# Investigating Relationship between Accounting Students' Learning Style Preferences and their Academic Performance at a University of Technology in South Africa

## Madoda Cekiso[1], Jeffery Arends[2], Bulelwa Mkabile[3] and Thenjiwe Meyiwa[4]

[1]*Tshwane University of Technology, Department of Applied Languages, South Africa*
*E-mail: CekisoMP@tut.ac.za*
[2]*Faculty of Education, Walter Sisulu University, Mthatha Campus, South Africa*
*E-mail: jarends@wsu.ac.za*
[3]*Faculty of Education, Walter Sisulu University, Butterworth Campus, South Africa*
*E-mail: bmkabile@wsu.ac.za*
[4]*Durban University of Technology, South Africa*
*E-mail: thenjiwem@dut.ac.za*

**ABSTRACT** The purpose of this study was to explore the association between accounting students' learning style preferences and their academic performance at an institution of higher learning in South Africa. Kolb's Learning Style Inventory (LSI) was used to identify the learning style preferences of the first, second and third year accounting students. The students' academic performance for accounting was based on the scores obtained in the final examination assessment component. A purposeful sample of first, second and third year students registered for a Bachelor of Education degree were used in this study. The findings indicated that the majority of the first-year students were the convergers whereas the results for the second and third year students revealed that the majority were divergers. The results further revealed that the relationship between first year students' learning styles and academic performance was significant whereas there was no significant relationship between second and third year students' learning styles and their academic performance.

## INTRODUCTION

Different academic fields provide different learning environments, with differences in students' learning approaches across disciplines being observed (Meyer 1999). A number of learning styles have been identified over the years in studies that have examined the connection between a student's learning style preferences and academic performance. In these studies learning style refers to the way each student begins to concentrate, process and retain new and difficult information (Dunn 1990). Furthermore, according to Fleming (2001), learning style refers to an individual's characteristic and preferred way of gathering, organising and thinking about information. The literature reveals that research in learning styles has been conducted in various disciplines (McChlery and Visser 2009) including accounting (Baker et al. 1987; Donald

and Jackling 2007). The changed and increasingly diversified student populations in higher education across the world amplify the need for accounting lecturers to take note of their students' learning styles (Steenkamp et al. 2009). Subsequently, Gow et al. (1994: 118) urged that an in-depth examination of the ways accounting students approach their study can provide insights into how they learn and thus provide a guide to the teaching strategies needed to improve their learning. In addition, Dunn (1990) points out that it is important to identify and assess a person's learning style in order to determine what will most likely trigger each student's concentration, and cause long-term memory.

Different research instruments have been used in the past to assess the learning styles of accounting students such as Kolb's Learning Style Inventory, Honey and Mumford's Learning Style Questionnaire, Felder- Silverman Index of Learning Styles and so on. The literature on learning styles has revealed that the results based on these instruments are mixed. A concern related to the mixed learning styles research results is the construct validity and reliability of

*Address for correspondence:*
Madoda Cekiso
Tshwane University of Technology,
Department of Applied Languages, South Africa
*E-mail:* CekisoMP@tut.ac.za

the numerous instruments assumed to measure learning styles (Coffield et al. 2004; Duff 2001). However, Kolb's Learning Style Inventory was used in this study because it remains one of the most influential and widely distributed instruments to measure individual learning differences (Kayes 2005) and has tested extensively in the literature (Marriott 2002).

A number of studies on accounting students focused on approaches to learning (Byrne et al. 2004; Duff 2004; Lucas and Meyer 2004) with an aim to do course adjustments, match learning styles with teaching styles and improving instruction. According to the knowledge of the researchers, few studies have focused on the influence of learning style preferences on the academic performance of the accounting students. For example, the results of a study conducted by Cano and Justicia (1993) revealed that students with better academic achievement scored higher in Concrete Experience, Abstract Conceptualization and Reflective Observation than those with poorer academic achievement. This result is further supported by Cano-Garcia and Hughes (2000) who also demonstrate that students with better academic achievement scored higher in Concrete Experience. This indicates that learning style is one of the predictors of academic achievement; hence the current study seeks to investigate the relationship between accounting students' learning style preferences and their academic performance.

Researchers have argued that in order to promote more conceptual, and deeper forms of learning, educators need to understand how students approach learning (Duff 2004; Elias 2005). One consequence of this argument has been an increasing awareness and interest in learning styles. The term "learning style" has been defined by different authors in various ways. For example, Reid (1995) defines learning styles as a person's general approach to learning and problem solving. In addition, Fleming (2001) defines learning styles as an individualism characteristic and preferred way of gathering, organising and thinking about information. Thus, the concept of learning style provides a framework for dealing with individuality.

The literature on learning styles reveals that there are many models of learning styles. For example, Honey and Mumford's Learning Style Questionnaire, Felder- Silverman Index of Learning Styles, Biggs' (1987) Study Process Ques-

tionnaire (SPQ), Felder and Soloman's (1999) Index Learning Style (ILS), the VAK Learning Style Inventory and Kolb's (1976, 1984, 2005) Learning Style Inventory (LSI). Many studies in accounting education literature have used Kolb's model to examine various factors that could influence students' preferred learning style. The Kolb's Learning Style Inventory describes a four-stage cycle of learning which forms a continuum that learners move through over time. According to McChlery and Visser (2009), the cycle starts with Concrete Experience (CE) of an event followed by Reflective Observation (RO) leading to Abstract Conceptualisation (AC) and then Active Experimentation (AE). They further state that the Kolb's LSI model has two axes that lie behind it: AC-CE and AE-RO, reflecting two basic dimensions of learning as to how new information is perceived and acted upon. Four different groupings are formed when plotting student learning styles across the two axes: divergers, who combine concrete experience and reflective observation; assimilators, who combine reflective observation and abstract conceptualisation; convergers, who combine abstract conceptualisation and active experimentation; and accommodators, who combine concrete experience and active experimentation.

According to Kolb (1984), converger refers to an individual who wants to solve a problem and often focuses on specific problems. In addition, Chiong and Jovanovic (2011) state that the converger (doing and thinking) believes that there is a correct answer to the problem and they always approach the problem by using theories, principles and other data. On the other hand, an individual is a diverger when the person solves problems by viewing situations from many perspectives and relies heavily on ideas generating and brainstorming. Chiong and Jovanovic (2011) point out that diverger (feeling and watching) like to gather information and observe everything around him. He further states that because of these traits, the diverger is viewed as someone who is creative, open-minded, respectful of other people's perspective and has a great awareness of the perceived affordance. Kolb describes assimilator as an individual who solves problems using inductive reasoning and has the ability to create theoretical models. In addition, Chiong and Jovanovic (2011) state that assimilator (watching and thinking) prefers using a concise and logical approach. He further states

that assimilators are interested in ideas and abstract concepts over people , prefers lectures and readings over practical experience and favours being given time to think and analyse through things. On the other hand, accommodator is classified as an individual who solves problems by carrying out plans and performing experiments and adapting to specific immediate circumstances. According to Chiong and Jovanovic (2011), accommodator (doing and feeling) prefers doing "hands-on" work (action-oriented). They use other people's analysis and prefer intuition over logic.

Based on the above description of the learning styles identified by Kolb, it is important to establish which learning styles are relevant for the learning demands of accounting students. Nelson (2002) states that the aim of educational process in accounting is to achieve high quality learning outcomes. He further states that such outcomes include a broad understanding of the discipline, the ability to think critically and apply ideas and concepts to problems. According to Marriot (2010), the study of accounting involves the consideration of both conceptual and applied aspects of the subject that involves both subject specific knowledge and skills and cognitive ability and non-subject specific skills. Marriot further states that students require to develop these skills over the course of their degree programme but students do not all have the same learning style preferences. Thus, it is important to identify the link between the features of the learning style preferences and the benchmark requirements of the accounting course. For example, Marriot (2010) points out that it is important for lecturers to know which learning styles would encourage the cognitive abilities necessary to critically evaluate arguments and evidence, and analyse and draw reasoned conclusions concerning structured and unstructured problems.

The literature in accounting education revealed that higher academic performance is associated with a deep approach to learning and lower performance with a surface approach (Biggs 1987a; Eley 1992). Booth et al. (1999) conducted a study on the impact of accounting students' approaches to learning on academic performance. The results indicated that higher surface approach scores were found to be associated with less successful academic performance and also with lower self-ratings of performance relative to peers. According to these authors the results suggest that these students were using a learning approach unsuited to higher performance in the subject. In another study, Warn (2009) conducted a research on students' learning style and their academic achievement for taxation course. The results indicated that there was no significant association between the students' learning style and their academic performance despite the fact that some studies (for example, Marriot 2010; Booth et al. 1999) revealed a positive relationship between learning style preference and academic achievement. It is therefore clear that the results are mixed; hence the current study seeks to provide some evidence relating to claims that certain learning styles used by accounting students are more relevant/ productive than others to learning accounting. Therefore this study sought to investigate the relationship between accounting students' learning style and their academic performance by addressing the following research questions:

1. What is the learning style profile of the accounting students?
2. Are accounting students' academic performances associated with their learning style?

## METHODOLOGY

### Research Design

The study was quantitative in nature and followed a survey design. Surveys are normally appropriate for studies that seek to obtain participants' perceptions, opinions and belief on a phenomenon (Slavin 2007). Questionnaires were administered under controlled conditions in class to all first, second and third year accounting students. A purposive sample of 232 students was drawn for the learning style inventory. The sample consisted of all students registered for first, second and third year accounting in 2013. A letter was handed out with the questionnaire, explaining the purpose of the study and providing instructions as to how the questionnaire be completed. Participants were requested to write their student numbers so that the questionnaires should be easily matched with their examination scores in accounting. They were assured that their information was not going to be submitted or shared with anyone, but strictly only for the purpose of the research.

**Instrumentation**

The Learning Style Inventory developed by Kolb was used to explore the learning style preferences of the accounting degree students and to determine if there was any relationship between students' learning style preferences and their academic performance. This instrument was felt relevant for this study as Healey and Jenkins (2000) point out that Kolb's model is particularly well-designed since it offers both a way to understand individual's different learning styles and also an explanation of a cycle of experiential learning that applies to all individuals. The instrument contains 12 questions, which require the respondent to rank statements reflective of the identified four modes for perceiving and processing information, thereby indicating the individual's preferences for each. The questionnaire is divided into four modes, that is, Concrete Experience, Abstract Conceptualisation, Reflective Observation and Active Experimentation. The extent to which an individual prefers Concrete Experience for perceiving information is denoted in a score called "CE", and the extent to which an individual prefers Abstract Conceptualization is denoted in a score called "AC". The extent to which an individual prefers Reflective Observation for processing information is denoted in the "RO" score, and the extent to which an individual prefers Active Experimentation is denoted in the "AE" score. The lowest raw score for any of the modes is 12 and the highest is 48. Within these four modes Kolb identified four learning styles, that is, the Diverger, Assimilator, Coverger and Accommodator.

The 2013 end of the year examination marks for the accounting module were also used in this study to measure the performance of the students in accounting. The examination scores were compared with the learning style preferences of the students to establish whether there was any relationship between the learning style choice and performance in accounting.

**Data Analysis**

The data was entered and interpreted by using Statistical Package for Social Sciences (SPSS). The overall analysis of the respondents' learning styles was descriptively analysed using percentage and frequency. The chi-square test was used to analyse the association between learning styles and academic achievement in accounting. The statistical significance level was set at p=0.05.

**RESULTS AND DISCUSSION**

The results of the first research question that pertain the learning styles preferred by accounting students are presented first.

**Table 1: Learning style distribution of accounting 1st year students**

| Accommodators | Convergers | Divergers | Assimmilators |
|---|---|---|---|
| 27.08 | 31.37 | 16.56 | 24.99 |

Table 1 shows the learning style distribution of Accounting 1st year students. It reveals that the learning styles for all 1st year students in order of preference are Convergers (31. 37%), Accommodators (27. 08%), Assimilators (24. 99%) and Divergers (16. 56%). This table further shows a wide gap between the Divergers and the rest of the learning style preferences. It is also worth noting that the majority of students are Convergers. According to Putintseva (2003), the convergers are people who favour Abstract Conceptualization and Active Experimentation and also use their learning to find solutions to practical issues and they like to experiment with new ideas to simulate and to work with practical applications. A similar finding was observed by Warn (2009) who concluded that convergers were dominating among the students who were doing accounting. Warn describe the convergers as people who rely on logical reasoning rather than feelings when making decisions. Another study with the findings similar to the current study is the study conducted by Baker et al. (1986). They observed that the majority of the accounting students were convergers and the least preferred learning style by accounting students was the Diverger. According to Kolb (1981), Divergers are the people who favour Concrete Experiencing and Reflective Observation learning dimension.

**Table 2: Learning style preferences of 2nd year accounting students**

| Accommodators | Convergers | Divergers | Assimmilators |
|---|---|---|---|
| 17.65 | 26.47 | 38.24 | 17.65 |

Table 2 reveals the learning styles preferences for all 2nd year students. It reveals that learning styles for all 2nd year students in order of preference are Convergers (26.47%), Accommodators (17.65%), Assimilators (17. 65%) and Divergers (38. 24%).

Table 3 shows the learning style preferences for all 3rd year students. The order of learning style preference for these students is Covergers (19. 57%), Accommodators (19. 57%), Assimilators (26. 09%) and Divergers (34. 79%).

**Table 3: Learning style preferences of 3rd year accounting students**

| Accommodators | Convergers | Divergers | Assimmilators |
|---|---|---|---|
| 19.57 | 19.57 | 34.78 | 26.09 |

The results for the 2nd year and 3rd year students show a slightly different pattern from the 1st year students. Whereas the convergers dominated at the first year level, the divergers dominate at the second and third year levels. This finding is supported by Tinto (2007) who points out that the learning environment of an institution, in addition to that of the individual, also greatly influences the students' learning style preferences. A similar finding was observed by Marriott (2010) who concluded that the learning styles of the UK undergraduate students changed over time and this could be linked to the personal maturing of students.

Below are the results of the second research question that focused on the relationship between accounting students' academic performances and their learning style preferences.

**Table 4: Relationship between learning styles and performance of 1st year students**

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 21.207a | 12 | .047 |
| Likelihood Ratio | 23.741 | 12 | .022 |
| Linear-by-Linear Association | .088 | 1 | .766 |
| N of Valid Cases | 34 | | |

Table 4 is the presentations of 1st year students' performance against their learning styles. The Pearson Chi square shows 0. 047. This means that the relationship between 1st year students' learning styles and performance is significant. This finding is supported by the results of a similar study conducted by Marriot (2010). In his study, Marriot concluded that it is important for lecturers to know which learning styles would encourage the cognitive abilities necessary to critically evaluate arguments and evidence, and analyse and draw reasoned conclusions concerning structured and unstructured problems. A similar study was conducted by Booth et al. (1999) on the impact of accounting students' approaches to learning on academic performance. The results indicated that higher surface approach scores were found to be associated with less successful academic performance and also with lower self-ratings of performance relative to peers. Moreover, it should also be noted that the Divergers' performances, according to the statistics in table 1, are significantly higher than the rest of the students' learning styles in 1st year. Below are tables 5 and 6 depicting 2nd and 3rd year students' performance tabulated with their learning styles. The discussion of these levels is done simultaneously below as their results are similar.

**Table 5: Relationship between learning styles and performance of 2nd year students**

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 11.218a | 9 | .261 |
| Likelihood Ratio | 14.356 | 9 | .110 |
| Linear-by-Linear Association | 1.532 | 1 | .216 |
| N of Valid Cases | 34 | | |

In Tables 5 and 6, the p-values of 0.261 and 0.333 indicate that there are no significant relationships between performances and learning styles of 2nd and 3rd year students. This finding is supported by the results of a study conducted by Warn (2009). He conducted a research on students' learning style and their academic achievement for taxation course. The results in-

**Table 6: Relationship between learning styles and performance of 3rd year students**

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 10.221a | 9 | .333 |
| Likelihood Ratio | 12.824 | 9 | .171 |
| Linear-by-Linear Association | .764 | 1 | .382 |
| N of Valid Cases | 46 | | |

dicated that there was no significant association between the students' learning style and their academic performance. It should be noted, however, that the Divergers' performances, according to Tables 2 and 3 statistics are significantly higher than the rest of the 2nd and 3rd year students' learning styles.

## Implications for Teaching Accounting

The findings of this study have implications for teaching accounting to the group of students under study and to other students in similar contexts. The lecturers' knowledge of the different types of learning styles and the learning demands for each learning style preference can assist the lecturers tailor their teaching methods, classroom activities and assessment in order to cater for the needs presented by various learning style preferences. Another important implication raised in the findings of this study was that the majority of the students were convergent-oriented. This finding is of particular relevance to accounting educators as it provides some empirical evidence of widely-expressed concerns that accounting students are convergers. Larkin-Hein and Budny (2000) argue that the most effective teaching approach for students who are convergers involves the instructor functioning as a coach, and hence, providing guided practice and feedback. Novin et al. (2003) add that convergers are active learners who prefer discovery-type inquiry and above all, interactive, not passive style. They further state that to facilitate accounting students' learning, an instructor of accounting students should approach teaching from an objective approach, which allows students to learn by doing, having them work on problems and cases that allow them to evaluate alternatives and arrive at answers logically. Therefore, the lecturers should organise classroom activities that would facilitate the maximisation of opportunities for these students to succeed academically.

Another important finding of the study is that Divergers' are more relevant for learning accounting. This manifests itself in the significant academic performance of the 2nd and 3rd year students when their learning style preferences are compared to their performance in accounting. In the literature review it was highlighted that an individual is a diverger when the person solves problems by viewing situations from many perspectives and relies heavily on ideas

generating and brainstorming. In addition, Chiong and Jovanovic (2011) states that divergers like to gather information and observe everything around them. They further state that because of these traits, the diverger is viewed as someone who is creative, open-minded, respectful of other people's perspective and has a great awareness of the perceived affordance. Therefore, the lecturers' awareness of the learning style preferences associated with academic success can make it possible for them to encourage other students also to make use of that particular learning style in order to be successful in accounting.

## CONCLUSION

This study sought to investigate relationship between accounting students' learning style preferences and their academic performance. The results indicated that the majority of students were divergers. With regard to the link between learning style preference and academic performance, the 1st year students differed from the 2nd and 3rd year students. In the first year the results indicated no significant link between the learning styles and academic performance whereas in the 2nd and 3rd year there was significance in the relationship between students' performances and their academic performance.

## RECOMMENDATIONS

The results for this study suggest that as more and more lecturers adopt various approaches in teaching and engaging students in learning, tertiary students have to learn by exposing them to varied learning styles. For 2nd and 3rd year students there are learning styles that are associated with academic success. Lecturers should motivate students who do not use such strategies to apply them as they could solve their academic problems.

## REFERENCES

Baker RE, Simon JR, Bazeli FP 1987. An assessment of the learning style preferences of accounting majors. *Issues in Accounting Education*, 1(1): 1-12.
Biggs JB 1987a. *Student Approaches to Learning and Studying*. Hawthorn, Victoria: Australian Council for Educational Research.
Booth P, Luckett P, Mladenovic R 1999. The quality of learning in accounting education: The impact of

approaches to learning on academic performance. *Accounting Education,* 8: 277-300.

Byrne M, Flood B, Willis P 2004. Validation of the Approaches and Study Skills Inventory of Students (ASSIST) using accounting students in the USA and Ireland: A research note. *Accounting Education*, 13(4): 449-459.

Cano F, Justicia F 1993. Academic factors, learning strategies and learning styles. *Revista de PsicogAia General y Aplicada*, 46(1): 89-99.

Cano-Garcia F, Hughes EH 2000. Learning and thinking styles: an analysis of their interrelationship and influence on academic achievement. *Educational Psychology*, 20(4): 413-430.

Chiong R, Jovanovic J 2012. Collaborative learning in online study group: An Evolutionary Game Theory perspective. *Journal of Information Technology Education*, 11: 81-101.

Coffield F, Mosseley D, Hall E, Ecclestone K 2004. *Learning Styles and Pedagogy in Post Learning. Asystematic and Critical Review.* London: Learning and Skills Research Centre.

Donald J, Jackling B 2007. Approaches to learning accounting: A cross-cultural study. *Asian Review on Accounting,* 15(2): 100-121.

Duff A 2001. A note on the psychometric properties of the Learning Styles Questionnaire (LSQ). *Accounting Education: An International Journal*, 10(2): 185- 197.

Duff A 2004. Understanding academic performance and progression of first-year accounting and business economics undergraduates: The role of approaches to learning and prior academic achievement. *Accounting Education*, 13(4): 409-430.

Dunn R 1990. Understanding the Dunn and Dunn learning styles model and the need for individual diagnosis and prescription. *Journal of Reading, Writing and Learning Disabilities*, 6(3): 223-247.

Eley MG 1992. Differential adoption of study approaches within individual students. *Higher Education*, 23(3): 231-254.

Flemming ND 2001. *Teaching and Learning Styles: VARK Strategies.* Christchurch, New Zealand: N.D. Flemming.

Gow L, Kember D, Cooper B 1994. The teaching context and approaches to study of accounting students. *Issues in Accounting Education*, 9(1): 118-130.

Gracia L, Jenkins E 2002. An exploration of student failure on an undergraduate accounting programme of study. *Accounting Education*, 11(1): 93-107.

Healey M, Jenkins A 2000. Learning cycles and learning styles: The application of Kolb's experiential learning model in higher education. *Journal of Geography*, 99: 185-195.

Kayes DC 2005. Internal validity and reliability of Kolb's learning style inventory version 3 (1999). *Journal of Business and Psychology*, 20(2): 249-258.

Kolb DA 1984. *Experiential Learning: Experience as the Source of Learning and Development.* Englewood Cliffs, N.J.: Prentice-Hall.

Kolb's Learning Style Inventory. *Journal of Cross-Cultural Psychology*, 19: 361-379.

Lucas U, Meyer JHF 2004. Supporting student awareness: Understanding student preconceptions of their subject matter within introductory courses. *Innovations in Education and Teaching International*, 41(4): 459-471.

Marriott P 2002. A longitudinal study of undergraduate accounting students' learning style preferences at two UK universities. *Accounting Education,* 11(1): 43-62.

Meyer J 1999. Assessing outcomes in terms of "hidden" observables. In: C Rust (Ed.): *Improving Student Learning Outcomes.* Oxford: The Oxford Centre for Staff and Learning Development, pp. 25-37.

McChlery S, Visser S 2009. A comparative analysis of the learning styles of accounting students in the United Kingdom and South Africa, *Research in Post-Compulsory Education*, 14(3): 299-315.

Nelson GL 2002. Cultural differences in learning styles. In: JM Reid (Ed.): *Learning Styles in the ESL/EFL Classroom.* Beijing: Foreign Language Teaching and Research Press.

Putintseva 2003. The Importance of Learning Styles in ESL/EFL.The Internet TESL Journal, From <http://iteslj.org/Articles/Putintseva-learning Styles.html> (Retrieved 10 on May 2014).

Reid MJ 1995. *Learning Styles in the ESL/EFL Classroom.* Boston: Heinle and Heinle.

Slavin R 2007. *Educational Research in an Age of Accountability.* Boston: Pearson Education.

Steenkamp LP, Baard RS, Frick BL 2009. Factors influencing success in first-year accounting at a South African university: A comparison between lecturers' assumptions and students' perceptions. *SAJAR,* 23(1): 113-140.

Tinto V 2007. Research and practice of student retention: What next? *Journal of College Student Retention,* 8(1): 1-20.

Warn TS 2009. Students' Learning Style and Their Academic Achievement for Taxation Course – A Comparison Study. *Proceedings of the 2nd International Conference of Teaching and Learning (ICTL),* INTI University College, Malaysia.