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## Full Length Article

# Selection criteria for a radiography programme in South Africa: Predictors for academic success in the first year of study



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## ABSTRACT

**Background:** Selection criteria used to admit students to a radiography programme at the Central University of Technology (CUT) included academic criteria, as well as the General Scholastic Aptitude Test (GSAT) and Self-directed Search (SDS) Questionnaire.

**Aims and objectives:** The aim of the study was to identify which selection criteria were predictors of academic success in the first year of study. As a four year Bachelor's degree in Radiography (480 credits) was to replace the three year National Diploma (NDip) in Radiography (360 credits), selection criteria would come under review.

**Design and method:** Data from 130 students were gathered in a retrospective quantitative study. Data were edited, categorised and summarised. A statistical analysis was undertaken to identify which selection criteria predicted academic success in the first year of study.

**Results:** Statistics showed that the matriculation Admission Points Score (National Senior Certificate/NCS APS) and core matriculation subject results in Mathematics, Physical Sciences and English were adequate predictors for first-year academic success, and the subjects Life Sciences for the NSC and Biology for the Senior Certificate (SC), showed strong predictive values for first-year academic success. According to the statistical analysis, the GSAT and SDS Questionnaire did not contribute any significant information which could predict academic success.

**Conclusion:** Matriculation marks and NSC APS were adequate predictors for academic success, with a focus on Life Sciences or Biology marks as the strongest predictor. The usefulness of the GSAT and SDS Questionnaire could be questioned, and a recommendation was made to replace these tests with alternative student selection methods.

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## 1. Introduction

At the time of this study, the selection criteria used to admit students to a three year radiography programme, the National Diploma in Radiography (360 credits) at the Central University of Technology (CUT), in Bloemfontein, South Africa included academic criteria, as well as the General Scholastic Aptitude Test (GSAT) and Self-directed Search (SDS) Questionnaire. During 2010, the Health Professions Council of South Africa (HPCSA) and the South African Qualification Authority (SAQA) approved and registered a four year professional Bachelor's degree in Radiography (480 credits), on a level 8 of the Higher Education Qualification Sub-Framework (HEQSF, 2013:online), and according to the National Qualification Framework (NQF) guidelines (NQF, 2013:online). The South African Bachelor's degree in Radiography included an additional exit-level outcome where the graduate should demonstrate research skills in radiography (HPCSA 2013a:online), indicating that additional academic competencies would be required from students at degree level education. Authors Ng, White, and McKay (2008:256) highlight the need for both academic excellence and professional competence in an undergraduate radiography programme, stressing that degree programmes need to ensure both the academic development of skills such as analysis and critique, as well as improved practice skills. An assessment of the selection criteria as predictors of academic success, particularly for entry level students in the current radiography programme was considered relevant.

### 1.1. Literature review

Research into selection criteria for radiography education in other countries such as Kenya, showed that both diploma and degree level radiography education is available, and there is an articulation from the three year diploma level programme to degree level (JKUAT, 2015: online). Selection criteria in Kenya include academic achievement in core subjects. Other countries such as Australia, offer only degree level education and academic achievement in English, Mathematics and Physics is a prerequisite for admission to the Bachelor of Medical Imaging degree at Central Queensland University (CQU) (CQU, 2015: online). In the United Kingdom (UK), achievement in Mathematics, Science, Biology and English is a prerequisite for admission to Bachelor of Science in Diagnostic Radiography programme, where prospective students also undergo an interview, to establish whether they demonstrate “the right values to support effective team working and excellent patient care and experience” (Derby University, 2015: online). Additionally a disclosure and barring service (DBS) to disclose any criminal record in the UK helps selection panel members make safer recruitment decisions (2015: online).

### 1.2. Background

Against the background of the proposed transition from diploma level to degree level radiography education, an assessment of selection criteria for diploma level radiography education at the CUT during 2010–2012 was considered

relevant. A statistical analysis of the above selection criteria as performance predictors could assist selection panel members in selecting students most likely to succeed in the programme, as only a limited number of students could be accommodated annually. It could also help to identify the best practice for a future radiography programme selection process in South Africa.

Selection criteria do not stand alone in predicting the academic success of the student. It is also recognised that numerous additional factors, such as the availability of finances, student living conditions, socialisation factors, time management and dedication to studies, all play a role in the academic success or failure of the entry level student. Additionally, it is recognised that institutional intervention strategies which assist students to achieve academic success also have a positive contributing role. All registered CUT students write an Academic Language Proficiency (ALP) test at the commencement of their first academic year. This is in line with other tertiary institutions, where academic literacy tests serve as “diagnostic measures of students' learning and thinking capacities and shortcomings at this early stage of their studies” (Cliff & Hanslo, 2009:269).

All first-year students at the CUT were also expected to complete a credit-bearing English Proficiency module, unless they had evidence of credits in a language proficiency module in English at another institution of tertiary education. This module was intended to equip the student with the necessary language proficiency required for studies in tertiary education (CUT, 2013a, 2013b:online). In other intervention strategies at the CUT, entry level students identified as being “at risk” after the first cycle of formative assessment tests, may be advised by educators or student counsellors to enrol in modules such as the Academic Literacy module and a Personal Competencies and Life Skills module, which include guidance in effective study methods, critical and creative thinking skills, and analytical decision-making skills (CUT, 2013a, 2013b:online).

Firstly, to consider how radiography students in this study were initially selected for the programme and secondly, to assess their academic performance in a radiography context where the practical competence of graduates is highly rated, may provide useful information for future student selections. A reflection on discipline-specific contexts may help answer questions related to student selection and admittance to institutions of higher education in South Africa. Cliff, Ramaboa, and Pearce (2007:33) considered the following questions in their research: (i) whether an understanding of students' academic literacy levels (through an initial assessment thereof) had a consequence for teaching and learning and ultimately the academic performance of the student; and (ii) whether “generic levels of academic literacy” could be related to academic performance in discipline-specific contexts.

In a recent South African study, authors Mashige, Rampersad, and Venkatas (2014:550) considered whether National Senior Certificate (NSC) results could predict first-year academic performance amongst Bachelor of Optometry students at the University of KwaZulu-Natal, South Africa. The study focused only on first-year students who had written the National Senior Certificate (NSC) examination, and did not consider other groups of students who had prior tertiary

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