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The readability of Managerial Accounting and Financial Management textbooks

Karen Bargate
School of Accounting, University of KwaZulu-Natal, Westville Campus, South Africa

Abstract

Purpose – University Accountancy faculty need criteria to assist with the selection of textbooks, to ensure that the subject matter is congruent with the level at which students are taught. Readability is one such criterion. The purpose of this study is to assess the readability of two Managerial Accounting and two Financial Management textbooks, using three different readability evaluation methods.

Design/methodology/approach – The sample for the study included 281 Accounting students from an Eastern seaboard university. Each student was requested to complete two passages – one from a Management Accounting textbook and one from a Financial Management textbook. The Gunning Fog Index, Flesch Reading Ease and Cloze Procedure readability evaluation methods were used to measure readability.

Findings – The findings suggest varying levels of readability among the textbooks. Results from the Cloze Procedure reveal that three of the four textbooks were being read at the *Frustration Level* and the fourth marginally above the *Frustration Level*. The readability formulae returned varying results demonstrating that some of the textbooks were at a level that the students ought to be able to read.

Research limitations/implications – Only two Managerial Accounting and two Financial Management textbooks of many published were assessed, and only three readability evaluation methods were used.

Social implications – The findings have implications for university faculty, authors, publishers, editors and students.

Originality/value – The readability of Managerial Accounting and Financial Management textbooks used at South African universities, has received scant attention in the literature. The analysis of the readability of the accounting textbooks, presents a synthesis that adds important knowledge in this under-researched topic.

Keywords Cloze procedure, Financial Management textbooks, Flesch Reading Ease, Gunning Fog Index, Managerial Accounting textbooks, Readability evaluation methods, Selection of textbooks, Republic of South Africa, Financial management, Management accounting

Paper type Research paper

1. Introduction

The problem of selecting textbooks that are suitable in terms of vocabulary and degree of grammatical complexity, was illustrated in the following letter published in *FM Campus* (2005, p. 3), in response to an earlier article pertaining to the shortage of black chartered accountants:

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> Many textbooks are written at an advanced level of English, suitable for first-language English speaking students. English is my first language, but in my experience, the language of these textbooks is difficult to understand. I'm sure this problem is compounded when English is your second language. This leads to many students feeling frustrated or failing, then deregistering from university. A lot of prescribed textbooks are written by our lecturers therefore we cannot complain.

Many students entering tertiary institutions in South Africa are second-language users of English (E2L), and textbooks are usually written in English (Sadler and Erasmus, 2005; Roos, 2009). First-language speakers of English (E1L) may struggle with academic language, especially in their undergraduate years (Koch and Kriel, 2005). Students whose families have become E1Ls only a generation ago, or whose use of English has been restricted (E1R), may have serious problems with textbooks – maybe even more so, because institutions usually fail to take them into account (Venzke, 2004; Steenkamp *et al.*, 2009). In this regard, technical terms or other vocabulary specific to a discipline will create difficulties, especially if lecturers do not explain these adequately.

Most accounting faculty share a common goal of selecting the "best" textbooks available, but in order to define that "best" more precisely, a range of factors should be considered. Obvious factors include coverage of the syllabus to pedagogical approach, supplementary materials, and the faculty's past experience with the text. A prior criterion, however, is the readability of the text, at the level of language use expected of the particular year of study (Spinks and Wells, 1993, p. 89). In a study of textbook selection criteria by Smith and DeRidder (1997), accounting faculty ranked textbook comprehensibility as the most significant criterion in those decisions. This was supported in a South African study (Bargate, 2011) where textbook comprehensibility was ranked second (out of 14) criteria. Textbook comprehensibility can be predicted, in part, by readability measures (Plucinski, 2010).

Chiang *et al.* (2008, p. 47) maintain that the readability of accounting textbooks impacts on students' learning and achievement. Texts that are difficult to grasp may cause students to become frustrated and lose interest in the subject. Poor results may be the consequence as they may focus on rote learning, without comprehension of underlying concepts. Understanding is not only crucial for students, it also has the advantage that if students are able to read textbooks independently, lecture time can be freed up to supplement the topic being studied (Razek *et al.*, 1982). Textbooks are often used to structure a course and they "serve as a primary means to communicate the knowledge and skills that are necessary for success" (Jones, 2011, p. 29).

Readability problems are not particular to South Africa, and the need for research on the readability of accounting textbooks has been discussed in a Brazilian study (Cornachione, 2004, p. 1), and an American study (Plucinski *et al.*, 2009, p. 120). Although the International Financial Reporting Standards impose a degree of standardisation on Accountancy here and elsewhere, it is desirable that a textbook use the currency measures – and indeed the idiom – of the country in which it is used. *Management and Cost Accounting* (Drury, 2004), *Managerial Accounting* (Vigario, 2005a) and two financial management textbooks: *Managerial Finance* (Vigario, 2005b) and *Financial Management* (Correia *et al.*, 2005)[1] have been selected for this study. These are used at third-year level at some South African Institute of Chartered Accountants (SAICA) accredited universities.

The intention in this paper is not to recommend one textbook over another, but to urge accounting faculty to consider readability as a factor in textbook selection. This paper is confined to accounting, incorporating the fields of auditing, financial accounting, financial management, management accounting and taxation. Three measuring instruments will be used to measure the readability of the specified texts: the Gunning Fog Index (GFI), the Flesch Reading Ease, and the Cloze procedure – all of which will be discussed below. Aspects of the text such as font size and type, layout and coverage of the prescribed syllabus, although important in particular cases, are not taken into consideration.

The article is structured as follows: Section 2 lists the requirements for an accounting degree, defines readability, and discusses readability evaluation methods. In this section, literature on prior studies in the readability of accounting textbooks will be examined. Section 3 contains a description of the methods used in the study and Section 4 a discussion of the findings. Section 5 provides the conclusion, noting limitations and suggesting areas for future research.

2. Background and prior research

The requirements for an accounting degree are set by bodies external to the university. Currently there are 13 SAICA-accredited universities (SAICA, 2010b). To qualify as a Chartered Accountant in South Africa ((CA (SA)), a student must complete an undergraduate degree and then a certificate in the theory of accounting (CTA) at a SAICA-accredited university. The major subjects are financial accounting, auditing, taxation and financial management. On completion of the CTA, a student must enter into a three-year training contract with a Registered Training Office for the audit specialisation, or an Approved Training Organisation to specialise in Financial Management. During the training contract, the student is required to complete Parts I and II of the qualifying examination, Part I being compulsory for all. In Part II, students take either an audit (professional practice examination) or financial management specialisation. Once these requirements have been met, the candidate may use the designation CA (SA) (SAICA, 2010a).

For students intending to pursue the CA route, it is compulsory to complete Managerial Accounting and Finance III (MAF), a third-year course for Bachelor of Commerce (B. Comm.) students. Other students, such as those following a B. Comm. (general) course, can also register for MAF.

2.1 Readability

Readability is a measure of textual difficulty for the reader, and is an attribute of the text (Jones, 1997; Chiang *et al.*, 2008). It requires an interaction between the writer, reader, and text (Snyman, 2004). Plucinski *et al.* (2009, p. 119) claim that readability "refers to the qualities of writing which are related to reader comprehension." A readability measure, such as the GFI, indicates the appropriateness of a piece of writing, based on a score derived from word and sentence length, to students at a particular level.

2.2 Readability evaluation methods

Readability evaluation methods are divided into two groups: readability formulae (defined below), and the Cloze procedure where students are required to supply words deleted from the text. There are more than 200 readability formulae (Lee and French,

2011, p. 695) which are easy to administer using computer programs, such as the grammar-checking function available with MS-Word (*inter alia* Sullivan and Benke, 1997, p. 202; Kanter *et al.*, 2008, p. 2; Plucinski, 2010, p. 51).

2.3 Readability formulae

Readability formulae are passive, objective, easy to use and do not require input from the reader (Flory *et al.*, 1992). They produce a single reading-ease score for passages, which indicates whether the passages could be read and understood by the intended reader (Courtis, 1995, p. 60). They measure only two factors in a piece of text – word difficulty (semantic factor) and sentence length (syntactic factor), and have no reference to the skill or experience of the reader. Word difficulty is measured by either the length of the word or its "familiarity" (Stevens *et al.*, 1992, p. 370). Short sentences are considered to be easier to read than longer sentences.

Several authors (*inter alia* Klare, 1974/1975; Stevens *et al.*, 1985, 1992; Sydserff and Weetman, 1999; Lee and French, 2011) have however argued that longer sentences and "unfamiliar" words do not necessarily impede readability. Harrison and Baker (1998) questioned the validity of using shorter sentences to improve readability scores. They contend that by shortening sentences, terminology may become over-simplified, and that longer sentences can increase comprehension. Moore and Shuptrine (1993, p. 25) claim that readability formulae are a better – perhaps they mean an easier – measure of readability than the Cloze procedure – due to their ease of use, reliability and validity. Readability formulae have been criticised, however, because they can take no account of the skills and motivation of readers (Sydserff and Weetman, 1999, p. 459). They also disregard word order, sentences and paragraphing (Sydes and Hartley, 1997). Fry (1989, p. 296) acknowledges the limitations of readability formulae, but remarks that textbook selectors who do not use readability formulae in conjunction with other criteria, are "not using one valuable, well researched tool for book selection."

Acknowledging the limitations of any single readability formula, it was decided these, in combination with the Cloze procedure, are suitable measuring instruments for the evaluation of the accessibility to students of textbooks.

2.4 The Cloze procedure

The Cloze procedure was developed in Taylor (1953) (Taylor, 1957, p. 19), as a method of evaluating the comprehensibility of texts for defined populations of readers. A passage of text is selected and certain words are deleted from it, which the student will then be required to supply. Depending on the nature of the vocabulary or syntax to be tested, the words to be deleted will differ. For example, every *n*th word may be deleted, or technical words only may be deleted, or conjunctions or adverbs. The reader needs to infer the appropriate missing words to fill in the blanks (Williams *et al.*, 2011, p. 220). A score of 58 per cent or above indicates that the readability of the text is appropriate to the level of the readership. The procedure is based, in part, on the concept of Gestalt psychology, where humans mentally close the gap in an unfinished pattern (Williams *et al.*, 2002, p. 4). The more readable the passage, the better it is understood and the more likely that the reader will be able to infer the missing words. The higher the number of words replaced correctly, the higher the Cloze score – implying that the passage is easier to read.

The Cloze procedure, however, takes no account of the motivation and effort expended by subjects completing the passage. It differs from readability formulae since it tests understanding of language conventions and writing styles and therefore tests the reader's skills. Criticisms of this evaluation method, such as those of Jones (1997) and Flory *et al.* (1992), are that the Cloze procedure is time-consuming to administer, because subjects are required to complete the set passages. While Stevens *et al.* (1993) acknowledge this, they claim that it is appropriate for use at tertiary level to assess the readability of textbooks, and since faculty have students, class time, and textbooks at their disposal. In the South African context especially, where E1L, E2L, and E1R students coexist in courses, faculty must be willing to give attention to at least three types of language proficiency.

Bormuth (1968), Adelberg and Razek (1984), Stevens *et al.* (1993, p. 290) and Williams *et al.* (2011, p. 218) conclude that the Cloze procedure "serves as a tested, valid measure of whether a reader comprehends material". It remains the only measure of readability which requires interaction between readers (in all their diversity) and the text. It requires that the text be both semantically and syntactically correct, consequently ensuring that it is readable by the intended audience.

2.5 Prior research

Plucinski (2010, p. 50), in a review of Accounting research over the past 25 years, was able to identify only six studies on the readability of accounting textbooks (Razek *et al.*, 1982; Adelberg and Razek, 1984; Traugh *et al.*, 1987; Flory *et al.*, 1992; Sullivan and Benke, 1997; Davidson, 2005). He failed, however, to identify other studies in this area – such as Williams *et al.* (2002), Cornachione (2004), Chiang *et al.* (2008), and Chene *et al.* (2008). Nevertheless, Jones (2011, p. 30) also notes that there are a limited number of studies into the readability of accounting textbooks. Readability formulae were used in studies by Razek *et al.* (1982) of six intermediate (second-year) and six advanced (fourth-year) financial accounting textbooks. Traugh *et al.* (1987) analysed successive editions of Principles of accounting textbooks; Flory *et al.* (1992) of seven intermediate accounting textbooks; Sullivan and Benke (1997) of 33 introductory (first-year) financial accounting textbooks; Chiang *et al.* (2008) of seven financial accounting principles textbooks; Plucinski *et al.* (2009) of seven introductory financial and management accounting texts (both sections in one book); and Plucinski (2010) of seven Intermediate accounting texts.

Using readability formulae, Razek *et al.* (1982) found no significant differences between the intermediate textbooks, but significant differences between the readability of the advanced texts. Traugh *et al.* (1987), Flory *et al.* (1992), and Sullivan and Benke (1997), concluded that there was no significant difference in readability of the textbooks that they studied, and that the readability was at the appropriate level. Chiang *et al.* (2008) and Plucinski (2010) found that readability varied across textbooks, but that there was consistency within textbooks and no reason to choose one text over another. The findings of Plucinski *et al.* (2009), however, suggest there were differences in the readability levels of all textbooks as well as within textbooks, with the mean readability of the managerial accounting texts being highest.

The Cloze procedure and accounting textbooks were the focus of studies by Adelberg and Razek (1984), using four intermediate accounting textbooks, while Williams *et al.* (2002) analysed four first-year financial accounting textbooks and Cornachione (2004)

examined two introductory accounting textbooks. Adelberg and Razek found that students understood the accounting textbooks, but that the level of understanding varied significantly both across and within textbooks designed for the same levels of students. Williams *et al.* (2002) reported that one of the textbooks had significantly higher Cloze scores than the other three; all however were at an approximately acceptable level for first-year students. The mean Cloze scores of textbooks in Cornachione's (2004) study were also found to be at an appropriate level of readability, although for one there were significant differences in mean scores across the textbook, indicating lack of uniformity in its contents of readability levels.

Taxation textbooks were the focus of the study of Raabe *et al.* (1993). They used the Cloze procedure to investigate the readability of six taxation textbooks and regulations. With the exception of one passage, all passages were read below the instructional level score of 44 per cent (readers able to cope, but some assistance required). The Cloze procedure and three introductory *Auditing* textbooks were examined by Chene *et al.* (2008). There were no significant differences in overall readability among the textbooks, but there were significant differences in readability among passages within all of them. Davidson (2005) conducted a longitudinal study into the complexity of writing in 115 financial accounting textbooks from introductory to advanced levels, published over the past 100 years. He found that current trends show decreases in sentence complexity, but increases in word length, which has implications for the demands made on students by the vocabularies of textbooks.

No South African studies in the readability of accounting textbooks were identified. This is a serious deficiency, because the language skills of South African students differ considerably from those in other countries – and indeed may differ greatly within a single class.

3. Research methodology

3.1 Choice of readability evaluation methods

The Flesch Reading Ease, GFI, and Cloze procedures were used to determine readability levels in a selection of MAF textbooks. These methods were chosen since they have been used previously in studies using accounting texts. The Flesch formula has also been used in studies of the readability of annual financial reports by *inter alia,* Smith and Smith (1971), Lewis *et al.* (1986), Smith and Taffler (1992), and Courtis (1995, 1998). Further, Lee and French (2011, p. 696) state that the Flesch formula "is the most widely used, reliable and tested formula" of readability.

3.2 Textbooks used in the present study

Questionnaires were sent to the heads of accounting at ten[2] SAICA-accredited universities, to determine the most frequently prescribed managerial accounting and financial management textbooks. The response rate was 70 per cent, consistent with that of Williams *et al.* (2002, p. 8), where the response rate was 68.4 per cent. It was found that *Management and Cost Accounting* (Drury, 2004, pp. 1-1280) and *Financial Management* (Correia *et al.*, 2005, pp. I-1-I-14) were the textbooks most frequently prescribed. *Managerial Accounting* (Vigario, 2005a, pp. 1-530) and *Managerial Finance* (Vigario, 2005b, pp. 1-442) were the prescribed MAF textbooks at the university where the study was conducted.

3.3 Selection of passages used in the study

Each of the four textbooks was divided into three equal parts. A random-number generator was used to select two pages from each part. A passage containing text only was chosen from each of the selected pages, since in this study "readability" was taken as referring to words only, which is consistent with other studies of readability in accounting (Razek *et al.*, 1982; Williams *et al.*, 2002; Cornachione, 2004; Chiang *et al.*, 2008; Plucinski *et al.*, 2009). No attempt was made to choose passages dealing with similar topics in the textbooks, since this would have negated the randomness of the selection. One of the textbooks was multiple-authored, and it was therefore essential that a cross-section of the book be covered to account for different styles. This is in keeping with the methods of Razek *et al.* (1982, p. 25) and Plucinski *et al.* (2009, p. 124). The effect of changing the deletion frequency of words was investigated by Alderson (1979, p. 108), who reported that changing the deletion frequency did not result in an easier test, and the Cloze scores were "unaffected by context greater than five words." In the present study, the first and last sentences of each of the selected passages were left intact, to provide a context. Every fifth word was deleted, with a total of 25 deletions per passage, the practice recommended by Adelberg and Razek (1984), Raabe *et al.* (1984), Williams *et al.* (2002), Cornachione (2004), Chene *et al.* (2008), and Plucinski *et al.* (2009). The deleted words were replaced by an underlined blank space of uniform size (Williams *et al.*, 2002; Chene *et al.*, 2008) – with the intention that the blank spaces should not suggest the length of the deleted word (Hartley and Trueman, 1986). An example of a Cloze passage used in the study is provided in the Appendix.

About 25 words were deleted from each of the two passages selected from each third of each MAF textbook. About 50 words were therefore deleted from each third of each MAF textbook. Taylor (1957) suggests that 50 deletions and a minimum of three randomly selected passages per book provide a sufficient sample for reliable results. This is consistent with readability studies in accounting (Taylor, 1953; Bormuth, 1968; Adelberg and Razek, 1984; Stevens *et al.*, 1993; Raabe *et al.*, 1984; Williams *et al.*, 2002; Cornachione, 2004; Chene *et al.*, 2008). Adelberg and Razek (1984) used six passages per half of the book and the number of deletions was not stated; Raabe *et al.* (1984) used three passages per book and 50 deletions per passage; Williams *et al.* (2002) used eight passages and ten deletions per passage; Cornachione (2004) used four passages per book and 50 deletions per passage, and Chene *et al.* (2008) used nine passages and 50 deletions per passage. These figures are only a rough guide, since lengths of passages were invariably unspecified.

3.4 Students completing the Cloze procedure

About 281 full-time B. Comm. students registered for third-year MAF at a large university on the eastern seaboard of South Africa, participated in the study. The student body included E1L, E2L, and E1R individuals. Although the different linguistic proficiencies in the group must affect the individuals' ability to cope with textbooks, many will eventually have to pass examinations at a high level of English, and the selection of textbooks must bear this in mind. Compensatory mechanisms must be introduced into the teaching process, to increase students' familiarity with professional vocabulary and complex syntax (Koch and Kriel, 2005).

As there were approximately 380 students registered in this cohort, the size of the sample makes it representative of the population. Participation in the exercise was

voluntary; students who did not complete the Cloze procedure chose not to participate, or were absent on the day.

Each student was requested to complete two passages (out of 24 in all distributed among the students) – one from a managerial accounting textbook and one from a *Financial Management* textbook. The passages were randomly allocated. A time limit of 20 minutes was set for the completion of the passages. This time limit is consistent with Chene *et al.*'s (2008, p. 5) study, where Auditing students were allowed an hour to complete three passages, each with 50 deletions. Submissions of completed tasks were anonymous, although students were asked to indicate whether they were E1Ls or E2Ls.

3.5 Analysis of the Cloze passages

In this study only exactly correct word replacement, allowing for minor misspellings, was acceptable – consistent with the method of Taylor (1957, p. 22), Bormuth (1969, p. 362), Cohen (1975, p. 249), Adelberg and Razek (1984, p. 113), Cornachione (2004, p. 12), and Chene *et al.* (2008, p. 5). Some researchers allow the use of synonyms. Williams *et al.* (2002) used "close synonyms" as well as exact replacements. Litz and Smith (2006) considered the correlation between exact replacement scoring (ERS) and semantically acceptable scoring (SEMAC), in the scoring of the Cloze passages. In their study the passages were marked twice, once using ERS and the second time using SEMAC. The findings revealed closely similar scores. These findings are corroborated by Cornachione (2004), who first used exact word replacement and later permitted synonyms: the use of synonyms did not significantly affect the results.

3.6 Scoring of readability evaluation methods

With the Flesch Reading Ease, a notional score out of 100 is obtained, with a low score reflecting a more difficult passage (Lewis *et al.*, 1986, p. 203). A score of 60-69 represents "plain English," which suggests the material is comprehensible to the intended readership. The seven-point ranking developed by Flesch and used by Razek *et al.* (1982, p. 24); Lewis *et al.* (1986, p. 203) and Lee and French (2011, p. 696) was applied, with interpretations related to South African educational levels (primary, secondary, undergraduate, and postgraduate years). Table I illustrates this scale.

The GFI is a measure of the approximate grade level (Moore and Shuptrine, 1993, p. 25) that a reader requires to comprehend the written material. A GFI of 15 is equivalent to matriculation (12 years of schooling) plus a three-year degree. Technical documents have a GFI of between 10 and 15, and professional writing does not often exceed 18. These GFI scores were used by Lewis *et al.* (1986). Heese (1991, p. 42) made a similar adaptation to the South African educational system in her study of UNISA

Flesch Reading Ease scale	GFI	Reading level
90-100	6	Very easy (grade 5)
80-89	7	Easy (grade 6)
70-79	8	Fairly easy (grade 7)
60-69	9	Standard (grades 8 and 9)
50-59	10-12	Fairly difficult (grades 10-12)
30-49	13-15	Difficult (undergraduate)
0-29	16-18	Very difficult (postgraduate)

Table I.
Seven-point general Reading Ease scale adapted for South Africa

tutorial matter. She considers a GFI level of 12 appropriate for first-year students, and a GFI of 17 for post-graduate students.

For the Cloze procedure, the benchmark comprehension levels of Bormuth (1968, 1969) and Rankin and Culhane (1969), as illustrated in Table II are used. The lower the percentage of correct words inserted, the more difficult the passage. These comprehension levels were used in most existing studies of accounting textbooks (Adelberg and Razek, 1984; Williams *et al.*, 2002; Cornachione, 2004; Chene *et al.*, 2008). Bormuth (1968) proposes that textbooks should be written at the instructional level (see below), which scores between 44 per cent and 57 per cent.

4. Results

4.1 Readability scores

The results of the Flesch Reading Ease, GFI, and Cloze readability scores are shown in Table III. In terms of the findings of the readability formulae, Drury's text (the only non-South African textbook in the study), was overall the most difficult. With an average GFI of 16.21, Drury is identified as very difficult and would be suitable only for post-graduate students. Drury also had the worst average Flesch Reading Ease score at 26.55, in the very difficult scale, making it unsuitable for MAF at third-year level.

Correia *et al.* (2005) was considered the easiest to read in terms of the Flesch Reading Ease and GFI. The average Flesch Reading Ease score is 44.93, which is considered difficult on the seven-point General Reading Ease scale (Table I). The standard deviation of 15.83 is indicative of the wide range of scores obtained. This is probably due to the fact that the book has multiple authors, who have differing styles of writing. Plucinski *et al.* (2009, p. 124) report a similar finding in their study on the readability of seven textbooks for introductory accounting. The mean scores of the Managerial accounting section of the textbook were higher than those of the Financial accounting section. This may be because of the different authorial styles, but the possibility exists that the matter and professional vocabulary necessarily used, are more complex. Plucinski *et al.* however attribute the difference in mean scores to the fact that every textbook had at least two authors, who would have different styles of writing.

Table II.
Cloze comprehension levels

Cloze score (%)	Level
0-43	Frustration level – language is difficult for readers to cope with
44-57	Instructional level – readers able to cope, but some assistance required
58-100	Independent level – readers able to cope with the language

Table III.
Flesch Reading Ease, GFI, and Cloze scores ranges, means, and standard deviations

	Flesch Reading Ease			GFI			Cloze (%)		
Book	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Vigario Man. Acc.	21.3-52.2	38.03	11.37	11.0-14.8	13.09	1.61	30.0-63.8	44.7	11.9
Drury	14.3-46.3	26.55	14.4	14.5-19.8	16.21	1.84	34.9-41.3	38.36	3.77
Vigario Fin. Mgt.	31.0-47.4	38.62	5.51	12.2-17.7	14.93	2.36	31.1-41.8	37.99	4.69
Correia *et al.*	19.5-62.2	44.93	15.83	10.9-16.7	12.51	2.1	30.6-50.9	41.44	8.3

The average GFI of Correia *et al.* (2005) at 12.51, represents a level slightly above matriculation level and is termed difficult (i.e. suitable for undergraduates) on the seven-point scale. This finding is in line with the results of Traugh *et al.* (1987) in their study of 24 introductory accounting textbooks. The vast majority – 21 textbooks – had GFI scores of 11 or 12, in the difficult range (Traugh *et al.*, 1987, p. 161). Both the Flesch Reading Ease and GFI indicate that Correia *et al.* (2005) is suitable for third-year MAF.

The two Vigario textbooks returned similar mean scores using Flesch Reading Ease, indicating that the standard of writing is consistent in the two books. For both textbooks, the Flesch Reading Ease average scores were in the difficult range, indicating that the readability is at a level which undergraduates should comprehend. On the GFI, both textbooks had average scores in the very difficult ranking (i.e. not suitable even for third-year students). The standard deviation of the management accounting book, at 1.61, was the lowest of the four books – indicating that all of the chapters were written at a similar level of difficulty.

Three of the four MAF textbooks investigated in the study returned a mean Cloze score of below 44 per cent (Table III), which signifies that many of the students were reading texts at the frustration level. Vigario's managerial accounting textbook returned the highest average Cloze score of 44.71 per cent, which falls just within the instructional level of reading. This level of readability is consistent with studies of accounting textbooks conducted by Raabe *et al.* (1984) and Williams *et al.* (2002), where the average Cloze scores were below 44 per cent, indicating that the books were being read at the frustration level. Adelberg and Razek (1984) and Cornachione (2004) had average Cloze scores of 44 per cent, which just reaches the instructional level.

Of the Cloze passages, the highest Cloze score (63.81 per cent), was at the independent level and a further three passages were at the instructional level, which is considered appropriate for undergraduate textbooks. The passage with the highest Cloze score was from AC108 (now replaced by IAS 2), Accounting Statement on Inventories, para 12. This may be because students are expected to be familiar with the content of IAS 2, having already met the vocabulary of accounting statements in financial accounting courses. The fact that students scored highly on this particular passage indicates, either that the statements are written in an idiom understandable to future accounting professionals, or that students have encountered it already. If this passage is excluded from the average Cloze score, the average decreases to 40.89 per cent – within the frustration level.

The second highest average Cloze score was from the passage on Linear Programming in Vigario's management accounting textbook. At the university where this research took place, this topic is taught in Advanced management accounting. Students who studied Higher Grade Mathematics at high school would, however, have been exposed to Linear Programming, since it was part of the former Higher Grade syllabus. The two other Cloze scores above the frustration level were from Correia *et al.* (2005). One of the passages (50.77 per cent) was on financial statement analysis, another topic which would have been familiar to students from prior studies. The Cloze scores realised in the passages suggest that on average the students were reading the textbooks at the frustration level.

4.2 T-*tests*

Correlated *t*-tests were used to test for significant differences between the sample means across the textbooks. The results for the Flesch Reading Ease, GFI, and the Cloze procedure at the 95 per cent confidence level, are presented in Table IV. For the Flesch

Reading Ease, there was no significant difference ($p > 0.0001$) in readability between the two *Financial Management* textbooks (Vigario, 2005b; Correia *et al.*, 2005) or between the two Vigario textbooks, indicating that level of readability was consistent. There was a significant difference in readability among the management accounting textbooks (Vigario, 2005a; Drury, 2004).

Using the GFI, all combinations of textbooks tested returned significant differences in readability, indicating that there was no consistency in readability. For the Vigario/Drury combination, the significant difference in readability levels is consistent with the Flesch Reading Ease. For the Vigario/Correia *et al.* and Vigario/Vigario combination, the two measures of readability levels are inconsistent with the results returned using the Flesch Reading Ease.

For the Cloze procedure, there was a statistically significant difference in Cloze scores across the textbooks. This concurs with the results obtained from the GFI. It could be expected that the two Vigario textbooks would be written at the same level, but the Cloze passage results for these two textbooks were significantly different. This difference was also evident in the percentage difference (17.69 per cent) between the average mean Cloze scores for the two Vigario textbooks (Table III). This concurs with the findings of the GFI, which indicate that the Vigario books were written at different levels of readability.

4.3 Cloze scores and first language

Consideration was given to whether a student's language proficiency has an effect on Cloze scores. Of the 281 students who completed the Cloze passages, 223 (79.4 per cent) were E1Ls, and 58 (20.6 per cent) were E2Ls. There was no means of determining how many of the E1Ls were in fact E1Rs. The mean Cloze score for E1Ls students was 41.17 per cent and for E2Ls students, 38.21 per cent. The difference in mean Cloze scores between E1Ls and E2Ls was not statistically significant at the 95 per cent level of significance ($p = 0.2627$). Both groups of students were reading the textbooks at the frustration level.

This finding concurs with that of Williams *et al.* (2002), where 167 (80.3 per cent) of the students were E1L and 41 (19.7 per cent) were E2L. Williams *et al.* (2002) noted that there was no statistically significant difference between mean Cloze scores; E2Ls, however, had consistently slightly lower scores.

5. Conclusion and areas for further research

5.1 Conclusion

An important issue in the selection of textbooks should be the readability of the prescribed texts, since texts that require greater effort to read and understand may cause students to become frustrated (Razek *et al.*, 1982; Adelberg and Razek, 1984; Jones, 2011). The present study addressed the readability of four MAF textbooks used at third-year level at SAICA-accredited universities. This study suggests that differences in

Table IV.
T-test values: Flesch Reading Ease, GFI, and Cloze

	Flesh Reading Ease (p)	GFI (p)	Cloze (p)
Vigario – Man. Acc. vs Drury	0.0808	0.0181	0.0027
Vigario – Fin. Mgt. vs Correia *et al.*	0.4124	0.0146	0.0304
Vigario – Man. Acc. vs Vigario – Fin. Mgt.	0.9195	0.0289	0.0013

readability of passages within the MAF textbooks analysed are revealed when different readability evaluation methods are used (Williams *et al.*, 2002; Chene *et al.*, 2008). Further analysis of the three readability evaluation methods used in this study, indicates that they do not produce consistent results in terms of level of readability.

Use of Flesch Reading Ease and GFI revealed that Drury (2004) is written at a readability level suitable for postgraduate students, and is above the level of present prescription. In terms of readability, the other three MAF textbooks are suitable for prescription at the third-year level. Using *t*-tests to assess for differences in the mean readability levels between textbooks, differences were found in the results between the Flesch Reading Ease and GFI, demonstrating that the readability formulae did not produce consistent results.

The average Cloze scores for the passages were 37.99-44.71 per cent, indicating that students were reading the MAF textbooks at the frustration level. There may be reservations about using these findings in student populations linguistically very different from those in this study, but they may be used in a number of ways. For accounting faculty, readability levels of textbooks could be used as an initial selection criterion to narrow down the choice of those considered suitable for prescription. Other factors related to textbook selection, such as layout and coverage of the prescribed syllabus, could be considered before readability. If faculty ignored readability and selected the prescribed textbook with reference only to other factors, the texts selected might not be level-appropriate.

Students studying prescribed texts which are not level-appropriate, could result in frustration and a loss of interest, which in turn can lead to poor results. A further way in which students could benefit is by using the results of a Cloze procedure test to differentiate between struggling and non-struggling readers (Williams *et al.*, 2011). An enriched reading intervention programme could be developed to assist struggling readers. This would contribute to improving their reading skills which would consequently enhance their studying and question answering skills.

Authors, editors and publishers of accounting textbooks must take the findings into consideration. Where textbooks have multiple authors, editors can use readability evaluation methods to ensure consistency in readability across the textbook. They can also use readability evaluation methods to ensure that the textbook is written at a level appropriate to its intended audience.

5.2 Limitations to the research and suggestions for future research

The findings should be considered against the limitations of a localised study. The present study uses a sample of third-year students, who it must be assumed, have some acquaintance with the technical vocabulary of the discipline. In the case of first-years, the situation is different, and vocabulary must be taught, not assumed. Readability formulae may appear to assume that the lower the readability level, the more suitable the text – but this must not obscure the fact that complex material must be taught (Lee and French, 2011). The Cloze procedure, valuable because it reveals difference in reading levels within the group, is costly and time-consuming to implement (Plucinski *et al.*, 2009).

Other attributes of textbooks, such as type of pedagogy, end-of-chapter questions, or coverage of the syllabus, have necessarily been omitted. Other studies might test the usefulness of these.

The fact that students from only one university were involved in the study and only two managerial accounting and two *Financial Management* textbooks of the many published were considered, limits generalisation of the results to students from other universities and other MAF textbooks. To overcome this limitation, further research should be undertaken on a larger sample of managerial accounting and financial management textbooks, as well as other textbooks used in the broad discipline of accounting, and should involve students from other South African universities to enhance generalisability. Only three passages were examined from each of the four textbooks. The number of passages could be increased to ascertain whether similar results would be attained. In the current study, only ERS was considered correct. Further research could investigate whether different results would be obtained if SEMAC was used.

Despite the limitations of the study, the findings contribute to reducing the paucity of South African research into the readability of MAF textbooks in particular and accounting textbooks in general. While this paper was not designed to answer the question of "which MAF textbook is the best," it was intended to help faculty to consider the readability level of a textbook as a criterion when making a textbook selection.

Notes

1. Since this study was originally undertaken in 2005, textbooks from that year were used. When revisions were undertaken in 2011, the researcher compared the passages from the 2005 editions of the textbooks with those in later editions (2010 and 2011). For the Drury textbook, one of the six passages had been re-written. For both Vigario textbooks, there was no change between the passages selected in this study, and those in the later edition of the textbooks. With regard to Correia *et al.*, one of the passages had been deleted from the most recent edition (7th – 2011) of the textbook. The other five passages were the same.
2. When the questionnaire was sent out, there were ten SAICA-accredited universities.

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Appendix. Sample cloze passage

Joint product costing

Context of allocating joint product costs.

The main reason for allocating joint product costs to two or more products is for the purpose of stock valuation.

Joint costs are sometimes _____ for the purpose of _____ the selling prices and _____ profitability. This cost allocation _____ is incorrect as selling _____ should be market related _____ not cost plus. Profitability _____ each joint product is _____ erroneous as the profit _____ strongly influenced by the _____ used to allocate the joint _____. As the

products are _____ and cannot be separated, _____ per product should not _____ determined for managerial accounting _____ making.

It is regrettable _____ companies often make cost _____ so as to determine _____ profitability of a product._____ for joint cost allocation _____ are four generally accepted _____ of allocating joint costs.

a. _____:

Costs are allocated in _____ to the physical volume _____ weight or each joint _____.

b.Sales value method Joint costs are allocated in proportion to the sales value of the joint products. Profit margins are the same for each joint product.

Corresponding author
Karen Bargate can be contacted at: bargate@ukzn.ac.za