

# Gci h' 5Zf]Wb hfU]b]b[ 'c WfgNdYfWdh]cbg' of skills requirements for entry-level trainee accountants

K. Barac

## ABSTRACT

Given the rapid pace of change, the environment in which today's accountants work has become far more demanding. In response to these demands, accountants are having to upgrade their skills and, in particular, to become highly computer literate and acquire skills such as communication, analytical and interpersonal skills. The objective of this study was to determine the perceptions of training c Wfg'cZhY'Yj Y'g'cZhYgY'g\_]`g'UbX'Vta di hf'WdUV]`h]Yg'Ua cb[ ' entry-level trainee accountants.

: cf' U'' b]bY' ]bZcfa Uh]cb' hfWbc'c[ m f#H' WdUV]`h]Yg' ]XYbh] YXz' h'Y' expectation was that entry-level trainee accountants would have had at least average exposure, namely the ability to use the IT application under supervision. All the listed skills (namely, communication, analytical and interpersonal skills) were perceived to be important or very important for entry-level trainee accountants, which illustrates that there is a movement towards an expanded set of competencies beyond the technical knowledge typically taught. Independent statistical tests revealed that the perceptions of respondents of the H'WdUV]`h]Yg'UbX ]XYbh] YX'g\_]`g'Zcf Ybhfmi'Yj Y' hfU]bYY'UWti bHUbhg' X]X' bch X] Yf' g][ b] Wbhm k]h' fYgdYVti hc' hfU]b]b[ ' ]bg]XY' di V' ]W practice (TIPP) and training outside public practice (TOPP). Only h'c' ]bgHUbWg' k YfY' Zci bX' k \YfY' g][ b] Wb'h]X]gU[ fYYa Ybh' VYrk Yyb' TIPP and TOPP respondents' perceptions existed, namely for the IT capability of audit working paper-related software and for the analytical skill of analysing business problems.

---

Prof. K. Barac is a Professor in Auditing in the School of Accounting Sciences, University of South Africa. E-mail: barack@unisa.ac.za.

important role to play in providing entry-level trainee accountants with skills that are more closely aligned with the expectations of accountants

**Key words:** communication skills, analytical skills, problem-solving skills, interpersonal skills, IT capabilities, spreadsheet software, Internet software, word- accountants

## Introduction

Over the years, the context of work for accounting professionals has changed dramatically. Pressure for change has come from many sources, including information technology, which is still changing rapidly, and the Internet, which has revolutionised global communication. Societies have changed to provide for a concentration of power among certain market investors, which has resulted in more legal actions and actions by stakeholder groups. The activities of regulators and oversight boards have expanded, and concern for the environment and sustainable development has grown. These changes have culminated in increased expectations of professional accountants, in that they now not only have to serve the needs of investors and creditors, but also to meet the information needs of many other users of financial and non-financial information (IFAC 2003a: 29; SAICA 2005: 3/05, 4/05).

This has resulted in a worldwide challenge with respect to the competencies (in the form of technical knowledge, skills and attitudes) of professional accountants. Accounting professions have responded to this challenge by developing competency frameworks encapsulating a broad range of knowledge, skills and attributes. In 1999, the American Institute of Certified Public Accountants (AICPA) developed a competency framework, *Core Competency Framework for Entry into the Accounting Profession* (Boritz & Carnaghan 2003: 18, 19), while the Chartered Accountants of Canada (CICA) produced a competency map in 2002 (Palmer, Ziegenfuss & Pinkster 2004: 894). The Institute of Chartered Accountants in Australia, the Institute of Chartered Accountants in New Zealand and the Australian Society of Certified Public Accountants (ASCPA) have developed competency frameworks covering knowledge areas as well as skills (Boritz & Carnaghan 2003: 20). The Framework Advisory Committee of the South African Institute of Chartered Accountants (SAICA) recently issued a document entitled *Draft Competency Framework*:

*Competencies of a Chartered Accountant (SA) at Entry Point to the Profession* (SAICA 2008a), which represents the first step by SAICA in establishing a competency framework in South Africa.

The increased emphasis on the skills of a professional accountant in terms of competency frameworks has resulted in evolutionary changes in skills requirements for professional accountants (Howieson 2003: 79; De Lange, Jackling & Gut 2006: 365; Gammie, Gammie & Cargill 2002: 64). Numerous studies (for example, De Lange et al. 2006: 366; Arquero Montano, Cardoso & Joyce 2004: 191; Palmer et al. 2004: 895; Hassall, Joyce, Arquero Montano & Anes 2003: 82; Gammie et al. 2002: 64; Inglis & Dall'Alba 1998: 200; Hardy & Deppe 1995: 59) have been undertaken to ascertain exactly which skills employers would like included in the accounting graduate profile. These studies have concluded that communication, problem-solving, personal and interpersonal skills, responsibility and organisational ability represent the most commonly perceived skills.

Accounting professionals develop such skills during their education as well as in the workplace. In a very recent study, training officers and trainee accountants identified skills development as having the biggest impact on their satisfaction with regard to the SAICA training programme (SAICA 2008b). Gammie et al. (2002: 65) acknowledge that tertiary institutions cannot be regarded as surrogate employment and training agencies, but believe that a range of skills is essential for students leaving university and entering the world of work. Many examples in the literature support the notion that more emphasis should be placed on skills development in accounting education (Hardy & Deppe 1995; Boyce, Williams, Kelly & Yee 2001; Watson, Apostolou, Hassell & Webber 2007: 6, 9).

In the only study conducted in South Africa (Koornhof & Lubbe 2002) on the skills requirements of accounting graduates, it was found that university education in South Africa does not place sufficient emphasis on the development of such skills. The study investigated whether there is an expectation gap between trainee accountants, their training officers and the secretariat of SAICA. Almost all respondents in this study (Koornhof & Lubbe 2002: 10, 14) agreed that the 'soft skills' (for example, communication, negotiation and people skills) of accounting graduates were generally weak, and felt that they lacked communication, writing and people skills when they began their training period. These respondents stated that universities should do more to improve these skills.

## Objective of this study

The objective of this study was to determine the perceptions of training officers of the communication, analytical and interpersonal skills and computer capabilities among

entry-level trainee accountants. For the purposes of this study, entry-level trainee accountants are defined as individuals who are undergoing a practical experience or workplace training programme for qualification as professional accountants (IFAC 2003b: 23), have completed an accredited postgraduate programme of SAICA, also referred to as the Certificate in Theory of Accounting (CTA), and are within their first six months of traineeship.

This study could benefit SAICA by providing information on the perceptions of training officers of the skills requirements for entry-level trainee accountants. SAICA could use such information in the development of the education and training programmes of its competency framework. In addition, the study could be useful to tertiary institutions to assess the perceived importance of these skills during curriculum development.

At a theoretical level, the findings are important because the literature is expanded by the fact that this study focuses on trainee accountants in the South African context, a relatively unexplored area. As already indicated, the study by Koornhof and Lubbe (2002) was the only study conducted in South Africa on the skills requirements of accounting graduates. In this study, interviews were held with trainee accountants and training officers, selected on a judgemental basis and limited to the geographical areas of Johannesburg, Pretoria and Bloemfontein. The secretariat of SAICA was also included in the study. By means of mainly open-ended questions asked during the interviews, the expectations and experiences of trainee accountants, training officers and the secretariat of SAICA with regard to the training of accountants in South Africa were explored.

To address the objectives as explained, this paper first reviews the existing literature on the skills required of entry-level trainee accountants. This is followed by a section outlining the methodology applied in this study. In the third section, the findings resulting from an analysis of responses to the questionnaire used as the research instrument are reported. In the final section, the results are summarised, conclusions reached and recommendations made.

## Literature review on skills requirements for entry-level trainee accountants

This study aimed to determine the perceptions of training officers with regard to the skills requirements and computer capabilities of South African trainee accountants. These training officers are all registered with SAICA, and its requirements therefore formed the basis of the research. In the SAICA document *The Education Requirements of the South African Institute of Chartered Accountants for Entry into Part 1 of the*

*Qualifying Examination* (SAICA 2005), competencies in the practical application of information technology (IT) are listed. Six of the nine computer capabilities identified by SAICA were tested in the study. The other three computer capabilities were based on results of previous studies and the author's own contributions (refer to the section on computer capabilities under research instrument design).

In May 2003, SAICA issued a document providing guidelines for the effective induction of trainee accountants (SAICA 2003). In it, examples are given for the development of analytical/intellectual, interpersonal and communication skills. The study was limited to these specific skills. More detail on the selection of the individual components relating to these three skills that were tested in the study is provided in the section on communication, intellectual/analytical and interpersonal skills.

Over the past ten years, numerous studies (listed in Table 1) have been performed to ascertain exactly what skills employers would like included in the accounting graduate profile. These studies support the relevance of analytical/intellectual, interpersonal and communication skills for trainee accountants or accounting graduates.

**Table 1:** Gt X]Yg'cb'g\_]`g'fc`VY]bVM`XYX`]b`Ub`UWti`bh]b[`[fUXi`UH`dfc`Y`

Study	Year	Objective	Respondents
Bui & Porter	2007	Analyse the gap between the competencies and attributes employers expect of accounting graduates, and those they perceive they do possess	Practising accountants in New Zealand
De Lange, Jackling & Gut	2006	Determine the emphasis placed on technical and generic skills developed during university education	Graduates of two universities in Australia
Hassal, Joyce, Arquero Montano & Anes	2003	Identify the vocational skills needed for an accountant to discharge his or her duties	Employers of management accountants in the UK and Spain
Hassal, Joyce, Arquero Montano & Anes	2005	Compare the opinions of employers of management accountants in Spain and UK to determine vocational skills development priorities	Employers of management accountants in the UK and Spain
Helliari, Monk & Stevenson	2006	Examine of the skills practitioners, academics and students think are important for trainee auditors to have to embark upon a successful auditing career	Partners and managers of accounting firms in Scotland and Wales
Morgan	1997	Identify the communication skills required by accounting graduates: practitioner and academic perceptions	Accounting practitioners and accounting university lecturers in the UK

## Computer capabilities

Information technology is subject to regular change and development. This not only constantly challenges the professional competence of professional accountants (McCourt Larres, Ballantine & Whittington 2003: 100), but also creates opportunities. Technology has become an inevitable part of today's accounting practice, and therefore selecting equipment and tools, applying technology to certain tasks, and maintaining and tracing and correcting faults in technological devices are necessary skills for the average accountant (Mohamed & Lashine 2003: 6). Mohamed and Lashine (2003: 6) believe that knowledge of basic technology not only makes entry-level accounting trainees 'creative' in the workplace, but also helps them to adapt to the new environment faster. Many members of the accounting profession have voiced concern over whether accounting education effectively and efficiently prepares graduates to meet these challenges (Chang & Hwang 2003: 441).

The inclusion of computer capabilities in the accounting curriculum has been widely recognised as a means of reflecting the fact that various forms of information systems are increasingly being used in accounting in today's business world (De Lange et al. 2006: 369). According to Ainsworth (2001: 281), IT is still not integrated throughout the accounting curriculum, and given that accounting programmes are already overcrowded, creating space for new IT courses within existing accounting programmes is difficult. However, Chang and Hwang (2003: 442) found in their study that there had been a marked improvement in this area, because current entry-level accounting trainees had received more exposure to IT in their tertiary training than had their seniors, which suggests that educators have modified accounting curricula by incorporating more exposure to IT.

In late 1999, four organisations (AAA, AICPA, IMA and Big 5) in the USA came together to sponsor a study on the future of accounting education. The final product was the monograph, *Accounting Education: Charting the Course through a Perilous Future* (Albrecht & Sack 2000), which addressed the subject of the computer capabilities expected of accounting graduates. Burnett (2003: 129) undertook a similar study in Texas to obtain a regional perspective. The results of her study on the computer capabilities required of accounting graduates coincided with those obtained in the Albrecht and Sack study, namely that spreadsheet software (such as Excel) was ranked first, followed by Windows, a word-processing program (such as Word) in the third position, and then Internet capabilities in the fourth position (Burnett 2003: 131).

During a recent study conducted in New Zealand by Bui and Porter (2007), most respondents (graduate trainees and employers of graduates in large and small accounting firms) regarded computer skills as important, but in most cases they

perceived the essential skills to be limited to the ability to use computers and basic office and accounting software. Helliari, Monk and Stevenson (2006: 33) found that the respondents from the profession included in their study assumed that trainee accountants that enter the profession would have learnt to use word processors, spreadsheets and presentation software.

## Communication skills

These skills entail the ability to communicate well and to share or exchange information and ideas without difficulty. An accounting practitioner must be able to prepare reports on what work has been done and what results were obtained, request information verbally, and read and evaluate the quality of the work of those under his or her supervision (Hardy & Deppe 1995: 65). Individuals entering the accounting profession should therefore have the skills necessary to convey and exchange information within a meaningful context and with appropriate delivery (AICPA 2005). They should have the ability to listen, deliver influential presentations and produce examples of effective business writing. Against this background, SAICA (2003) identifies the following communication skills for entry-level trainee accountants:

- The ability to present, discuss and defend views effectively through formal and informal, written and spoken language
- The ability to listen effectively
- The ability to locate, obtain, organise, report and use information from human, printed and electronic sources.

Effective communication is frequently cited as being an essential skill for an accounting professional (Mohamed & Lashine 2003: 6; De Lange et al. 2006: 368), especially as communication between accountants and non-accountants could prove difficult if non-accountants misinterpret information because they are unfamiliar with accounting concepts and terms (Zaid & Abraham 1994: 205, 206). Many examples are found in the literature of both written and oral communication skills being regarded as important skills in the competency framework of accounting graduates (Bui & Porter 2007; Burnett 2003; Lee & Blaszczyński 1999; Morgan 1997; Collier & Wilson 1994; Zaid & Abraham 1994).

Accounting students' inability to write has received more attention from accounting educators over the past 15 years than any other competency (Rebele 2002: 22). Webb, English and Bonanno (1995: 345), for example, found some shortcomings in the communication skills of accounting students: students fail to

answer the set question, answers are poorly structured, and many inconsistencies appear in the arguments presented.

The findings of the Zaid and Abraham study (1994: 217) reveal that accounting graduates experience communication-related problems in early employment, especially in the areas of communication with others, report-writing and comprehension of responsibilities. More than half of the respondents, who were employers of accounting graduates, regarded these problems as a consequence of accounting curricula that do not place sufficient emphasis on the teaching of communication skills. In response to this perceived educational need, an increasing number of overseas undergraduate and postgraduate programmes in accounting are paying more attention to communication skills by integrating specifically designed development activities into their curriculum (Joyce, Hassall, Arquero Montano & Anes 2006: 456; Morgan 1997: 105). SAICA has responded to this call and makes provision for the inclusion of a specific communication course at undergraduate level as part of the supportive courses in its accounting curricula (SAICA 2005).

## Analytical and intellectual skills

Analytical and intellectual skills entail the ability to use analysis or logical reasoning in a satisfactory way, thus exhibiting the faculty of reasoning and understanding. They include a person's ability to ask the right questions and thus collect accurate and complete information, the ability to recognise the importance of information and the implications of that information, and the ability to apply logic and reasoning to clarify relationships between different objects, events, individuals and methodologies (Mohamed & Lashine 2003: 6).

SAICA (2003) identifies the following intellectual (analytical) skills for entry-level accounting trainees:

- The capacity for inquiry, research, abstract logical thinking, inductive and deductive reasoning and critical analysis
- The ability to identify problems and solve unstructured problems in unfamiliar settings and to apply problem-solving skills in a consultative process
- The ability to select and assign priorities with restricted resources and to organise work to meet tight deadlines
- The ability to adapt to change
- The ability to apply accounting knowledge in solving real-world problems.

Critical thinking, a component of analytical/intellectual skills, focuses on problem identification and problem-solving. It is a rational response to questions that cannot



be answered definitively, as not all relevant information may be available, and it seeks to explore situations to arrive at optimal, justifiable hypotheses or conclusions (Reinstein & Bayou 1997: 336; Mohamed & Lashine 2003: 8). Critical thinking therefore encompasses the ability to link data, knowledge and insight drawn from various disciplines to provide information for decision-making. This kind of critical thinking enables the accountant to provide quality advice for strategic decision-making.

The ability to think analytically is regarded as a basic skill for all accountants (Mohamed & Lashine 2003: 6). Yazdifar and Tsamenyi (2005: 192) predict that analytical thinking will in future become the most important skill for an accountant. The literature has many examples of analytical or intellectual skills, which are closely related to problem-solving, being identified as critical for accountants (De Lange et al. 2006: 70; Helliari et al. 2006: 32; Burnett 2003: 129; Mohamed & Lashine 2003: 7; Siegel & Sorenson 1994).

In order to include analytical and intellectual skills in accounting education, Boyce et al. (2001: 54) advocate including the following skills in the accounting education syllabus: tolerance of uncertainty and ambiguity, willingness to deal with complexity and confusion, acceptance of conflicting information, the courage to take risks, and a fundamental desire to enhance thinking and problem-solving. They ascribe the absence of such innovation to the fact that most accounting educators are themselves the product of conventional accounting education programmes and that the accounting profession itself exhibits an inbuilt preference for technical orientation (Boyce et al. 2001: 55).

From the discussion, it is clear that the accounting profession is demanding more innovative problem-solvers. Wolk and Cates (1994: 280) are of the opinion that accounting firms are more effective if accounting trainees have adaptive and innovative styles. An adaptive style leads to efficient, methodical and prudent problem-solving that concentrates on making improvements to existing methods and systems, whereas an innovative style encourages accounting graduates to challenge existing methods and procedures (Wolk & Cates 1994: 272–273).

## Interpersonal skills

Interpersonal skills entail the ability to maintain fulfilling relationships between people. Individuals entering the accounting profession should be able to lead effectively in appropriate circumstances. This involves acquiring the skills needed to influence, inspire and motivate individuals and groups to achieve results (AICPA 2005).

The accounting practitioner seldom works in isolation but rather in a team in which the members possess various levels of experience and skills (Hardy & Deppe 1995: 65), and teamwork is therefore of paramount importance in the accounting profession. SAICA (2003) identifies the following leadership skills for entry-level accounting trainees:

- The ability to work with others, particularly in groups, to influence them, to lead them and to withstand and resolve conflict
- The ability to negotiate acceptable solutions.

In their study in the United Kingdom, Helliari et al. (2006: 31) examined the skills that practitioners, academics and students perceive as important for trainee auditors to embark upon a successful auditing career. They found that although practitioner respondents deemed analytical skills and communication skills to be important, they considered teamwork of even higher importance. As the academic respondents in their study did not place much emphasis on teamwork, Helliari et al. (2006: 31) suggest that this could be an indication of a gap between the skills that academic respondents perceive as important for trainee auditors and those perceived as important by practitioner respondents. Where educators do not perceive teamwork as important, the result may be limited opportunities for accounting students to gain experience of teamwork during their university education.

## Research methodology

### Research method

A structured questionnaire consisting mostly of Likert-type scale questions, which called for graded responses to the statements, was used in this study. A self-administered approach was followed, utilising a computer-aided web-based questionnaire. A dedicated uniform reference locator (URL) had been established on the website of the Bureau of Market Research (BMR) at the University of South Africa (Unisa) on their file server at Unisa. An e-mail message explaining the procedure to follow in order to complete the questionnaire was sent to each training officer. The e-mail message included a hyperlink to the URL where the questionnaire had been hosted. The respondents were invited by e-mail to go to the URL and complete the questionnaire online. A pilot study was conducted, with a follow-up study in September/October 2007.

## Sample design

The population consisted of the 917 training officers registered with SAICA, all of whom were included in the study. The population included 820 training officers in public practice. Some of these training officers were attached to the Office of the Auditor-General and were working in the public sector at the time but were also regarded by SAICA as training officers in public practice. All of these training officers provided training contracts in terms of the SAICA TIPP (training inside public practice) programme. Registering for a training contract in terms of the TIPP programme enables trainees to specialise in the audit function and is a prerequisite for performing the attest function, that is, signing an audit report (SAICA 2007a). Such trainees write the Part II Audit Specialism paper as part of the Public Practice Examination (PPE) currently administered by the Independent Regulatory Board for Auditors (IRBA), which is a prerequisite for performing the attest function.

The 97 training officers in commerce and industry that provided training contracts in terms of the SAICA TOPP (training outside public practice) programme (SAICA 2007a) were also included in the study. Registering for a training contract in terms of the TOPP programme enables trainees to work in commerce and industry and focus on financial management and business principles, rather than on auditing. They have to write the Part II Financial Management examination, which is administered by SAICA.

A total of 153 responses were received. Ten TIPP training officers and four TOPP training officers refrained from participating in the study either because they had discontinued the employment of trainee accountants or because they had never employed trainee accountants that had already obtained the CTA qualification. The effective population therefore amounted to 903 (917-14), which yielded a 17% (153/903) response rate.

For the purposes of further statistical analysis between the perceptions of TIPP and TOPP respondents, all inappropriate, unknowledgeable and unconcerned respondents were excluded, as advocated by Van der Stede, Young and Chen (2005: 666). This resulted in a total of 21 responses being discarded. Thus, 93 responses from TIPP respondents and 39 responses from TOPP respondents, in total 132 responses (15% response rate), were used in the study after all incomplete or unusable responses had been eliminated.

Although the response rate compares with the 16.2% response rate achieved by Helliar et al. (2006: 16) in their study to establish the skills set of trainee auditors in Scotland, the relatively low percentage of respondents could be explained by the very nature of the study. The 15% response rate is also in line with the 14.5% response rate achieved during a very recent study conducted by Ask Africa (SAICA 2008b),

*SAICA Needs Analysis Report: May 2008*, in which the training officers' perceptions, expectations, preferences and dislikes regarding the SAICA trainee programme were tested.

This study specifically deals with the skills requirements of entry-level trainee accountants, identified as graduates who have completed the SAICA accredited postgraduate programme and have thus obtained CTA status and are within the first six months of their traineeship. These trainee accountants would have been appointed after the completion of their university education and qualified to write Part I of the SAICA qualifying examination (QEI). In June 2007, a total of 4 169 (and in 2006 a total of 4 299) (SAICA 2007b) candidates sat for the SAICA QEI, which implies the number of such graduates per year over the past two years to be approximately 4 000. According to a survey conducted for SAICA by Mulberry Leaf Consulting in 2007, there is a significant shortfall in the supply of first-year trainees with CTA status. It was estimated that the shortfall of such trainees in 2008 would be 1 655 trainees (SAICA 2007c: 29).

Owing to the restricted number and shortfall of entry-level trainee accountants with CTA status, the limited exposure of many training officers to such graduates as trainee accountants, who form the object of this study, is understandable and probably served as a contributing factor to the response rate achieved. The results of the study should nevertheless be interpreted by taking into account the limitation of the relatively low response rate. Table 2 provides a summary of the participants' records used in the study.

**Table 2:** Participants' records used in the study

<b>Participants' records</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Cumulative percentage</b>
TIPP	93	70.5	70.5
TOPP	39	29.5	100.0
<b>TOTAL</b>	<b>132</b>	<b>100.0</b>	

## Research instrument design

### *Computer capabilities*

As explained in the literature review of skills requirements for entry-level trainee accountants, the nine computer capabilities tested in the study were based on SAICA's educational requirements (2005: 33/05), the results of previous studies and the author's own contributions. Table 3 provides the detail.

**Table 3:** Computer capabilities tested in the study

Computer capability	1	2	3	4
Spreadsheet software (e.g. Excel)	1	1	1	1
Database software (e.g. Access)	1	1	1	1
Standard Internet software (e.g. e-mail, web browser)	1	1	1	1
GdYVW WfYgYUfWV`hcc`fV"[ "fYgYUfWV`Hcc`Vcl Ł	1			
Business presentation software (e.g. PowerPoint)	1	1	1	
Accounting packages (e.g. Pastel)	1			1
Word processing software (e.g. Word)		1	1	1
Utility software (e.g. CAATS)	2	2	2	2
Audit working paper-related software (e.g. Caseware)	2	2	2	2

**Key:** 1 = The education requirements of SAICA for entry into Part 1 of the qualifying examination (SAICA 2005); 2 = Albrecht & Sack (2000); 3 = McCourt Larres et al. (2003); 4 = McCourt Larres & Oyelere (1999); 2 = 1 'H\YgY`k c`WdUV]`h]Yg`k YfY`]bWV`XYX`cb`h`Y`fYVt`a a YbXU`h]cb`cZUb`Yi dYfh`Vt`YU[ i Y`]b`h`Y`#i` Y`X.

The questionnaire defined the nine IT capabilities, and respondents were asked to rate the degree of exposure that they believed entry-level trainee accountants should have to each. Five degrees of exposure were identified:

- 1 = No exposure at all
- 2 = Limited exposure in which entry-level trainee accountants are only exposed to an introduction to the various identified IT applications
- 3 = Average exposure, in which entry-level trainee accountants still need supervision to use the various identified IT applications
- 4 = Above average exposure, in which entry-level trainee accountants are able to use the various IT applications independently, but are not yet fully proficient in their use
- 5 = Extensive exposure, in which entry-level trainee accountants are proficient in the use of the various IT applications.

This rating scale was based on the levels of learning in which SAICA expects IT capabilities to be mastered (SAICA 2005: 29/05). The latter were revised for the purposes of this study. The degree of exposure was clearly explained in the questionnaire.

**Communication, intellectual/analytical and interpersonal skills**

Training officers were required to rate the importance of certain skills for entry-level accounting trainees. These skills consist of communication, intellectual/analytical and interpersonal skills identified by SAICA in its guidelines to training officers for the effective induction of trainee accountants (SAICA 2003). The individual components of these skills were based on the guidelines issued by SAICA and on previous studies. Table 4 provides the detail.

**Table 4:** Skills tested in the study

Skills tested	1	2	3	4	5	6
Communication skills						
Presenting views orally	✓	✓	✓	✓	✓	
Presenting views in writing	✓	✓	✓	✓	✓	✓
Locating/organising information from paper-based and other sources	✓					✓
Ability to explain purpose/structure of a formal presentation		✓	✓	✓		✓
Ability to participate constructively in meetings						✓
Analytical skills						
Ask correct questions			✓			
Analyse business problems	✓		✓		✓	
Apply problem-solving methodologies	✓		✓			
Ability to discern true nature of situations	✓					
Interpersonal skills						
Work as part of team	✓	✓	✓	✓	✓	
Work/negotiate with people from other cultures	✓					
Organise			✓			
Delegate tasks			✓			
Manage time properly		✓	✓	✓		

**Key:** 1 = Guidelines for the Effective Induction of Trainee Accountants (SAICA 2003); 2 = Helliard et al. (2006); 3 = Hassal et al. (2005); 4 = Gammie et al. (2002); 5 = De Lange et al. (2006); 6 = Morgan (1997)

SAICA does not prescribe any evaluation criteria in this regard, and it was therefore decided to limit this study to the determination of the perceived importance of these skills. The importance of the skills was rated on a scale from 1 (of little importance) to 5 (extremely important).

## Results and discussion

The questionnaire was analysed to address the objective outlined in the section in which the objective of the study was discussed. The sample was dichotomised by identifying a respondent as either a TIPP or a TOPP training officer. Analysis was done to compare the perceptions and expectations of these two groups of respondents.

### Computer capabilities

The questionnaire used in this study identified a list of nine IT capabilities (refer to the section on computer capabilities under research instrument design). Respondents were asked to rate the extent of exposure that they believed entry-level trainee accountants should have regarding these IT capabilities.

To investigate whether there is a difference between the TIPP and TOPP training officers' perceptions with respect to the importance of the exposure of entry-level trainee accountants to the various IT capabilities, a between-subjects multivariate analysis of variance (MANOVA) was performed with one independent variable, namely, the type of training officer (TIPP and TOPP), and nine dependent variables, related to expectations regarding IT capabilities. The results from the evaluation of assumptions for MANOVA were satisfactory. Using Pillay's criterion (Pillay's Trace = .15), the combined expectations regarding IT capabilities were significantly affected by whether a respondent was a TIPP or a TOPP training officer,  $F(9, 121) = 2.27, p < .05$ . The results reflected a major association between the type of training officer (TIPP compared with TOPP) and the combined expectations regarding IT capabilities, partial  $\eta^2 = .15$ .

It appears that the findings of this study correspond with those of previous studies, namely that extensive exposure to spreadsheet software was expected from entry-level trainee accountants, a capability that was ranked as most important for accounting graduates in previous studies (Albrecht & Sack 2001; Burnett 2003: 129; Helliard et al. 2006: 33). In the case of spreadsheet software, the marginal mean was above 4.0 for all respondents, which indicates that entry-level trainee accountants were expected to be proficient in the use of spreadsheet software, for example

**Table 5:** Expected exposure to IT capabilities

Dependent variable	Independent variable	Marginal mean	F	Df	Error df	Sig.	Partial $\eta^2$
Spreadsheet software (e.g. Excel)	TIPP	4.250 (E)	.123	1	131	.726	.001
	TOPP	4.205 (E)					
Database software (e.g. Access)	TIPP	2.739 (A)	.536	1	131	.466	.004
	TOPP	2.872 (A)					
Standard Internet software (e.g. e-mail, web browser)	TIPP	4.000 (AA)	.026	1	131	.873	.000
	TOPP	4.026 (E)					
Research toolbox (e.g. Research toolbox)	TIPP	2.652 (A)	.123	1	131	.727	.001
	TOPP	2.718 (A)					
Business presentation software (e.g. PowerPoint)	TIPP	2.891 (A)	2.515	1	131	.115	.019
	TOPP	3.179 (AA)					
Accounting packages (e.g. Pastel)	TIPP	3.663 (AA)	3.213	1	131	.075	.024
	TOPP	3.308 (AA)					
Word processing software (e.g. Word)	TIPP	3.957 (AA)	1.836	1	131	.178	.014
	TOPP	3.744 (AA)					
Utility software (e.g. CAATS)	TIPP	2.609 (A)	.001	1	131	.969	.000
	TOPP	2.615 (A)					
Audit working paper-related software (e.g. Caseware)	TIPP	3.511 (AA)	10.213	1	131	.002	.073
	TOPP	2.795 (A)					

**Marginal mean interpretation:** The table shows the expected exposure to IT capabilities for two groups: TIPP (Training in Practice) and TOPP (Training on Paper). The marginal mean represents the average expected exposure score for each group. The F-value, degrees of freedom (Df), error degrees of freedom (Error df), significance level (Sig.), and partial eta squared ( $\eta^2$ ) are also provided for each comparison. A significance level of .05 is used. No exposure (mean < 1.00).

MSExcel. The study revealed a similar expectation (expected extensive exposure) regarding the exposure of entry-level trainee accountants to Internet software, which reflects the role of the Internet in today’s working environment. For all nine IT capabilities, respondents expected at least average exposure, namely that entry-level trainee accountants should be able to use the IT application under supervision.

From Table 5, it can be seen that the two different types of training officers disagreed significantly on only one of the expected IT capabilities, namely audit working paper-related software,  $F(1, 131) = 10.213, p < .01, \eta^2 = .07$ . TIPP training officers ( $M = 3.511$ ) considered this topic to be more important than TOPP training officers ( $M = 2.795$ ). TIPP respondents work in an auditing environment where the preparation of audit working papers forms part of their trainee accountants’ daily activities, which is not the case for TOPP respondents. TIPP respondents perform audits that should be documented, and the preparation of working papers therefore forms an integral part of the whole audit process. In today’s technologically driven environment, working paper-related software is used.



## Communication skills

The questionnaire used in this study identified eight communication skills (refer to the section on computer capabilities under research instrument design). Respondents were asked to rate the importance of these communication skills for entry-level trainee accountants.

To investigate whether there is a difference between the TIPP and TOPP training officers' perceptions with respect to the importance of exposure of entry-level trainee accountants to the various communication skills, a between-subjects MANOVA was performed with one independent variable, namely, the type of training officer (TIPP and TOPP), and eight dependent variables related to perceptions regarding communication skills. The discrepancy in sample sizes of the groups does not invalidate the use of MANOVA owing to the small differences in variance and the very sensitive Box's *M*-test for homogeneity of dispersion matrices produced  $F(36, 19329.121) = 1.10, p > .05$ , supporting the assumption of homogeneity of variance-covariance matrices.

Using Pillay's criterion (Pillay's trace = .057), the combined communication skills were not significantly affected by whether a respondent was a TIPP or a TOPP training officer,  $F(8, 123) = 0.92, p > .05$ .

Table 6 summarises the perceptions of the respondents with regard to communication skills, based on estimated marginal means scores.

From Table 6, it can be seen that, on average, the two types of training officers differed only slightly with respect to the importance of all the communication skills. All the communication skills were ranked as important or very important. None was ranked as reasonably important or not important at all. This illustrates the fact that the training officer respondents place a high premium on communication skills in the workplace, a notion for which there is much support in the literature (Collier & Wilson 1994; Zaid & Abraham 1994; Morgan 1997; Lee & Blaszczynski 1999; Burnett 2003; Bui & Porter 2007).

## Analytical skills

Respondents in this study were asked to rate the importance of four analytical skills, namely asking the correct questions, analysing business problems, applying problem-solving methodologies and the ability to discern the true nature of situations (refer to the section on computer capabilities under research instrument design). As in the case of communication skills, a five-point Lickert scale was used, ranging from 1 = not important at all to 5 = extremely important.

**Table 6:** Estimated marginal means regarding the perceptions of the importance of communication skills

Dependent variable	TIPP/ TOPP	Mean	Std error	95% confidence interval	
				Lower bound	Upper bound
Presenting views orally	TIPP	3.957 (I)	.076	3.806	4.108
	TOPP	4.128 (V)	.118	3.895	4.361
Presenting views in writing	TIPP	4.161 (V)	.073	4.018	4.305
	TOPP	4.154 (V)	.112	3.932	4.376
@gh/b]b[ 'Y YVmj Y'm	TIPP	4.312 (V)	.067	4.180	4.444
	TOPP	4.282 (V)	.103	4.078	4.486
Locating/organising information from paper-based and other sources	TIPP	3.882 (I)	.073	3.737	4.026
	TOPP	4.077 (V)	.113	3.854	4.300
9 YVmj Y fYUX]b[ 'fVta dfY\Ybg]cbt	TIPP	4.151 (V)	.068	4.016	4.285
	TOPP	4.282 (V)	.105	4.075	4.490
9 YVmj Y fYUX]b[ 'fYdYYXt	TIPP	3.763 (I)	.084	3.597	3.930
	TOPP	3.923 (I)	.130	3.666	4.180
Ability to explain purpose/structure of a formal presentation	TIPP	3.602 (I)	.079	3.446	3.759
	TOPP	3.744 (I)	.122	3.502	3.985
Ability to participate constructively in meetings	TIPP	3.581 (I)	.082	3.418	3.743
	TOPP	3.846 (I)	.127	3.595	4.097

**Marginal mean interpretation:** 9'1 9l hfYa Ym]a dcfhUbfhfa YUb'' ('') \$t/J '1 J Yfm]a dcfhUbfh'("\$ \$' @'a YUb'O'(') \$t/=1 'a dcfhUbfhfl "\$ \$' @'a YUb'O' (" \$t/F '1 'FYUgcbUV'm]a dcfhUbfh'&"\$ \$' @'a YUb'O' 3.00); N = Not important (mean < 2.00)

A between-subjects MANOVA was performed with one independent variable, namely the type of training officer (TIPP and TOPP), and four dependent variables, namely the perceptions regarding analytical skills. The discrepancy in sample sizes between the groups does not invalidate the use of MANOVA owing to the small differences in variance and the very sensitive Box's *M*-test for homogeneity of dispersion matrices produced,  $F(10, 25791.687) = .85, p > .05$ , supporting the assumption of homogeneity of variance-covariance matrices. Using Pillay's criterion (Pillay's trace = .04), the combined analytical skills were not significantly affected by whether a respondent was a TIPP or a TOPP training officer,  $F(4, 126) = 1.35, p > .05$ .

However, after investigating the results of the between-subjects tests (see Table 7), it is clear that there could possibly be a univariate difference between the means of the two different types of training officers with regard to analysing business

problems,  $F(1, 131) = 4.75, p < .05, \eta^2 = .04$ . This possibility will be further investigated univariately.

**Table 7:** dYhk YYb! gi VYVgY YWg'UbX'a Uf[ ]bU'a YUbg'Zcf'h'Y'dYfWdh]cbg:cZ analytical skills

Dependent variable	Independent variable	Marginal mean	F	Df	Error df	Sig	Partial $\eta^2$
Ask correct questions	TIPP	4.043 (V)	1.975	1	131	.162	.015
	TOPP	4.231 (V)					
Analyse business problems	TIPP	3.783 (I)	4.751	1	131	.031	.036
	TOPP	4.077 (V)					
Apply problem-solving methodologies	TIPP	3.739 (I)	2.439	1	131	.121	.019
	TOPP	3.949(I)					
Discern true nature of situations	TIPP	3.826 (I)	1.139	1	131	.288	.009
	TOPP	3.974 (V)					

**Marginal mean interpretation:** 91 9! hYa Ym]a dcfHbhfa Yub` (") \$t/J`1` JYfm]a dcfHbhf("\$ \$ @`a Yub`O`(") \$t/=1`-a dcfHbhf! "\$ \$ @`a Yub`O` (" \$t/F`1` FYUgcbUV`m]a dcfHbhf&" "\$ \$ @`a Yub`O` 3.00); N = Not important (mean < 2.00)

The normality of assumptions for the continuous dependent variables was examined using the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality. The results indicated a highly significant ( $p < .001$ ) deviation from normality in the scores of each of the dependent variables. The non-parametric Mann-Whitney *U*-test was subsequently performed with one independent variable, namely the type of training officer (TIPP and TOPP), and four dependent variables, namely the perceptions regarding analytical skills.

**Table 8:** Mann-Whitney *U*-test ranks and test statistics

Dependent variable	Independent variable	N	Mean rank	Mann-Whitney U	Wilcoxon W	Z	Asymp. sig. (2-tailed)
Ask correct questions	TIPP	92	63.01	1 518.500	5 796.500	-1.543	.123
	TOPP	39	73.06				
	<b>Total</b>	<b>131</b>					
Analyse business problems	TIPP	93	62.45	1 436.500	5 807.500	-2.082	.037
	TOPP	39	76.17				
	<b>Total</b>	<b>132</b>					
Apply problem-solving methodologies	TIPP	93	63.72	1 555.000	5 926.000	-1.428	.153
	TOPP	39	73.13				
	<b>Total</b>	<b>132</b>					
Ability to discern true nature of situations	TIPP	93	60.35	1 632.000	6 003.000	-.989	.323
	TOPP	39	79.32				
	<b>Total</b>	<b>132</b>					

From Table 8, it can be seen that the perception regarding the analytical skill, namely to analyse business problems, was significantly affected by whether a respondent was a TIPP or a TOPP training officer,  $U = 1436.5, p < .05$ . The Mann-Whitney  $U$ -test revealed that TOPP officers ( $n = 39$ ) were more likely to consider the analysis of business problems as an important skills requirement for entry-level trainee accountants than TIPP ( $n = 93$ ) officers. It therefore appears that such an analytical skill is perceived as more important by TOPP respondents than by TIPP respondents. This phenomenon can again be ascribed to the working environment of TOPP trainee accountants, in that such trainee accountants are confronted with actual business problems, which may have an impact on their employer organisation itself. For the other three analytical skills, the perceptions of TIPP and TOPP respondents were not significantly affected.

### Interpersonal skills

Six different interpersonal skills were identified in this study (refer to the section on computer capabilities under research instrument design). Respondents were required to rate the importance of these skills on a five-point Lickert scale ranging from 1 = not important at all to 5 = extremely important.

**Table 9:** Estimated marginal means regarding perceptions of the importance of interpersonal skills

Dependent variable	TIPP/ TOPP	Mean	Std error	95% confidence level	
				Lower bound	Upper bound
Work as part of team	TIPP	4.269 (V)	.074	4.122	4.416
	TOPP	4.308 (V)	.155	4.081	4.534
Work/negotiate with people from other cultures	TIPP	4.140 (V)	.080	3.981	4.298
	TOPP	4.128 (V)	.124	3.884	4.373
Organise	TIPP	3.989 (I)	.074	3.843	4.135
	TOPP	4.077 (V)	.114	3.852	4.302
Delegate tasks	TIPP	3.387 (I)	.094	3.202	3.572
	TOPP	3.462 (I)	.144	3.176	3.747
FYgc`j`Y`V`b` j`V`g`	TIPP	3.538 (I)	.090	3.359	3.716
	TOPP	3.615 (I)	.139	3.340	3.891
Manage time properly	TIPP	4.269 (V)	.070	4.130	4.407
	TOPP	4.359 (V)	.108	4.145	4.573

**Marginal mean interpretation:** 91 9l hfYa Ym]a dcfHJbhfa Yub` (" ) \$t/J '1 'J Yfm]a dcfHJbhf("\$ \$` ®`a Yub`O`(") \$t/=1`-a dcfHJbhfl "\$ \$`®`a Yub`O`("\$ \$t/F`1` FYUgcbUV`m]a dcfHJbhf&"\$ \$`®`a Yub` < 3.00); N = Not important (mean < 2.00)

A between-subjects MANOVA was performed with one independent variable, namely the type of training officer (TIPP and TOPP), and six dependent variables, namely the expectations regarding interpersonal skills. The discrepancy in sample sizes of the groups does not invalidate the use of MANOVA owing to the small differences in variance and the very sensitive Box's *M*-test for homogeneity of dispersion matrices produced  $F(21, 20\ 831.80) = 1.10, p > .05$ , supporting the assumption of homogeneity of variance-covariance matrices. Using Pillay's criterion (Pillay's trace = .01), the combined interpersonal skills were not significantly affected by whether a respondent was a TIPP or a TOPP training officer,  $F(6, 125) = 0.19, p > .05$ .

From Table 9, it can be seen that on average, the two types of training officers differ only slightly on the importance of all the interpersonal skills. All interpersonal skills were ranked as important or very important, and none was ranked as reasonably important or not important at all. Teamwork and time management were ranked as very important. Entry-level TIPP trainee accountants usually work in teams, and fees are billed according to the time spent. The TIPP respondents' perceptions in this regard are understandable because, if a TIPP trainee accountant cannot function as a member of a team, it would be questionable whether such a trainee accountant would fit in with the firm's culture. TIPP trainee accountants have to account for all time spent, which should in theory be recoverable from clients. Poor time management will lead to many unproductive hours, which represents a cost that the firm would have to incur. Commerce and industry is an equally demanding environment where deadlines continually have to be met (for example, where a management report must be prepared to serve before a board committee), and the emphasis placed on time management is again understandable. An entry-level TOPP trainee accountant will fall under the mentorship of colleagues and will therefore form part of a team, where teamwork is perceived as being of paramount importance.

The ability to work with people from other cultures was also viewed as very important, which illustrates the emphasis placed on the diversity of the South African community in which both TIPP and TOPP entry-level trainee accountants function. It was further perceived by TOPP respondents that it is very important for entry-level trainee accountants to demonstrate the ability to organise.

## Conclusions and recommendations

This paper set out to determine the perceptions of training officers with regard to the IT capabilities and skills requirements of entry-level trainee accountants in a

South African context. The perceptions of SAICA training officers of both TIPP and TOPP programmes were determined. Independent statistical tests were performed to detect significant differences in the perceptions and expectations of TIPP and TOPP respondents.

For all nine IT capabilities identified, at least average exposure was expected, in that entry-level trainee accountants were expected to be able to use the IT application under supervision. Only in the case of spreadsheet software and Internet software was the highest level of exposure expected, namely that entry-level trainee accountants should be proficient in the use of these IT applications. Independent statistical tests revealed that TIPP and TOPP respondents disagreed significantly on the importance of one IT capability, namely audit working paper-related software. TIPP respondents expected higher exposure to this IT capability than their TOPP counterparts. The fact that TIPP trainee accountants use such software during the performance of audits and that TOPP trainee accountants are not exposed to external auditing serves as an explanation for this difference.

The study focused on the importance of three skills, namely communication, analytical and interpersonal skills. The perceived importance of individual components of these skills was tested. All the listed skills were perceived to be important or very important for entry-level trainee accountants. This confirmed the conclusion reached in the Hardy and Deppe (1995: 62) study that there is a movement towards an expanded set of competencies beyond the technical knowledge typically taught. Such expanded competencies would incorporate IT capabilities, and communication, analytical and interpersonal skills.

Very little variance existed among TIPP and TOPP respondents of this study regarding the perceived level of importance of all the identified skills. Independent statistical tests revealed that the perceived importance of TIPP and TOPP respondents with regard to the eight identified communication skills was not significantly affected. All eight communication skills were ranked as important or very important, which indicates that communication skills in the workplace are highly regarded.

Independent statistical tests revealed that there was a significant difference between the mean scores of TIPP and TOPP respondents with regard to one of the four analytical skills tested, namely the analysis of business problems. This skill appears to be more important to TOPP respondents than to TIPP respondents. This finding suggests that TOPP trainee accountants working for organisations in commerce and industry are confronted with business problems to a greater extent than their TIPP counterparts, who perform the audits of such organisations.

With regard to interpersonal skills, independent statistical tests revealed no significant differences. Both TIPP and TOPP respondents perceived these skills as

important or very important. Teamwork, time management and work or negotiation with people from other cultures fell within the 'very important' category.

The object of this study was entry-level trainee accountants, who had completed their university education and commenced their training programme. The findings of this study show that the IT capabilities, and communication, analytical and interpersonal skills of such trainee accountants are perceived to be important. This may indicate that accounting education has an important role to play in providing entry-level trainee accountants with such capabilities and skills before trainee accountants commence their traineeships.

In the light of the findings of this study, it is therefore recommended that those responsible for syllabus development recognise the importance of including these skills in the syllabus to be followed by entry-level trainee accountants during their tertiary studies. The implications of such a recommendation for future research on education and training policies are considerable and include:

- The revision of academic syllabuses to take account of these skills as part of defined standards of professional competence
- The development of specific methods of teaching such skills
- The definition and implementation of reliable, valid and cost-effective methods of teaching such skills at tertiary level.

To expand on the study, it is further suggested that the actual IT capabilities and communication, analytical and interpersonal skills of trainee accountants be tested at the end of their traineeship and then compared with those expected by prospective employers to determine whether a trainee accountant, who has nearly completed his or her education and training programme, meets market expectations.

## References

- Ainsworth, P. 2001. 'Changes in accounting curricula: discussion and design', *Accounting Education*, 10(3): 279–297.
- Albrecht, W.S. & Sack, R.J. 2000. *Accounting Education: Charting the Course through a Perilous Future*. Accounting Series, vol. 16. Sarasota, FL: American Accounting Association.
- Albrecht, W.S. & Sack, R.J. 2001. 'The perilous future of accounting education', *CPA Journal*, March: 17–23.
- AICPA (American Institute of Certified Public Accountants). 2005. *Accounting Education Centre: Personal Competencies*. [Online] Available at: <http://ceae.aicpa.org/Resources/Education+Curriculum+Development?Core>. Accessed: 2 January 2007.

- Arquero Montano, J.L., Cardoso, S.M.J & Joyce, J. 2004. 'Skills development, motivation and learning in financial statement analysis: an evaluation of alternative types of case studies', *Accounting Education*, 13(2): 191–212.
- Boritz, J.E. & Carnaghan, C.A. 2003. 'Competency-based education and assessment of the accounting profession: a critical review', *Canadian Accounting Perspectives*, 2(1): 7–34.
- Boyce, G., Williams, S., Kelly, A. & Yee, H. 2001. 'Fostering deep and elaborative learning and generic (soft) skill development: the strategic use of case studies in accounting education', *Accounting Education*, 10(1): 37–60.
- Bui, B. & Porter, B. 2007. 'Expectation performance gap in accounting education: an exploratory study', Paper presented at the 30<sup>th</sup> Congress of the European Accounting Association, Lisbon, Portugal, April.
- Burnett, S. 2003. 'The future of accounting education: a regional perspective', *Journal of Education for Business*, January/February: 129–134.
- Chang, C.J. & Hwang, N.R. 2003. 'Accounting education, firm training and information technology: a research note', *Accounting Education*, 12(4): 441–450.
- Collier, B. & Wilson, J. 1994. 'What does a graduate need? Evidence from the careers and opinions of CFOs', *Financial Practice and Education*, Fall/Winter: 59–65.
- De Lange, P., Jackling, B. & Gut, A. 2006. 'Accounting graduates' perceptions of skills emphasis in undergraduate courses: an investigation from two Victorian universities', *Accounting and Finance*, 46: 365–386.
- Gammie, B., Gammie, E. & Cargill, E. 2002. 'Personal skills development in the accounting curriculum', *Accounting Education*, 11(1): 63–78.
- Hardy, J.W. & Deppe, L.A. 1995. 'A competency-based, integrated approach to accounting education', *Accounting Education*, 4(1): 55–75.
- Hassall, T., Joyce, J., Arquero Montano, J.L.A. & Anes, J.A.D. 2003. 'The vocational skills gap for management accountants: the stakeholders' perspectives', *Innovations in Education and Teaching International (IETI)*, 40(1): 78–88.
- Hassall, T., Joyce, J., Arquero Montano, J.L.A. & Anes, J.A.D. 2005. 'Priorities for the development of vocational skills in management accountants: a European perspective', *Accounting Forum*, 29: 379–394.
- Helliar, C.V., Monk, E.A. & Stevenson, L.A. 2006. 'The skill-set of trainee auditors', Paper presented at the National Auditing Conference, University of Manchester, March.
- Howieson, B. 2003. 'Accounting practice in the new millennium: is accounting education ready to meet the challenge?', *British Accounting Review*, 35: 69–103.
- Inglis, R. & Dall'Alba, G. 1998. 'The re-design of a management accounting course based upon principles for improving the quality of teaching and learning', *Accounting Education*, 7(3): 193–207.
- IFAC (International Federation of Accountants). 2003a. *Introduction to International Education Standards*. New York: IFAC.
- IFAC (International Federation of Accountants). 2003b. *Professional Skills*. International Education Statement (IES) 3. New York: IFAC.



- Joyce, J., Hassall, T., Arquero Montano, J.L.A. & Anes, J.A.D. 2006. 'Communication apprehension and maths anxiety as barriers to communication and numeracy skills development in accounting and business education', *Education and Training*, 48(6): 454–464.
- Koornhof, C. & Lubbe, D. 2002. *The Expectations and Experiences of Trainees, Training Officers and the Secretariat of SAICA with Regard to the Training of Accountants in South Africa*. Johannesburg: SAICA.
- Lee, D. & Blaszczynski, C. 1999. 'Perspectives of Fortune 500 executives on the competency requirements for accounting graduates', *Journal of Education for Business*, November/December: 104–107.
- McCourt Larres, P., Ballantine, J.A. & Whittington, M. 2003. 'Evaluating the validity of self-assessment: measuring computer literacy among entry-level undergraduates within accounting degree programmes at two UK universities', *Accounting Education*, 12(2): 97–112.
- McCourt Larres, P. & Oyelere, P. 1999. 'A critical analysis of self-assessed entry-level personal computer skills among newly-qualified Irish chartered accountants', *Accounting Education*, 8(3): 203–216.
- Mohamed, E.K.A. & Lashine, S.H. 2003. 'Accounting knowledge and skills and the challenges of a global business environment', *Managerial Finance*, 29(7): 3–16.
- Morgan, G.J. 1997. 'Communication skills required by accounting graduates: practitioner and academic perceptions', *Accounting Education*, 6(2): 93–107.
- Palmer, K.N., Ziegenfuss, D.E. & Pinsker, R.E. 2004. 'International knowledge, skills, and abilities of auditors/accountants: evidence from recent competency study', *Managerial Auditing Journal*, 19(7): 889–896.
- Rebele, J.E. 2002. 'Accounting education's uncertain environments: descriptions and implications for accounting programmes and accounting education research', *Accounting Education*, 11(1): 3–25.
- Reinstein, A. & Bayou, M.E. 1997. 'Critical thinking in accounting education: processes, skills and applications', *Managerial Auditing Journal*, 12(7): 336–342.
- Siegel, G. & Sorensen, J.E. 1994. 'What corporate America wants in entry-level accountants', *Management Accounting*, September: 26–31.
- SAICA (South African Institute of Chartered Accountants). 2003. *Guidelines for the Effective Induction of Trainee Accountants*. Johannesburg: SAICA.
- SAICA (South African Institute of Chartered Accountants). 2005. *The Education Requirements of the South African Institute of Chartered Accountants for Entry into Part 1 of the Qualifying Examination*. Johannesburg: SAICA.
- SAICA (South African Institute of Chartered Accountants). 2007a. Education and training. [Online] Available at: [www.saica.co.za](http://www.saica.co.za). Accessed: 27 September 2007.
- SAICA (South African Institute of Chartered Accountants). 2007b. 'QE1 results show blossoming transformation', *TIPP TOPP News*, 2(1).

- SAICA (South African Institute of Chartered Accountants). 2007c. *Trainee Chartered Accountants in South Africa: Supply and Demand*. May 2007. Mulberry Leaf Consulting.
- SAICA (South African Institute of Chartered Accountants). 2008a. *Draft Competency Framework: Competencies of a Chartered Accountant (SA) at Entry-Point of the Profession*. Johannesburg: SAICA.
- SAICA (South African Institute of Chartered Accountants). 2008b. *SAICA Needs Analysis Report*. May 2008. Ask Africa.
- Van der Stede, W.A., Young, S.M. & Chen, C.X. 2005. 'Assessing the quality of evidence in empirical management accounting research: the case of survey studies', *Accounting, Organisations and Society*, 30: 655–684.
- Watson, S.F., Apostolou, B., Hassell, J.M. & Webber, S.A. 2007. 'Accounting education literature review (2003–2005)', *Journal of Accounting Education*, 25: 1–58.
- Webb, C., English, L. & Bonanno, H. 1995. 'Collaboration in subject design: integration of the teaching and assessment of literacy skills into a first-year accounting course', *Accounting Education*, 4(4): 335–350.
- Wolk, C.M. & Cates, T.A. 1994. 'Problem-solving styles of accounting students: are expectations of innovation reasonable?', *Journal of Accounting Education*, 12(4): 269–281.
- Yazdifar, H. & Tsamenyi, M. 2005. 'Management accounting change and the changing roles of management accountants: a comparative analysis between dependent and independent organisations', *Journal of Accounting and Organizational Change*, 1(2): 180–198.
- Zaid, O.A. & Abraham, A. 1994. 'Communication skills in accounting education: perceptions of academics, employers and graduate accountants', *Accounting Education*, 3(3): 205–221.