Annelie Oosthuizen & Riëtte Eiselen

Factors associated with success in first-year accounting after the implementation of the National Senior Certificate

Questions have been raised as to whether the National Senior Certificate curriculum, awarded for the first time in 2008, adequately equips learners to achieve academic success at university. This article aims to identify factors associated with success in accounting at university after the implementation of the National Senior Certificate. Differences between students who failed and those who passed Accounting 1 in 2009 are explored in terms of their exposure to, and performance in accounting and mathematics at school level as well as differences in their perceptions of critical skills acquired in the National Senior Certificate. The findings of this study create a platform for continued debate on admission requirements and the importance of specific skills required for success in accounting studies at university.

Faktore geassosieer met sukses in eerstejaarsrekeningkunde na die implementering van die Nasionale Senior Sertifikaat

Vrae is gestel of die Nasionale Senior Sertifikaat-kurrikulum, wat vir die eerste keer in 2008 toegeken is, leerders voldoende toerus om akademiese sukses op universiteit te behaal. Die doel met hierdie artikel is om faktore geassosieer met sukses in rekeningkunde, ná die implementering van die Nasionale Senior Sertifikaat, te identifiseer. Verskille tussen studente wat Rekeningkunde 1 in 2009 gedruip het en diegene wat dit geslaag het word ondersoek in terme van hul blootstelling aan en prestasie in rekeningkunde en wiskunde op skoolvlak sowel as verskille in hul persepsies omtrent die verwerwing van kritiese vaardighede in die Nasionale Senior Sertifikaat. Die bevindinge van hierdie studie skep 'n platform vir volgehoue debat oor toelatingsvereistes en die belangrikheid van spesifieke vaardighede wat benodig word vir sukses in rekeningkunde-studie aan 'n universiteit.

Ms A Oosthuizen, Division for Institutional Planning and Quality Promotion & Prof R Eiselen, Dept of Finance and Investment Management, Faculty of Economic and Financial Sciences, University of Johannesburg. P O Box 1059, Fontainebleau 2032; E-mail: annelieo@qcci.co.za & rjeiselen@uj.ac.za.

SUN MEDIA
BLOEMFONTEIN

I n South Africa the replacement of the Senior Certificate (NATED 550) by the National Senior Certificate (NSC), awarded for the first time in 2008, has raised the following question: does the NSC curriculum adequately equip learners to achieve success in university studies? This article aims to identify factors associated with success in accounting at university after the introduction of the NSC. Eiselen *et al* (2007: 40) state that the investigation of factors associated with both success and failure at university is of particular importance to South African higher education institutions (HEIs) due to the fact that, at school level, an outcomes-based education (OBE) system has been introduced and the curricula of each of the compulsory and elective subjects have changed. The first students schooled under the OBE system, implemented in all schools in 1998 (Malan 1997: 1 & 2001: 82) and which culminated in the awarding of an NSC, entered South African HEIs in 2009.

Kantanis (2006: 31) is of the opinion that HEIs are bound not only to investigate the reasons for voluntary student departure pertinent to their individual local context but also to accept the responsibility of addressing the identified issues. Initiatives to improve institutional retention need to be predicated on a sound understanding of the causal relationship between students' university experience and student departure. Killen *et al* (2003: 147) recommend that HEIs should be proactive in attempting to improve the success rates of their students while they are striving to maintain or improve their academic standards. Indeed, both students and lecturers have a joint responsibility for student success, and the first stage in accepting this responsibility is for both students and lecturers to gain a thorough understanding of the complex processes that influence student success and failure (Killen *et al* 2003: 157).

This article explores differences between students who failed and those who passed the first-year accounting course in 2009. Differences are explored in terms of their exposure to, and performance in NSC accounting, their performance in NSC mathematics, as well as differences in their perceptions of critical skills acquired at school level. A quantitative survey of the students in the target group was conducted to ascertain their perceptions of the skills they acquired at school. Their perceptions were then compared to the institutional

data, namely actual results in the NSC in accounting and mathematics as well as first-year accounting results.

1.   Context of the research

At the University of Johannesburg (UJ), first-year Accounting (ACC1) is a year course comprising two couplet semester modules, namely Accounting 1A (ACC101) and Accounting 1B (ACC102). Couplet modules are defined as "two modules in a specified year, whereby the second module builds upon the first module" (UJ 2011: 21). The pass mark for each module is 50%, but a student who did not obtain the required 50% in the first module but obtained a minimum final mark of 40%, is granted entry to the second module. To obtain credit for both modules (ACC1), an average of 50% for both modules must be obtained. Accounting at first year level is a key component for the BCom degrees in Accounting and Finance at the UJ.The NSC, where students are schooled under the OBE system, was awarded for the first time in 2008. As a result, previous university admission requirements were revised for the 2009 enrolment. A new seven-point Admission Points Score (APS) was implemented at the UJ for NSC results based on the achievement rating for each subject. A prospective student's APS is the sum of his/her achievement ratings for the seven school subjects, bearing in mind that the performance rating achieved for life orientation is divided by two. A minimum APS of 28 is required in order for a student to be considered for admission into the three-year BCom (Finance) degree at the UJ. Four compulsory NSC subjects, namely mathematics (and not mathematical literacy), life orientation as well as a home language and a first additional language (where one of the NSC languages is the same as the student's tuition language at university, *i e.* English or Afrikaans) are required. In addition, a minimum of three electives from the designated 20-credit NSC subject list (for example, accounting, economics, business studies, physical science, geography, history) should be included (UJ 2011: 30).

The admission requirements of the UJ are similar to those of other HEIs in South Africa and are in line with the recommendations made by Killen *et al* (2003: 147-8), who stated that when universities admit students they need to be reasonably confident that those students will be capable of successfully completing the course in which they

are permitted to enrol. Koh & Koh (1999: 13) mention that it seems obvious that the more that is known about what can affect student performance, or what can predict academic success, the better educators and policymakers will be able to make informed decisions on curriculum, selection criteria and admission qualifications.

2. Literature review

Before the introduction of the NSC, various studies have focused on the success of students entering the HE system in general[1] and on the first-year success of accounting students, particularly at various South African universities.[2] In the following paragraphs, factors found to be associated with university success, in general, will firstly be discussed, and secondly, factors specifically associated with success in accounting-related courses will be explored.

Factors found to be associated with university success, in general, include:

- Cognitive factors: for example, academic background, cognitive ability, communication skills, language proficiency, performance in mathematics, reading ability and comprehension skills.[3]

- Personal or behavioural characteristics of students: for example, approaches to learning (deep and surface learning, for instance), class attendance, learning styles, study habits, time management.[4]

- Bio- and demographic factors: for example, age, gender, race and part-time work by students.[5]

1   *Cf* Baard *et al* 2010, Eskew & Faley 1988, Mji 2002, Myburgh 2005, Schroeder 1986.
2   *Cf* Baard *et al* 2010, Du Plessis *et al* 2005, Moore 2005, Müller *et al* 2007, Steenkamp *et al* 2009.
3   *Cf* Auyeung & Sands 1994, Baard *et al* 2010, Bartlett *et al* 1993, Bergin 1983, Bohlmann & Pretorius 2002, Du Plessis *et al* 2005, Eiselen *et al* 2007, Eiselen & Geyser 2003, Eskew & Faley 1988, Gul & Fong 1993, Halabi *et al* 2005, Killen *et al* 2003, Koch & Kriel 2005, Koh & Koh 1999, McKenna 2004, Moses 1987, Oosthuizen & Eiselen 2011, Pretorius & Bohlmann 2003, Steenkamp *et al* 2009.
4   *Cf* Baard *et al* 2010, Booth *et al* 1999, Du Plessis *et al* 2005, Eiselen & Geyser 2003, Jones & Fields 2001, Killen *et al* 2003, Mji 2002, Müller *et al* 2007, Oosthuizen & Eiselen 2011, Steenkamp *et al* 2009, Stout & Ruble 1991.
5   *Cf* Auyeung & Sands 1994, Baard *et al* 2010, Bartlett *et al* 1993, Buckless *et al* 1991, Carpenter *et al* 1993, Doran *et al* 1991, Du Plessis *et al* 2005, Koh & Koh 1999,

- Affective factors: for example, students' motivation to complete the degree programmes, self-concept, self-confidence and success expectations.[6]
- Factors external to the students: for example, instructional efficiency and the type of learning institution (residential or distance learning institution, for instance).[7]

2.1 Success in accounting-related courses at university

In terms of skills required, Oosthuizen & Eiselen (2011: 34-5) found that decision-making skills, the ability to practically implement learning content, critical thinking skills, the ability to reflect on a variety of strategies to learn more effectively, self-confidence and a positive self-concept contribute to the success of students studying towards a BCom (Finance) degree. Focusing on skills required for success in accounting, in particular, Booth *et al* (1999: 277) are of the opinion that the educational process in accounting aims to achieve high-quality learning outcomes. It has been argued that the outcomes include not only strong technical competencies, but also a broad understanding of the discipline, the ability to think critically and to apply ideas and concepts to problems, and the possession of good communication and related skills.

Jones & Fields (2001: 532) stated that the technical demands of accounting have often led to discouragement, failure and poor overall student perceptions of the accounting profession and curriculum. According to Steenkamp *et al* (2009: 127) some factors hampering success in first-year accounting include

> ... a lack of motivation; lack of self-discipline, concentration and interest in the subject; not asking for help; not perceiving the subject to be important; having a mental block or negative attitude; transport issues, and making unnecessary errors.

As far as cognitive skills are concerned, the results of the study by Eiselen & Geyser (2003: 128) indicate that achievers in accounting

---

Lipe 1989, Müller *et al* 2007.

6 *Cf* Carpenter *et al* 1993, Eskew & Faley 1988, Gul & Fong 1993, Harrell *et al* 1985, Kantanis 2006, Killen *et al* 2003, Müller *et al* 2007, Myburgh 2005, Steenkamp *et al* 2009.

7 *Cf* Halabi *et al* 2005, Jones & Fields 2001, Kantanis 2006, Killen *et al* 2003.

have, on average, better cognitive skills and obtained higher school marks than students who are at risk of failing. Similarly, Eskew & Faley (1988), Koh & Koh (1999), and Mitchell *et al* (1997) found that prior academic performance is a determinant of future academic performance. However, Bartlett *et al* (1993) and Gist *et al* (1996) found no significant association between academic aptitude (measured by pre-university performance) and performance in university accountancy examinations.

In addition, various researchers have concluded that the skill to perform well in mathematics is logically associated with success in accounting. The following examples are reported. Eskew & Faley (1988), Gul & Fong (1993) and Koh & Koh (1999) found evidence that prior performance in mathematics significantly explained the variance in student performance in accounting degree programmes; Wong & Chia (1996: 188) found a significant interaction effect of mathematics and English (language) on financial accounting performance among Hong Kong students.

Previous studies produced mixed results concerning the effects of accounting study at secondary school on performance in the first-year university accounting course. Koh & Koh (1999: 15) stated that, intuitively, those with prior accounting knowledge should perform better than those without such knowledge. However, results of studies in various HEIs and countries to date have not conclusively supported this presumption. There are reports of significantly better performance by students with an accounting background, particularly in the first or introductory accounting course. Doran *et al* (1991) support Baldwin & Howe (1982) and Bergin (1983), arguing that students with prior accounting knowledge did better early in the course, but worse subsequently. Thus the role of prior accounting knowledge is not as unequivocal as one would have expected.

3.   Aim

This article aims to identify factors associated with success in Accounting 1 at university after the introduction of the NSC as exit-level certification at school. To this end, it explores differences between students who failed and those who passed Accounting 1 in 2009. Based on the previous discussion, differences between students

who passed and those who failed are explored in terms of exposure to, and performance in accounting at school level, performance in mathematics at school level as well as differences in perceptions of critical skills acquired at school level. The scope of the study is limited to a single HEI in South Africa, namely the UJ, where Accounting 1 has consistently been shown to be the course with the lowest pass rate in the first year of the BCom (Finance) degree.

4. Methodology

A quantitative survey, utilising a paper-based questionnaire, was conducted among all first-year students who obtained an NSC certificate in 2008 and who enrolled for the BCom (Finance) degree at the UJ in 2009. All of these students satisfied the minimum entry requirements for admission. After the relevant faculty granted permission, the questionnaire was administered to students at the beginning of the second semester of 2009 during a scheduled lecture. Students participated voluntarily in the survey and were requested to provide their student numbers in order to link their responses to the survey to information regarding performance at school and during the first year of study at university. It is important to note that all participating students proceeded to the second semester of study.

5. Research instruments

The questionnaire consisted of several sections, including a biographic section and a section on skills acquired during the NSC. All questions in these sections were closed-ended. The latter section requested the students to indicate, on a 4-point Likert-type scale, the extent to which they required each of 35 skills, identified from the National Curriculum Statement and policy document (DoE 2008, 2004 & 2000). For the purpose of data analysis, these 35 skills were categorised into six main categories, namely intellectual and cognitive skills; skills in working with others; skills to organise and manage themselves and their activities; research and information gathering skills; communication skills, as well as local, national and global citizenship skills.

Information regarding the participating students' performance during their first year of study (2009), in particular during the first semester, the second semester and the first year of accounting as well as their performance in NSC accounting and NSC mathematics, was obtained from the student data-base.

6.   Results

A total of 149 (48.1%) students in the target population participated in the survey. Of these, 44.6% are male, 55.7% classified themselves as African and 30.2% as White. The majority (66.4%) were 18 years of age at the time of the survey. Although it is not an admission requirement, accounting was a school subject for the majority of the responding students, namely 119 (79.8%). In other words, the majority of students had exposure to accounting as a subject prior to enrolling for the BCom (Finance) degree.

The survey results of all responding students (n=149) on perceptions of skills acquired in the NSC revealed that calculation skills, the skill to read with understanding, mathematical communication skills, self-confidence, the ability to work under pressure, the ability to complete projects, oral communication skills, and teamwork ability were most frequently indicated to have been acquired well or very well during the NSC. By contrast, economic reasoning ability, the ability to find information in the library, the ability to practically implement learning content, and the ability to understand global issues and their impact on the local community were most frequently considered to have been acquired poorly or to a moderate extent only.

As far as the outcome variables (success in accounting at university during the first year of study) is concerned, 53.7% of the responding students passed ACC101 (that is, obtained a mark of 50% or above), and 49.7% passed ACC102, while only 47.7% passed ACC1. The pass rate was thus less than 50%.

Chi-squared tests of independence were performed to explore whether students' passing or failing each of ACC101, ACC102 and ACC1 had any relation to their exposure to NSC accounting and perceptions of skills acquired during the NSC. Independent samples t-tests were used to ascertain whether the average performance in accounting and mathematics, respectively, during the NSC of those

who passed and those who failed ACC101, ACC102 or ACC1 is the same. A minimum level of significance of 5% (0.05) was assumed throughout. Finally, step-wise logistic regression was used to predict the probability of a student passing ACC1.

As far as exposure to accounting as a subject at school level is concerned, no statistically significant differences emerged between those who passed and those who failed ACC101, ACC102 or ACC1 (p-values > 0.05 in all cases). Passing ACC101, ACC102 and ACC1 is thus independent of the student's exposure to accounting at school. This result should, however, be viewed in light of the fact that few students (approximately 20%) did not take accounting as a school subject.

In terms of performance in NSC accounting, statistically significant differences exist between students who passed and those who failed ACC101, ACC102 and ACC1 (p-values < 0.005 <0.05 in all cases). Specifically, those who failed ACC101, ACC102 or ACC1 on average obtained a lower percentage (less than 60% on average) for NSC accounting than those who passed it (above 65% on average) (*cf* Table 1).

Table 1: Mean (M) and standard deviation (SD) of school performance in NSC accounting

		M	SD
Passed ACC101?	No	57.98	6.977
	Yes	67.74	9.227
Passed ACC102?	No	59.16	7.613
	Yes	67.74	9.449
Passed ACC1?	No	59.04	7.578
	Yes	67.85	9.487

Similar to the results in NSC accounting, there are statistically significant differences between students who passed and those who failed ACC101, ACC102 or ACC1 in terms of their performance in NSC mathematics (p-values < 0.005 <0.05 in all cases). Specifically, those who failed ACC101, ACC102 or ACC1 on average obtained a lower percentage (less than 60% on average) in NSC mathematics than

those who passed (average percentage approximately 70%) (*cf* Table 2). Note that a minimum of 50% achievement in NSC mathematics is an admission requirement for students entering into the BCom (Finance) programme at the UJ.

Table 2: Mean (M) and standard deviation (SD) of school performance in NSC mathematics

		M	SD
Passed ACC101?	No	59.28	9.152
	Yes	69.60	11.748
Passed ACC102?	No	59.67	9.586
	Yes	70.07	11.487
Passed ACC1?	No	59.55	9.425
	Yes	70.48	11.563

No statistically significant differences were observed between those who passed ACC101, ACC102 or ACC1 in terms of performance in English at school level, irrespective of whether English was taken as home language or as first additional language.

As far as skills acquired during the NSC are concerned, those who failed accounting during the first semester (ACC101) were more inclined to believe that they had acquired the following skills either poorly or to a moderate extent only (*cf* Table 3).

Table 3: Percentages of students perceiving skills to have been acquired poorly or to a moderate extent only: ACC101

	Fail ACC101	Pass ACC101	p-value
Decision-making skills	39%	28.8%	0.023
Prioritise activities	38.9%	22.6%	0.003
Work independently	43.2%	20.8%	0.008
Interpret financial information	36.8%	30.2%	0.036

	Fail ACC101	Pass ACC101	p-value
Mathematical communication skills	30.8%	13.0%	0.017
Read with understanding	23.1%	18.9%	0.008
Adapt to new situations	46.2%	20.8%	0.006

Similarly, those who failed accounting during the second semester (ACC102) were more inclined to believe that they had acquired the following skills either poorly or to a moderate extent only (*cf* Table 4).

Table 4: Percentages of students perceiving skills to have been acquired poorly or to a moderate extent only: ACC102

	Fail ACC102	Pass ACC102	p-value
Decision-making skills	37.5%	27.5%	0.055
Prioritise activities	34.9%	22.2%	0.004
Interpret financial information	37.8%	26.7%	0.03
Mathematic communication skills	30.4%	10.9%	0.046
Adapt to new situations	41.3%	20.0%	0.021

Finally, in order to ascertain which of the variables, namely performance in mathematics at school level and perceptions of skills acquired during the NSC, are the best predictors of success in Accounting 1 (ACC1), a step-wise logistic regression model (using the Forward: Wald method) was fitted to the data. The model revealed that performance in mathematics at school level is the best predictor of success in ACC1. Based on a student's NSC mark in mathematics alone, 70% of the students could be correctly classified as either having failed or passed ACC1. Figure 1 illustrates the model and shows that the better the student's performance in NSC mathematics, the greater the probability of him/her passing ACC1. It is interesting to note that
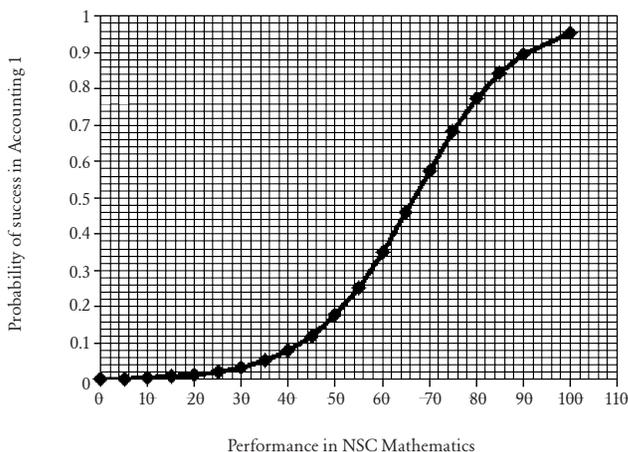
the probability of success is greater than 50% if the student's mark for NSC mathematics is above 67% (approximately).

Figure 1: Model for the probability of success in Accounting 1 in terms of performance in NSC mathematics

7.   Discussion

Exposure to accounting at school level has been reported to be either beneficial, have no influence (Koh & Koh 1999, Moses 1987), or have a detrimental effect on later performance (Baldwin & Howe 1982, Bergin 1983, Doran *et al* 1991) in accounting at university level. In this study, the majority of students had been exposed to accounting at school level, and it was established that passing ACC101, ACC102 and ACC1 is independent of exposure to accounting at school. However, this study included only students who had proceeded to the second semester of study, namely those students who obtained a minimum of 40% in the first semester module of accounting (ACC101). Those who did not proceed may indeed have been those who did not have any exposure to accounting at school level.

It was established, however, that the average performance of students in NSC accounting was higher for students who passed ACC101,

ACC102 and ACC1 than for those who failed these modules. This implies that students who perform well in NSC accounting are more inclined to pass accounting at university. The findings thus support other results. The HEI may recommend, although not require, that students who wish to enter the BCom (Finance) degree programme take accounting as an elective subject at school.

This study also found strong support for the research findings reporting that students who perform better in mathematics at school level have a higher probability of success in accounting at university level. It was established that those who pass ACC101, ACC102 and ACC1 on average performed better in NSC mathematics than those who failed. The logistic regression model fitted to the data revealed that a student with an NSC mathematics mark of approximately 67% or higher has a probability of more than 0.5 of passing ACC1. Based on these findings, the HEI may consider increasing the minimum requirement in terms of performance in NSC mathematics to 60% for admission to the BCom (Finance) degree.

Students who failed ACC101, ACC012 or ACC1 were found to be more inclined to believe that they had not acquired decision-making skills during the NSC or had acquired these to a moderate extent only. This lends support to previous findings by Mji (2002: 173) and Oosthuizen & Eiselen (2011: 34), where academic success has been linked to decision-making skills. The same holds true for the ability to interpret financial information, which has also been identified as a skill associated with success in commerce studies, in particular (Oosthuizen & Eiselen 2011: 35).

Prioritising of activities is closely associated with time management skills. The fact that students who failed ACC101, ACC012 or ACC1 were more inclined to believe that they did not acquire this skill or acquired it to a moderate extent only lends support to the notion that time management is important for success at university and in accounting studies, in particular.

The finding that mathematical communication skills were considered to have been acquired poorly or moderately only by those students who failed an accounting module may be associated with the fact that many of the students are second-language English students who may find it difficult to verbalise mathematical results

and interpret these findings in context. However, this finding could merely reflect the fact that communication of mathematical results in written sentences or paragraphs was not required at school, and hence poses a challenge for students entering the programme (*cf* Oosthuizen & Eiselen 2011: 45-6). As noted earlier, no statistically significant differences were observed between those who passed ACC101, ACC102 or ACC1 in terms of performance in English at school level when English was taken as home language or as first additional language.

The finding that students who failed an accounting module were more inclined to believe that they had not acquired the ability to adapt to new situations or had acquired it to a moderate extent confirms the very early studies related to success in higher education, where academic and social integration were shown to be critical success factors at university (Kantanis 2006, Lourens & Smit 2003, Tinto 1993). It should be noted that many of the students entering the UJ are first-generation students at university or come from previously disadvantaged communities. The university experience thus poses an entirely new situation to these students.

8.   Implications and recommendations

The importance of using measures of school performance as primary criteria for university admission has been confirmed as a valid and reliable predictor of university success. However, it is recommended that the current admission requirements in mathematics should increase from 50% to 60% for entry into BCom (Finance). It is also recommended that learners who are considering to enter for BCom (Finance) studies at university should be encouraged to include NSC accounting at secondary school level. It was found that there are advantages to prior knowledge of this school subject in terms of university success in this particular university programme.

It is recommended that the university should implement particular support systems and activities aimed at those students entering this degree programme with NSC mathematics results of less than 65%, as the findings of this study indicate that these students are at risk of failing the BCom (Finance) programme. The high levels of attrition in first-year accounting have huge resource implications for the university, in particular after the implementation of the NSC. It is

recommended that tailor-made support systems and activities to the students, who are at risk to fail, should become an integral part of the university offerings.

9. Conclusion

The more that is known about factors associated with student performance, or factors that can predict academic success at university, the better educators and policymakers will be able to make informed decisions regarding the admission criteria and the university curriculum. This article identified factors associated with success in accounting at university after the introduction of the NSC (in the 2009 academic year when the first students schooled under the OBE system entered South African HEIs). The researchers explored differences between students who failed and those who passed the first-year accounting course in terms of exposure to, and performance in NSC accounting, performance in NSC mathematics, and differences in perceptions of critical skills acquired at school level. Perceptions of students in the target group population were compared to institutional data, namely actual results in the NSC and first-year accounting. The research findings revealed that NSC mathematics results are strongly associated with success in first-year accounting. In addition, students who failed first-year accounting were more inclined to have obtained lower marks in NSC accounting and were also of the opinion that they failed to acquire particular critical skills at school. The significant impact of performance in mathematics at school level, irrespective of the system of education, in this study as well as in prior research, further bedrocks it as a universally important determinant of success in finance and accounting degree programmes. These findings re-emphasise the importance of a result of a minimum of 60% in NSC mathematics to be implemented as an admission requirement for students into finance and accounting programmes.

Bibliography

Auyeung P K & D F Sands
1994. Predicting success in first-year university accounting using gender-based learning analysis. *Accounting Education* 3(3): 259-72.

Baard R S, L P Steenkamp, B L Frick & M Kidd
2010. Factors influencing success in first-year accounting at a South African university: the profile of a successful first-year accounting student. *South African Journal of Accounting Research* 24(1): 129-47.

Baldwin B A & K R Howe
1982. Secondary-level study of accounting and subsequent performance in the first college course. *The Accounting Review* 57(3): 619-26.

Bartlett S, M J Peel & M Pendlebury
1993. From fresher to finalist: a three-year analysis of student performance on an accounting degree programme. *Accounting Education* 2(2): 111-22.

Bergin J L
1983. The effect of previous accounting study on student performance in the first college-level financial accounting course. *Issues in Accounting Education* 1983(1): 19-28.

Bohlmann C A & E J Pretorius
2002. Reading skills and mathematics. *South African Journal of Higher Education* 16(3): 196-206.

Booth P, P Luckett & R Mladenovic
1999. The quality of learning in accounting education: the impact of approaches to learning on academic performance. *Accounting Education* 8(4): 277-300.

Buckless F A, M G Lipe & S P Ravenscroft
1991. Do gender effects on accounting course performance persist after controlling for general academic aptitude? *Issues in Accounting Education* 6(2): 248-61.

Carpenter V L, S Friar & M G Lipe
1993. Evidence on the performance of accounting students: race, gender and expectations. *Issues in Accounting Education* 8(1): 1-17.

Department of Education (DoE)
2008. National Curriculum Statement Grade 10-12. NSTF Workshop. Pretoria: Department of Education.

2000. South African Curriculum for the twenty-first century. Report of the review committee on Curriculum 2005. Pretoria: Department of Education.

2004. National Policy on Assessment and Qualifications for Schools in the General Education and Training Band. Pretoria: Department of Education.

Dockweiler R C & C G Willis
1984. On the use of entry requirements for undergraduate accounting programs. *The Accounting Review* 59(3): 496-504.

DORAN B M, M L BOUILLON &
C G SMITH
    1991. Determinants of student
    performance in Accounting
    Principles I and II. *Issues in
    Accounting Education* 6(1): 74-84.

DU PLESSIS A, H MÜLLER &
P PRINSLOO
    2005. Determining the profile of
    the successful first-year accounting
    student. *South African Journal of
    Higher Education* 19(4): 684-98.

EISELEN R & H GEYSER
    2003. Factors distinguishing
    between achievers and at risk
    students: a qualitative and
    quantitative synthesis. *South African
    Journal of Higher Education* 17(2):
    118-30.

EISELEN R, J STRAUSS & B JONCK
    2007. A basic mathematical skills
    test as predictor of performance at
    tertiary level. *South African Journal of
    Higher Education* 21(1): 38-49.

ESKEW R K & R H FALEY
    1988. Some determinants of student
    performance in the first college-
    level financial accounting course.
    The Accounting Review 63(1): 137-47.

GIST W E, H GOEDDE & B H WARD
    1996. The influence of
    mathematical skills and other
    factors on minority student
    performance in principles of
    accounting. *Issues in Accounting
    Education* 11(1): 49-60.

GUL F A & S C C FONG
    1993. Predicting success for
    introductory accounting students:
    some further Hong Kong evidence.
    Accounting Education 2(1):33-42.

HALABI A K, J E TUOVINEN &
A A FARLEY
    2005. Empirical evidence on
    the relative efficiency of worked
    examples versus problem-solving
    exercises in accounting principles
    instruction. *Issues in Accounting
    Education* 20(1): 21-32.

HARRELL A, C CALDWELL & E DOTY
    1985. Within-person expectancy
    theory predictions of accounting
    students' motivation to achieve
    academic success. *The Accounting
    Review* 60(4): 724-35.

JONES J P & K T FIELDS
    2001. The role of supplemental
    instruction in the first accounting
    course. *Issues in Accounting Education*
    16(4): 531-47.

KANTANIS T
    2006. Review of 'retention'
    literature. Unpubl research report,
    Monash University, Clayton,
    Victoria, Australia.

KILLEN R, A DE K MARAIS &
P VAN Z LOEDOLFF
    2003. Success and failure in
    distance education: perceptions
    of South African students and
    lecturers in Business Management.
    *South African Journal of Higher
    Education* 17(2): 147-58.

KOCH E & M KRIEL
2005. An argument for integrating language or language-related skills in the accounting curriculum. *South African Journal of Higher Education* 19(3): 626-37.

KOH M Y & C K KOH
1999. The determinants of performance in an accountancy degree programme. *Accounting Education* 8(1): 13-29.

LIPE M G
1989. Further evidence on the performance of female versus male accounting students. *Issues in Accounting Education* 4(1): 144-52.

LOURENS A & I P J SMIT
2003. Retention: predicting first-year success. *South African Journal of Higher Education* 17(2): 169-76.

MALAN B M
1997. *Excellence through outcomes.* Pretoria: Kagiso Publishers.

2001. Curriculum 2005: transformation and outcomes-based education. Unpubl DEd thesis in Curriculum Studies, Rand Afrikaans University.

MCKENN A S
2004. Lecturers' discourses about the interplay between language and learning. *South African Journal for Higher Education* 18(2): 278-87.

MITCHELL G, P FRIDJHON & J HAUPT
1997. On the relationship between the matriculation examination and university performance in South Africa – 1980 to 1991. *South African Journal of Science* 93(9): 30-45.

MJI A
2002. What influences students to university education? Insights from the horse's mouth. *South African Journal of Higher Education* 16(2): 166-76.

MOORE C
2005. A contextual investigation into selected factors associated with student performance in Financial Accounting 1 at a South African tertiary institution. Unpubl MEd minor dissertation in the School of Education, University of Cape Town.

MOSES O D
1987. Factors explaining performance in graduate-level accounting. *Issues in Accounting Education* 2(2): 281-91.

MÜLLER H, P PRINSLOO & A DU PLESSIS
2007. Validating the profile of a successful first year accounting student. *Meditari Accountancy Research* 15(1): 19-33.

MYBURGH J E
2005. An empirical analysis of career choice factors that influence first-year accounting students at the University of Pretoria: a cross-racial study. *Meditari Accountancy Research* 13(2): 35-48.

OOSTHUIZEN A & R EISELEN
2011. An investigation into the extent to which the National Senior Certificate equips university finance students with required skills. *Journal of Economic & Financial Sciences* 4(1): 31-50.

PRETORIUS E J & C A BOHLMANN
2003. A reading intervention programme for mathematics students. *South African Journal for Higher Education* 17(2): 226-36.

SCHROEDER N W
1986. Previous accounting education and college-level accounting exam performance. *Issues in Accounting Education* 1(1): 37-47.

STEENKAMP L P, R S BAARD & B L FRICK
2009. Factors influencing success in first-year accounting at a South African university: a comparison between lecturers' assumptions and students' perceptions. *South African Journal of Accounting Research* 23(1): 113-40.

STOUT D E & T L RUBLE
1991. The learning style inventory and accounting education research: a cautionary view and suggestions for future research. *Issues in Accounting Education* 6(1): 41-52.

TINTO V
1993. *Rethinking the causes and cures of student attrition.* 2nd ed. Chicago: The University of Chicago Press.

UNIVERSITY OF JOHANNESBURG (UJ)
2011. Faculty of Economic and Financial Sciences: qualifications and regulations. Johannesburg: UJ.

WONG D S N & Y M CHIA
1996. English language, mathematics and first-year financial accounting performance: a research note. *Accounting Education* 5(2): 183-9.