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Abstract

The curriculum for accounting students is evolving to meet advancement in computer technology. To keep up with current concepts, the curriculum needs to have more depth with specific reference to technology, to facilitate the learning and development of students. This study aimed to explore how the implementation of technology can assist in assessing the students doing the diploma course in accounting. Secondary research methods such as books, peer-reviewed journals, magazines, newspapers and Internet resources were used to collect data and establish how technological advancement facilitates all features of professional accounting, thereby adding to the success of an organisation. Limited research on the use of technology in accounting warrants universities in South Africa to rethink the traditional learning model. The teaching of accounting has shifted from being teacher-centred to student-centred; the technological change in the teaching of accounting has also changed the culture of educational institutions. Students are being assessed on their theoretical as well as on their practical knowledge. For example, both the theoretical and practical knowledge of students are evaluated by requiring them to process transactions in a fictitious firm that they create. Students are also required to create a business plan and use software such as Microsoft Excel and Sage Pastel. While the study was based in South Africa, the findings of the study and the use of technology in accounting education could be utilised globally.

Keywords (separated by " - ") Accounting education - Computer technology - Teaching and learning - Student assessment

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The Importance and Implementation of Technology for Diploma Accounting Students at the University of Johannesburg

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Mohamed Karodia

Abstract The curriculum for accounting students is evolving to meet advancement in computer technology. To keep up with current concepts, the curriculum needs to have more depth with specific reference to technology, to facilitate the learning and development of students. This study aimed to explore how the implementation of technology can assist in assessing the students doing the diploma course in accounting. Secondary research methods such as books, peer-reviewed journals, magazines, newspapers and Internet resources were used to collect data and establish how technological advancement facilitates all features of professional accounting, thereby adding to the success of an organisation. Limited research on the use of technology in accounting warrants universities in South Africa to rethink the traditional learning model. The teaching of accounting has shifted from being teacher-centred to student-centred; the technological change in the teaching of accounting has also changed the culture of educational institutions. Students are being assessed on their theoretical as well as on their practical knowledge. For example, both the theoretical and practical knowledge of students are evaluated by requiring them to process transactions in a fictitious firm that they create. Students are also required to create a business plan and use software such as Microsoft Excel and Sage Pastel. While the study was based in South Africa, the findings of the study and the use of technology in accounting education could be utilised globally.

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1 Introduction

The accounting profession has changed rapidly over the past 50 years. These changes made it imperative for educational institutions to focus on developing various methods to meet the high standards posed by this growing field. As a result, the

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functions of accounting that are used by the different institutions have become increasingly complex.

The advancement in technology has successfully enhanced all the demands of professional accounting, and educational programmes are challenged to equip graduates to meet the demands of the profession, thereby affording them the opportunity to find employment in both public and private accounting firms. Various institutions have also endeavoured to include different software packages into their curriculum to assess the students (Martinez et al. 2012).

Technology can no longer be ignored at this point in time of our lives. Truly, technology is and has been incorporated into and has shaped our society. Technology affects numerous components and institutions of the society including education. Thereby, accounting education is neither exempt nor immune to its effects. Integration and inclusion of technology to accounting education facilitates learning within the accounting learners rather than hindering it (Iniesta-Bonillo et al. 2013).

However, inclusion and integration of technology into accounting education has faced several challenges from the people involved in it to the institutions that comprise such a sector of education. Most of the write-ups and research have been focused on the teacher who needs to have and/or be equipped with knowledge in technology as well as the acceptance and readiness of the accounting students towards technology integration as well as on the digital division that technology might do to the society. However, all of such challenges have been answered already or continuously answered wherein most scholars agreed that technology does have more beneficial effects than bad ones. Seldom focused on the curriculum development of the accounting education, it is one of the vital factors to which the teachers and accounting students have and are basing their pedagogies and learning (Kinyondo et al. 2012).

This paper discusses how technology can be incorporated into the accounting curricula of educational institutions, and emphasis is placed on how various institutions have implemented technology in the assessment of students. Recommendations are made on how the University of Johannesburg can implement accounting software packages and technology to assess the students at that university.

2 Problem Statement

Learners in the diploma accounting programme have a lack of ability to integrate technology and accounting theory, and as a result, this impacts their ability to perform successfully in the workplace.

3 Research Objectives

The aim of the study is to establish a comparative study to determine the impact made on the accountancy professional. The intention is to determine whether the changes made in accounting institutions are adopted and learned by the students and to recommend that technology be used by accounting students at the University of Johannesburg. The study was based on the past and the present data of other universities, how technology was implemented by university students, and how technology was used to assess the students.

4 Research Questions

The study designed the following research questions:

- How does the computer technology affect the accounting curriculum in the University of Johannesburg?
- How does the performance of the students improve with the use of computer technology?
- What are the benefits of implementing various software packages and technology regarding assessment?

5 Methodology

The research was based on secondary data collection. The data was extracted from various journals, articles and books. Secondary research described information gathered through literature, publications, broadcast media and other non-human sources.

The qualitative research method was used. Qualitative research is more subjective than quantitative research and uses different methods to collect information which could be both primary and secondary. As already mentioned, this study chose the secondary method.

This type of research is often less costly than surveys and is extremely effective in acquiring information. It is often the method of choice in instances where quantitative measurement is not required.

The author used a deductive approach of logic and gathered data that contained general information on the topic. Through this information, the author identified specific themes of the study.

6 Findings

6.1 Use of Technology in Education

In the past, technology was used to deliver direct instructions such as instructional television and interactive radio, especially in low-income countries, and audio tapes and photocopying machines were the main aids to learning (Kinyondo et al. 2012). Today, education has expanded to include the Internet, email and the World Wide Web. Many educators are at a distinct disadvantage, as many students are more adept at using computers than they are. This situation does not only embarrass the [AU4] educator but also makes teaching less effective (Sánchez et al. 2013, p. 163).

6.2 Role of Technology in Education

Technology encompasses the whole architecture of modern education, and accounting is no exception. For instance, social media and distance learning not only make it easier for students to study and learn accountancy, the online lecture and practical application of the theory make it easier for the educator to teach and assess the students. In addition, the use of software such as Peachtree, QuickBooks, SPSS and Microsoft Excel enables students to learn different time-saving and labour-saving techniques. The shift from teacher-centred to student-centred learning has also revolutionised the way accounting is taught at all levels (Groot et al. 2013, p. 1286). Before computers were plentiful, projectors and PowerPoint presentations were used in class, and accounting transactions were recorded manually in business institutions (Czerniewicz and Brown 2013, p. 44).

7 Literature Review

7.1 Circumstances of South Africa

Two studies were conducted recently on using technology to teach accountancy, one in Spanish literature (Sanchez and Mateos 2010) and one in British literature (Basioudis and de Lange 2009), but to date, no research has been done on the subject in South Africa.

The interchange of ideas, products, etc., has led to economic and societal drivers such as globalisation, societal change, technological advances and international integration (Newby et al. 2011). These changes have forced universities throughout the world, including South Africa, to rethink the model of traditional learning. The advance in technology, in particular, has not only changed the teaching of accounting

but has also changed the culture of educational institutions. Social media plays a significant role in learning and teaching as well.

Accounting teachers need to be flexible; they have no choice but to welcome technology into their classrooms and to equip themselves to provide their students with the knowledge they need in the field of accounting (Sánchez et al. 2014, p. 75). However, while technology and social media serve a variety of roles in education, their primary role is to enable the students to learn. Therefore, educators need to be selective in their choice of technology.

The department of commercial accounting at the University of Johannesburg is among the first internationally to provide courses that integrate the theory of accounting with software packages that are commonly used in business, including credit and banking programmes for management. Graduates are equipped to eventually use the software at their place of work while applying their knowledge of accounting (Bélanger et al. 2013, p. 20).

Since 2011, the accounting course at the University of Johannesburg has combined the theoretical with practical application using accounting packages such as Sage Pastel Evolution. The students create a fictitious company and then apply the theory that they learn to manage their company throughout the semester. In other words, the topic covered in the lecture on accounting theory is applied practically.

At first, the students found it difficult to answer questions on the integration of theory with the practical and they tended to isolate the two. This was overcome by asking the students to first record transactions manually before capturing them on the system.

The fictitious firm that the students create is an imitation of a real firm, and the transactions are similar to what they will encounter in a real firm. They record the initial transactions from the source documents right through to the analysis and final preparation and interpretation of the statements (Lundgren and Robertson 2013, p. 1406). The students therefore are able to understand what running a business entails and are made ready to work in an organisation.

[AU6]

7.2 Technology and Assessment

Technology and social media were used not only to teach the students but also to assess them. Students are assessed on two levels. They are required to submit two portfolios including printouts of the documents and transactions that they processed during the classes on practical accounting. From this, the educator is able to assess whether the students can process transactions based on the theory they have learned. The fruits of this programme will be seen next year when the first batch of students graduate and enter the workplace.

The traditional way of assessment was based on two tests and an examination; different questions assessed the ability of the student to record transactions manually and on how they integrated these transactions with Pastel software. The students

were usually given snapshots of Pastel transactions and documents, and questions were based on the snapshots.

The challenges faced by the accounting department at the University of Johannesburg were similar to those faced by most educational institutions, i.e. students who did not attend the practical accounting classes. As mentioned previously, it was important for students to attend both the practical and the theoretical classes so that they could understand and integrate the accounting theory with technology.

It is evident that the students who are exposed to the current accounting educational programme are better prepared for the workplace than those who were not exposed to the programme. Students who fare better in accounting theory should be motivated to raise their knowledge of technology to the same level. Educators must also keep up with the times and be creative in the use of available technological resources to enhance learning. There is an explicit need to integrate all modes of technology and social media into the environment of learning.

7.3 Integrating Accounting Curriculum

Hejazi et al. (2003) introduced an integrated accounting curriculum in SAP accounting software and included the Enterprise Resource Planning (ERP) software package. SAP is the global leader in ERP software. Almost 2,000 businesses and educational institutions use SAP to manage and meet their need for information. The key feature of SAP's R/3 software is its richness in configuring the system for the extensive modification of programmes. The SAP is used by all the application modules. SAP has been implemented in the course on management information systems. SAP can also be used in different other courses such as operation management, which requires a junior level course. It also teaches students how resources can be planned and organised together with the strategies of organisations (Grandzol et al. 2010).

7.4 Software Packages

Information management includes marketing, sales production, logistic accounting and finance. ERP is also used to manage quality assurance and management. In finance, students are taught capital budgeting, time value of money and the relationship between risk and return. By using SAP, students have a better knowledge of quality management and can assess the feasibility of a project. It can also be used in marketing management and human resource administration.

In marketing, SAP can improve the decision-making skills of the students based on the sales and revenue data. The marketing and sales report can also enable students to declare relevant information about the customers, such as their addresses, names and the annual sales. Human resource students can also focus on administra-

tion, planning, recruitments, selection and compensation. R/3 initiatives have made improvements in the three programmes regarding technical support, continued training of the technical support personnel and continued training.

Accounting professionals have to perform various tasks such as costing, recording, budgeting and financing. To meet these demands, the quality of education must be raised. According to Ainsworth (2001, pp. 279–297), to satisfy the needs of the accounting profession, accounting teaching techniques have changed considerably over the past few years. According to Martinez et al. (1994), the following standards must be met:

- Accuracy
- Fitness of purpose
- The goals of the organisation
- The direct and indirect needs of the customer

In the past, accountants were required to only do bookkeeping, but today they must be able to also do the costing of the product, auditing, taxation, etc. (Martinez et al. 2012, p. 7303).

Integrating XBRL into the accounting curriculum is important. XBRL is an extensible business reporting language required by 500 of the largest companies for security and exchange commission filings and federal deposit institutions. As accounting is a business language, it is used to disseminate and report construction. XBRL is basically an interactive reporting language. Previously, the business reports had only the basic components of the vernacular.

Today's fast-paced and technology-driven world with its demands for expediency prompts accounting professionals to place a premium on information which is easy to find. As XBRL is proficient in streamlining financial reports, it should be taught to students so help them understand financial reporting.

According to Saudagaran (1996), there is an increasing demand for highly qualified accountants because of the improvements in accounting education and the use of technology. Carl and Desmore (1988) find video conferencing effective in teaching accounting from a studio to distance students. The students are connected to the class via the Internet or telephone. Interactive television can also be used to teach accounting.

Little research has been done on how accounting students feel about distance learning and tele-teaching. However, Seay and Milkman (1994) studied the performance of accounting students at junior level and their reaction to two-way Internet technology (IT). According to this study, students at the remote site outperformed students at the originating site. While the students at the remote site could not enrol in the IT course, they could choose traditional instruction.

During the second semester of 1996, accounting lecturers at Monash University used a camera and a microphone to manage and maintain eye contact with students between the Gippsland and Berwick campuses. The lectures proceeded smoothly, but problems such as connection, time delay for material transmission and interaction with the students were experienced. Tele-teaching by a team of accountants was again introduced in 1999 based on 1.5 h, thus avoiding start-up time. Communication

between the students and educators was encouraged by different immediate questions. The settings of the microphones and camera allowed the staff to focus on the students who asked the question and transmit their image and sound to other sites. The video and audio quality has improved to where there is no time delay. According to Freeman and Tenant (1998), the evaluations were also used for developing tele-teaching in the year 1999. Benefits included greater equality assessment and learning and increased interaction between the campuses. Disadvantage included reduction in access to the lectures and the potential for increased unruly behaviour. Tennant (1998) also found that students at remote sites could be included in the lectures and that they experienced a reduced span of concentration.

The introduction to accounting, learning objectives and complexity of content is similar all over the world. A similar procedure for selecting the course as in the past year was followed so there was a similar group as far as features and characteristics were concerned. The lecturers for the sessions remained the same as the previous tele-teaching programme; therefore, the variables were constant except for the improved tele-teaching skills and better technology (Lundgren and Robertson 2013, p. 1406).

Quantitative and qualitative procedures were used to seek information from the students. Students provided responses regarding tele-teaching based on the different questions asked. From the findings, it was concluded that the staff required more remote sites, students were treated equally, tele-teaching was a fair technique that avoided lectures being repeated and tele-teaching allowed students to learn efficiently and provided interaction with the lecturers.

According to Wright and Chamlers (2010), professional accountants generally have poor communication skills but are able to provide appropriate quantitative outcomes for an organisation. Research is needed on how to best develop accountancy to improve the performance of firms. There are three major components for the profession of accounting, i.e. practice, research and policy. Education based on these accounting components can meet the requirements of South African organisations and institutions and its economy.

Currently, most South African institutions use different information technologies successfully to resolve their problems. Accountants are more capable than in the past to present appropriate accounting to external auditors.

8 Conclusion

While several studies have been done on incorporating technology in education and using technology to assess students generally, no research has been done in accounting in South Africa.

The advancement of technology has had a great impact on the field of accounting and had enabled accountants to contribute to the success of organisations. Universities throughout the world, including those in South Africa, have been forced to rethink the traditional teaching and learning model. Almost everywhere in the

world, calculators, computers, Microsoft PowerPoint, projectors and Microsoft Excel are used as teaching and learning tools and time-saving devices for students as well as educators. Students are also taught online via distance education, and, unlike face-to-face classes, students can review the lectures again and again.

Educational strategy based on newer technology has incorporated the Internet and the World Wide Web to expand communication, have access to lecturers and students and increase resources. These changes in technology have changed the role of the educator. Technologies such as XBRL, SAP and SPSS save time and ultimately increase the efficiency of the students. To answer questions from the students, educators should fully equip themselves not only with accounting knowledge but also in the use of technology, because students are generally more adept at using computers and technology than the educators.

This paper briefly discussed the changes made in the field of accounting over the past few years and how these e-changes affect students of accounting. The paper also briefly discussed changes made in the field of accounting and the various ways in which technology can be adopted into the assessment of students.

South African universities, including the University of Johannesburg, should use technology to assess accounting students and should implement software such as SPSS, Microsoft Excel and Microsoft PowerPoint to enable the practical application of accounting theory. Developing business plans also allows students to establish what cost is incurred to start up a new business and how the business can be financed, i.e. it gives the students practical experience for starting up a new business. It is necessary for the students to manually record transactions before capturing them onto the system using various software.

9 Recommendations

The University of Johannesburg should implement e-marking to assess students of accounting. By using e-marking, secrecy and transparency can be maintained. This process first scans examination booklets electronically before splitting electronic copies into components, items and sub-questions (Calero and de Huelva 2011). With the introduction of e-marking, reliability and integrity will be maintained. Impersonation and cheating will be counteracted. Marker error will be reduced to less than 2 %. Students will meet the various challenges and deadlines for university admission. The university will be empowered to improve the practices of teaching and the outcomes of learning. Students can be given various tasks to cover what was discussed in class to build their practical knowledge and perform well in the working environment (Calero and de Huelva 2011).

The students must become familiar with accounting software so that their theoretical as well as their practical knowledge can be improved. The University of Johannesburg should also familiarise the students with the features of Moodle software, as it will

- Provide options for assessing learning materials and assessment scores
- Provide facilities for assignment submission, a discussion forum, grading, file downloading, online calendar, online announcements and news, and online quizzes
- Allow students to assess the results themselves

Moodle's modular construction supports different plug-ins such as resource types, activities, content filters, question types, graphical themes, enrolment methods, authentication methods and types of data.

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AU3	The citations Martinez (2012), Iniesta (2013), Kinyondo (2012) have been changed to Martinez et al. (2012), Iniesta-Bonillo et al. (2013), Kinyondo et al. (2012). Please check if appropriate.	
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