3, it can be seen that there are differences in the time allocated to the assessment tasks (questions) by the different universities. This is not necessarily wrong or unfair, since there are many other factors influencing the SOLO level. For example, time management in itself may have been an ILO influencing one exam, while it may not have been an ILO for another exam at that moment in the qualification. It can be seen that Universities D, F and G on an overall level allow the least amount of time per mark. It is submitted that Universities D and F compensated for this by having shorter questions that are inherently easier to digest, while University G has less reading material. Furthermore, it can be seen that University E tends to include longer questions, i.e. those that count more marks per question. Longer questions (i.e. more pages of reading material) generally have an effect on time pressure, since students normally have to spend more time to

plan their responses (answers) or spend more time reading. One should, however, be careful to express a view based on this finding that University E's exams are more difficult or better or unfair, since there are many factors to consider (such as the nature of the question or ILO).

The numbers in Table 3 do, however, show that all the universities set their examinations within a reasonable range of time allocated, which is expected, since the examinations are all stated as testing on an NQF 5 level and covering the same financial accounting concepts. A summarised version of the above discussion is given with the final framework below.

Table 3: Analysis of the time allowed for assessment tasks of the sample of financial accounting exams.

	UNIVERSITY A	UNIVERSITY B	UNIVERSITY C	UNIVERSITY D	UNIVERSITY E	UNIVERSITY F	UNIVERSITY G
Total marks	100	100	80	150	160	100	125
Total minutes	180	180	120	180	240	120	150
Minutes per mark	1.8	1.8	1.5	1.2	1.5	1.2	1.2
Total number of pages of reading material	9	6	5	13	15	7	6
Time indicated (or can easily be derived) for sub questions?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of questions and sub-questions*	21	11	10	46	12	14	12
Average marks per sub-question*	4.8	9.1	8.0	3.3	13.3	7.1	10.4
Longest question in terms of marks	17	21	20	16	37	21	27
Shortest question in terms of marks	1	2	2	1	2	1	3

* University A's paper contained 8 x 1-mark multiple-choice questions. University D's paper contained 15 x 2-mark multiple-choice questions. University F's paper contained 5 x 1-mark multiple-choice questions.

Theme 2: The layout of the assessment

Relating to Theme 1 (as explained below), but having distinct implications, is the second theme that was identified as “the layout of the assessment”.

Ambrose and Harris (2005, p. 5) describe layout as the placement of text and image elements within a design. They assert that how these elements are positioned will affect how the content is viewed and received by the readers, as well as their *emotional reaction* towards it. They note that layout can help or hinder the receipt of the information presented in a work, and state that creative layouts can add value and embellishment to a piece, whereas understated layout can allow the content to shine through.

The examinations for Universities A to G are highly similar in terms of layout. Except for relatively minute detail such as font size and font formatting, the layout of all seven universities’ exams is in essence the same. This typical layout is shown in Figure 1 below. One should also note that these examinations are part of the process for students to eventually write the final professional examinations, and therefore these examinations probably seek to simulate the layout of the professional examinations. The explanation given below of the possible effect that layout has on the SOLO level of an assessment task logically explains why a first-year exam may simulate professional examinations in terms of layout.

Question 1	(x marks, x minutes)
Descriptive information / Case study	
Descriptive information / Case study	
Descriptive information / Case study	
Required:	
Assessment task	
Assessment task	

Figure 1: The layout of Universities A to G’s examinations.

To illustrate the effect of layout, the following scenarios serve as an example, which was constructed based on University B’s question 1 (the university and question

were chosen at random) as well as some real-life experience of the authors. At this point going forward, any information pertaining to the year of an exam question (e.g. 2016) was substituted by “20XX” so that the ethical principle of delinking the universities from the data analysis and findings remains adhered to. For the same reason, any organisational names were replaced by for example “A (Pty) Ltd” or “B General Dealers”.

Scenario 1:

The question from University B provides a trial balance and lists 13 points of additional information (i.e. potential adjustments needed) about a partnership.

The assessment task requires: “By taking into account the above adjustments, prepare the statement of profit or loss – including the distribution section – for the year ending on 28 February 20XX in order to comply with IFRS. Ignore VAT”. The question counts 21 marks.

To illustrate the point of this theme succinctly, it is initially accepted that the majority of the marks of the question are on the multi-structural level, since at least two concepts are tested, namely “presentation and disclosure” of the statement of profit or loss, but also the “classification” of the accounts into the correct line item of the statement of profit or loss (the way this scenario is analysed can be further refined by the methods referred to below).

Scenario 2:

The same assessment tasks as given in Scenario 1 apply. The only change is that the trial balance and adjustments are now not given in an unfamiliar layout. The information is given across multiple pages in the format of e-mails, WhatsApp messages and a dialogue between two parties. It is submitted that the majority of the marks now clearly move into the relational level, since the layout of the assessment task in itself is a concept that must now be processed by the student, as the student must relate (categorise) the information correctly before she can even start classifying and disclosing. As the layout of an assessment also influences how a reader reacts to the content of the assessment, it may also have an effect on the time allowed to complete the assessment, since a complex or unfamiliar layout

will require more time for the student to function on the relational level (i.e. more “thinking time” is required). A summarised version of the above discussion is given with the final framework below.

Theme 3: Conventional wisdom

The genesis of this theme is Biggs and Tang’s (2007, p. 78) pertinent statement that “today’s extended abstract is tomorrow’s relational”.

In the South African higher education system, when an assessment task is evaluated in order to categorise it under a Bloom or SOLO level, it is done within the context of an NQF level. What is implied is that a student has had a reasonable amount of effective facilitation, guidance, preparation, access to the necessary resources and other interventions so as to be able to handle a certain NQF level’s requirements. Therefore, examiners, in an environment of constructive alignment and fair assessment, may for example justly evaluate that a particular assessment task is on a multi-structural or relational SOLO level, but the risk is that these conditions (i.e. effective facilitation, guidance, preparation, etc.) may be absent for a certain student, which then has the effect that the SOLO level of that assessment task becomes one of extended abstract for that student. This may typically lead to a mismatch between the intended and perceived standard of the assessment (for that student), which can then lead to a range of unwanted complications such as low grades. Such a scenario also typically has implications for time pressure and mental stress, which may further exacerbate this effect. It is furthermore submitted that this risk is a primary reason why students of financial accounting are constantly encouraged and assisted to study the module content and practise answering problem-based questions. It is also one of the main reasons that continuous assessment is applied before the summative assessment.

This theme will now be demonstrated with a scenario from one of the financial accounting examinations to support the above explanation (the university and question were randomly chosen):

Scenario and discussion:

The question from University G provides half a page of information about a company that manufactures plastic bottles and sells them to various water retailers.

The assessment task requires: “Using the five-step model of IFRS 15, discuss with reasons the recognition of revenue from the contract with G (Pty) Ltd. Assume that the agreement between G (Pty) Ltd and Z (Pty) Ltd satisfies the requirements of step 1 of IFRS 15.” The question counts 6 marks.

The authors’ experience dictates (and most financial accounting lecturers should concur) that this is a classic Financial Accounting 1 assessment task, which entails the listing of rules and the relation or application of the given information to the rules while ultimately concluding with an answer. Even though the word “relating” is used, this does not place the assessment task on the relational SOLO level. If one analyses the assessment task by also taking into account the concepts of financial accounting, the task actually entails two broad elements, which are i) “recognising and recording” of ii) one standalone topic that is either sales or revenue. The task is therefore seen as multi-structural *if* a student has for example seen it before, has practised it, or has previously been guided on a similar task. In this instance, there will be little relational aspect (which does not mean it is a “bad” or invalid task). The reason for this is that typically a student would list the five rules (in this case of IFRS 15) and then scan for the typical “sales contract” information and list that under each item of the first list. Had the assessment task brought in an element of another topic, for example taxation or inventory, then the task will probably be on the relational SOLO level, since then the task will require more than an “autopilot” response. It is also interesting to see above that the first step of the assessment task is given, for which there may be a few reasons, but ultimately it may be understandable since it is an introductory financial accounting examination.

However, if for example the nature of the topic (i.e. IFRS 15 Revenue from Contracts with Customers) is new (as was indeed the case when this exam took place) and students, facilitators or even examiners have not had much chance to develop relative conventional wisdom over the topic, then the assessment task becomes clearly relational in terms of SOLO. This is because the student will now have to

process each part of the given information carefully and relate it to the correct step in the list for revenue recognition. If a student for some reason missed the IFRS 15 lecture and had no other effective facilitation or study guidance, then the whole assessment task may become an extended abstract for that student, that combined with time pressure and mental stress, will likely lead to failure. Admittedly, this theme involves a degree of professional judgement from the examiner, since the examiner, while regarding the best available information, will have to make a call on the extent and effect of “conventional wisdom” on the particular assessment task. The aim is, however, one of *more* objectively measuring the level (or standard) of a summative assessment and not claiming to find a *fully* objective method. A summarised version of the above discussion is given with the final framework below.

Reflecting on Themes 1 to 3

The common thread that can be seen in the explanation of these three themes is that they are more likely to change (or “disrupt”) a SOLO level of an assessment task than to set it. Of course, they can sometimes help to set a SOLO level, for example where the time pressure or layout is an ILO to be assessed in itself or where students are purposely required to function on an extended abstract level through the design of an assessment that is clearly beyond “conventional wisdom”. However, in general, the implication is that in most cases a SOLO level will be set (as explained in Theme 4 below) after which the impact of Themes 1 to 3 should be considered. Themes 1 to 3 can therefore be further categorised as the “disruptor themes”.

The issue found with the analysis applied under Themes 1 to 3 is that it was not yet a structured process that is geared to set an initial SOLO level for an assessment task.

Therefore, drawing on experience, the review of the data, analysing how the process can be better structured, as well as considering all the information given in the study up to this point, Theme 4 was formalised, which is termed the

“dimensional method of applying the SOLO taxonomy to the assessment tasks of Financial Accounting 1”.

Theme 4: The “dimensional method” of applying SOLO to the Financial Accounting 1 examinations’ assessment tasks

What the authors realised in utilising the SOLO taxonomy is that the notion of *cognitive demand induced by the assessment tasks* is central. This realisation agrees with Biggs and Tang’s (2007) observation that “good teaching is getting most students to use the level of *cognitive processes* needed to achieve the intended outcomes that the more academic students use spontaneously” (p. 11).

The SOLO taxonomy is a proxy of cognitive demand with the suggested way to set the SOLO level to find the verb (e.g. “apply”) of an ILO or student response. However, with the verbs not being a practical option in terms of Financial Accounting 1 assessments, another credible way to set the SOLO level for the financial accounting assessment tasks had to be found.

During the analysis process, it was realised that the following “elements” could provide a “dimension” that can link the assessment task efficiently to the SOLO taxonomy.

The elements to consider were found by asking “what is it that this assessment task requires the students to process cognitively?”

The main *elements* were found to be:

- The fundamental *concepts* of financial accounting that an assessment task requires (e.g. recording or classification or reporting, etc.).
- The *topics* of financial accounting that are involved, e.g. bank and cash or inventory, etc. These topics would for example be derived from the ILOs that constitute the curriculum.

Examiners should note that this process is not a mechanical positivist process. They should use their experience and judgement to, among other things, interpret what constitutes a “topic”, since it may for example be possible to divide a topic into even smaller topics. The overriding question remains “what is it that this assessment task requires the students to process cognitively?” Experience dictates that a collection

of ILOs, as found in a study unit (SU) would most likely constitute a topic, which can then be taken as an element of *material* cognitive demand. The word “material” is understood as something that makes a difference, i.e. something exceeding the trivial.

Linking these elements (*concepts* and *topics*) to the SOLO taxonomy can be done as follows:

- If an assessment task requires and awards an irrelevant response it is set as being on the pre-structural level. Such an assessment task will not be seen as credible or fair.
- If an assessment task only requires the cognitive processing of any one element (i.e. fundamental concept or topic), it is set as being one-dimensional and on the unistructural level.
- If an assessment task requires the material cognitive processing of two or more elements, but does not require relational activity between these elements, the assessment task is set as being two-dimensional or on the multi-structural level.
- If an assessment task requires the material cognitive processing of two or more elements and also requires material relational activity between these elements, the assessment task is set as being three-dimensional or on the relational level. “Material relational activity” means that the assessment task requires the integration of detail into a structural pattern, as opposed to requiring the mere increase in quantity of detail.
- If an assessment task that requires the material cognitive processing of i) two or more elements as well as ii) material relational activity between these elements, but also iii) the conceptualisation of responses to go beyond the given information as well as go beyond what can reasonably and contextually be expected as at least partly conventional wisdom, then the assessment task is set as being four-dimensional or on the extended abstract level.

One may ask why the term “dimensional” is used above. The reason is that it was found that it becomes easier to think of assessment tasks in terms of dimensions (2D vs 3D vs 4D). A three-dimensional question has “depth” (a relational aspect) and a four-dimensional question ventures into the unknown (“fourth dimension”). It is furthermore noted that the utilisation of verbs should not be totally discarded, since they may still assist, for example, in whether to decide which fundamental concepts of accounting are required by an assessment task. Similar to the current practice of universities to link assessment tasks to the revised Bloom’s taxonomy by using the number of marks (CUT, 2016, p. 57; NWU, 2011, p. 1 as examples), the “dimensional method” also uses the number of marks for analysis purposes where one stated assessment task may imply different SOLO levels.

The following examples illustrate the application of the “dimensional method”.

Example 1: Trial balance with adjustments

Examination: University A

Brief description of the scenario: The question provides a trial balance and lists ten points of additional information (including adjustments needed). The business has the form of a sole proprietorship. The overall “required” part is divided into two assessment tasks, of which number 1 is discussed here.

Assessment task: “Prepare the statement of profit or loss and other comprehensive income for the year ended 31 December 20XX.” The question counts 14 marks.

Analysis through SOLO: Since the assessment task requires the adjustment of the given information (the *concept* of “summarising and classifying”) as well as the preparation of a financial statement (“presentation and disclosure”) dealing mainly with the *topics* of income/expenses and assets (depreciation calculations), it can be seen that at least three *elements* are present. Since all 14 marks are awarded for amounts that needed adjustment, the initial reaction would be to consider the whole task as being on the relational level, since adjustments need to be related to the amounts. However, of these adjustments, eight marks i) do not require *material* relational activity, since they comprise simple straightforward calculations (e.g. 65 500 + 7 800) which are ii) considered conventional wisdom within the context of

Financial Accounting 1. Therefore, the assessment task is set as having six marks (43%) on the relational SOLO level (or 3D level) and eight marks (57%) on the multi-structural SOLO level (or 2D level).

Variations and other occurrences: The “Trial balance and adjustment” type question was found to be most prevalent, including those with minor variations, e.g. requiring a different financial statement (Universities D and F) or having a different business form (Universities A, B, C, D, F), or requiring accounting records such as the general ledger or journal entries (University F). The other business forms were found to be partnerships (Universities A, B, C, D) and clubs (Universities C and F). The business form of companies was found to rather fit into example 2, which is given separately since it is considered to be a major variation of this example. Some examinations had more than one of these types of questions. The analysis process would, however, follow the same logic as this example.

Example 2: Trial balance with adjustments and material integration of topics

Examination: University E

Brief description of the scenario: The question provides an extract from a trial balance and lists 20 points of additional information. The additional information covers basic adjustments needed, but also provides significant detail about various topics such as share capital, debentures, taxation and dividends. The business has the form of a company. The overall “required” part is divided into four assessment tasks, of which number 2 is discussed here.

Assessment task: “Prepare the statement of profit or loss and other comprehensive income for the year ended 30 September 20XX, starting from the profit before tax and finance costs figure which was calculated in 1 above.” The question counts 13 marks.

Analysis through SOLO: The assessment task comprises more than two *elements* (similar to example 1) as well as some relational aspects. There is, however, no requirement to address anything clearly beyond i) the given information together with ii) beyond what can reasonably and contextually be expected as being at least partly conventional wisdom. Therefore, the assessment task cannot be set on the

extended abstract level. The calculation of the finance costs is a calculation that is not straightforward conventional wisdom, since the concept time value of money is involved (this counts six marks). The remaining summarising of the given information into the financial statement is either done directly from the given information, or is based on straightforward basic calculations (this represents seven marks). Therefore, the assessment task is set as having six marks (46%) on the relational SOLO level (or 3D level) and seven marks (54%) on the multi-structural SOLO level (or 2D level). Due to the relative length of the given information as well as a layout that seems different to those seen in example 1 above, the examiners and moderators should consider whether “time pressure” and “layout” do not raise at least some of the marks to a higher SOLO level. This will depend on the “conventional wisdom” for the programme’s students, which, as experience dictates, should be fairly high (i.e. they would have seen such a layout and question before). This would then mean that the set SOLO levels are not disrupted.

Variations and other occurrences: University G had a similar type of question with the variation that the statement of changes in equity was required, while University B required both the statement of profit or loss and other comprehensive income as well as the statement of changes in equity.

About journal entries and general ledger accounts

Journal entries and general ledger accounts are accounting activities (typically involving recognition and measurement) that are a means to an end. The “end” being the financial statements. Therefore, the same logic as the examples above would apply to evaluating the SOLO level of an assessment task requiring journal entries of general ledger accounts. Journal entries were required in the examination of Universities A, B, D and G, while general ledger accounts were required by Universities A, D and F.

Other examples

During the research, other typical assessment tasks that were found were the “Disclosure of notes to the financial statements”, “Theory and apply type

questions”, “Cash flow statement”, “Bank reconciliation” and “Financial ratios”. While the dimensional method was successfully applied to these examples by using the principles illustrated above, these examples are for the sake of conciseness not repeated here.

Reflecting on Theme 4

During the analysis given under Theme 4 above, the following observations were also made.

No instances of pre-structural questions were found at all. This is to be expected in a professional environment such as an accounting school, but is still gratifying to see. Only two unistructural questions were found, which counted seven marks. These unistructural questions may, however, have been used to balance the level of the paper or time pressure. No examples of extended abstract questions were seen, which also makes sense in light of the fact that the examinations were pitched at NQF 5 (introductory level). The questions were found to generally be pitched at around +60% on the multi-structural level, with the majority of the remaining marks being on the relational level. It was also noted that none of the examinations covered the typical higher level topics such as consolidated group financial statements, which is in line with the authors’ experience of the typical financial accounting ILOs at NQF 5. All in all, the examinations were perceived to be professionally prepared and aligned to the typical financial accounting ILOs.

In time and by practising the “dimensional method”, examiners will likely be able to quickly state an assessment task as being 1D/2D/3D or 4D in nature.

Recommendations and conclusion

The study’s research problem was solved by iteratively achieving the study’s secondary research objectives, which fed into and achieved the primary research objective, as well as solving the research questions. The secondary research objectives as achieved in the various sections of this chapter culminate into the coherent framework given below. The authors believe that this framework will be

invaluable in enhancing the objectivity of evaluating the cognitive levels of assessment in an introductory financial accounting module.

Framework for the application of the SOLO Taxonomy in evaluating the level of introductory Financial Accounting assessments

The aim of this framework is to provide guidance for the application of the SOLO taxonomy in evaluating the standard of a summative assessment of a Financial Accounting 1 (introductory financial accounting) module. The framework is informed by research with the main aim of having practical utility. The framework is not meant to be prescriptive, but rather to illuminate or assist. Examiners and moderators are encouraged to use their experience and judgement to consider contextual issues and to not merely follow a mechanical process. The sections that follow each addresses a significant specific theme of guidance.

Time allowed to complete assessment tasks

Time pressure has an impact on a student's cognitive response, and therefore examiners must carefully contemplate whether an assessment task is to test time management skills, reading skills, planning skills, the concepts of financial accounting, or all of these as well as to what degree. Examiners must be careful that time pressure does not inadvertently frustrate the SOLO level that the assessment task aims for the students to operate at.

The layout of the assessment

A layout that students perceive as unfamiliar or complex can have the effect of raising the SOLO level (which may be desired or not) of the assessment task for that student, since the effect of the layout of the examination in itself then becomes a concept to cognitively process along with the other requirements of the assessment task. A complex or unfamiliar layout will also affect the time allowed to complete an assessment, since such a layout will require more time of the student in order to function on the relational SOLO level (i.e. more "thinking time" is required).

The effect of “conventional wisdom”:

Conventional wisdom or the lack thereof may raise or lower an assessment task’s SOLO level. Examiners, in an environment of constructive alignment and fair assessment, may for example rightfully evaluate that a particular assessment task is on the multi-structural or relational SOLO level while there is a risk that these conditions (i.e. effective facilitation, guidance, preparation, etc.) may be absent for a certain student. This could have the effect that the SOLO level of that assessment task then becomes one of extended abstract for that student. The recommendation of this theme is therefore, that an examiner should, while regarding the best available information, consider how much conventional wisdom a well-prepared student (i.e. the “reasonable man” test) should possess in terms of a certain assessment task. The examiner should then consider the effect of the conventional wisdom on the SOLO level of an assessment.

The “dimensional method” of applying SOLO to the Financial Accounting 1 examinations’ assessment tasks

This method was developed as a more structured and formalised way of applying SOLO to the Financial Accounting 1 examinations’ assessment tasks since themes of “time allowed”, “layout” and “conventional wisdom” were found to be more likely to change (or “disrupt”) a SOLO level of an assessment task than to set it. The “dimensional method” is a cornerstone of this framework and is thoroughly described (including examples) under the “results, findings and discussion” section of the chapter above.

Limitations of the study that underpins this chapter

The main limitations firstly include that there is a degree of subjectivity in the data analysis, since the authors alone coded the data. To compensate for this limitation, the data analysis and findings were richly and transparently described in order to demonstrate logic and the lack of undue bias. The authors also point to their vast experience to demonstrate their expertise in relation to Financial Accounting 1 examinations. Secondly, the study utilises data that are bound to a snapshot in time

which, if the nature of financial accounting examinations changes fundamentally, will render the study outdated. Currently, there is no indication that Financial Accounting 1 summative examinations will change materially from the data that the study used and the findings will therefore be relevant for the foreseeable future. The final framework is, however, also suited to future modification.

Areas for further research

It follows that the study (and subsequent chapters) may be extended to the assessment of financial accounting under higher NQF levels or other subject disciplines, while a study that compares students' perception of the cognitive demands of a financial accounting exam against the findings of the application of the above framework, may show some interesting perspectives.

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