

VARIABILITY OF STUDY SKILLS IN HIGHER EDUCATION: THE CASE OF RWANDAN UNDERGRADUATE STUDENTS AT THE NATIONAL POLICE COLLEGE

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ABSTRACT

This study extends knowledge production about students' study skills in higher education. It is intended to unpack variations among undergraduate students' study skills based on demographic characteristics. The article uses a comparative cross-sectional design drawing on a survey questionnaire distributed among 398 students of three programs of study at the University of Rwanda (UR), National Police College (NPC). These are Professional Police Studies (PPS), Law and Computer Science (CS) with the option of Information Security. Results indicate that students' features primarily gender, age, marital status, year of study, program of study and working experience are relevant categories to study skills. These features were found to have an effect on all study skills investigated except gender which influence test preparation and test-taking only. We argue that strategies for improving study skills at all levels of higher education should take cognizance of students' demographic features.

Keywords: study skills, variability, demographic features, higher education, Rwanda

INTRODUCTION

In higher education, students are expected to demonstrate a high level of success. However, students sometimes fall short of meeting this expectation (Green and Celkan 2011). Several studies (e.g., Ganyaupfu 2013; Nuthana and Yenagi 2009; Sabbah 2016) have identified

internal and external factors contributing significantly to the undergraduates' academic achievement. Internal factors are commonly related to students whereas external factors are correlated with students' external environment and are beyond students' control. Internal factors include personal conditions and characteristics as well as study skills. On the other hand, external factors are concerned with home, school, and teacher conditions (Alshammari et al. 2018). The present article deals with internal factors with a focus on study skills.

According to some scholars (e.g., Ganyaupfu 2013; Mashayekhi et al. 2014; Naqvi et al. 2018; Rahim and Meon 2013), study skills constitute one of the student-related factors affecting academic achievement. In the same vein, personal conditions and characteristics such as gender, age, marital status, level of education, employment status, students' intellectual ability, physical and mental health, and level of motivation have also been highlighted by several studies as student-related factors shaping their achievement at university (e.g., Alhajraf and Alasfour 2014; Christopher and Redempta 2016; Ganyaupfu 2013; Green and Celkan 2011; Rahim and Meon 2013). This study examines the interplay between study skills and personal characteristics.

The literature on undergraduate students' study skills is replete with studies focusing on the quality of students' study skills (e.g., Didarloo and Khalkhali 2014; Ezeala and Siyanga 2015; Kumar 2015; Naqvi et al. 2018; Shackebaei et al. 2015; Shahidi et al. 2014). Moreover, an extensive literature has been interested in establishing the relationship between undergraduates' study skills and demographic characteristics such as age, gender, departments, area of specialization, and levels of study (e.g. Bavi, Asilzadeh and Haghighi 2014; Didarloo and Khalkhali 2014; Ezeala and Siyanga 2015; Koki and Abdullahi 2014; Naqvi et al. 2018; Ogoemeka 2013; Yahaya and Yalwa 2016; Ossai 2012). It is noticeable that, in understanding the relationship between students' study skills and their demographic features, studies have come to different conclusions: while some studies confirm this relationship (e.g., Bulent, Hakan, and Aydin 2015; Khan 2016; Koki and Abdullahi 2014; Ossai 2012; Naqvi et al. 2018; Powell 2011; Tambawal 2011), others reject it (e.g., Ayodele and Adebisi 2013; Bavi et al. 2014; Dinçer and Akdeniz 2008; Ezeala and Siyanga 2015; Mushoriwa 2009; Sekar and Rajendran 2015). Hence, further research is needed to enrich, expand and, clarify this contested relationship.

Furthermore, while the vast majority of these academic works have been conducted in developing and developed countries, there is a dearth of such research in Rwanda. Also, research shows that previous studies combined in one study both variables, i.e., level and variability of students' study skills. We are of the view that a separate detailed study of each of these variables would provide deeper insights. With this in mind, we felt the requisite for

exclusively exploring the variability of study skills concerning demographic characteristics among undergraduates of the UR studying at the NPC in Musanze district, Northern Province. This college was chosen as a case to study chiefly because its entire student body comprises police officers contrary to other UR constituencies.

The present study aims at comparing UR-NPC undergraduate students' study skills based on demographic features including gender, age, marital status, working experience, year of study, and program of study. The study seeks to investigate how the study skills of UR undergraduate students at NPC vary with their demographic features, namely gender, age, marital status, work experience, year of study, and program of study. The study focuses on the following study skills: time management, reading, note-taking, writing, test preparation and test-taking skills. The choice of these study skills is based on their recurrence in the teaching and learning process.

The findings of this study are expected to contribute to a better and deeper understanding of variables likely to affect quality learning and teaching. They could also provide education policy officials and decision-makers with baseline information to consider while fostering quality education.

LITERATURE REVIEW

Study skills

Study skills, which are regarded as one of the utmost influences of students' performance at university (Ganyaupfu 2013; Rahim and Meon 2013), have been defined in various ways (Bulent et al. 2015). They are depicted as any cognitive, behavioral, or cognitive activity, enabling the retention, retrieval, and use of the learnt materials (Alibakhshi and Zare 2010; Pepe 2012). Study skills include abilities related to acquiring, organizing, recording, synthesizing, recalling, and using information (Gettinger and Seibert 2002; Kerka 2007). They comprise a variety of observable and non-observable actions that students are expected to accomplish before, during, and after learning to reminisce and use, in or out of class, the learnt material (Kerka 2007; Shackebaei et al. 2015; Yahaya and Yalwa, 2016). Moreover, study skills are considered as a set of strategies and activities allowing students to be well-organized and competent in learning (Smythe 2012). Drawing on these various definitions, the present study considers study skills as strategies applied by students to perform well at school and beyond.

Higher education and study skills in Rwanda

The government of Rwanda has emphasized the necessity to equip graduates with the

knowledge and skills needed to help the country realize its ambition of becoming a country with a knowledge-based economy (Tabaro 2017). One of the expected outcomes of the Second Economic Development and Poverty Reduction Strategy (EDPRS II) is to produce graduates who are ready for the labour market and equipped with essential skills termed “catalytic skills” (MINEDUC 2010). However, beyond these national aspirations, it is very important to ensure that higher education imparts skills relevant to current and future job markets at the national, regional, and global levels (MINEDUC 2013). Unfortunately, perhaps paradoxically, there is a public outcry that present-day graduates in Rwanda do not have the necessary skills to assist the country realize its goals. Several studies have found that graduates are not competent and do not possess enduring learning skills to help them perform well in their workplaces and meet the prospects of their employers (e.g., MINEDUC 2010; Mbabazi 2013).

Besides, research has indicated substantial challenges in the employability of graduates from Rwandan institutions of higher learning (MINEDUC 2010; Mbabazi 2013, International Youth Foundation 2011). This is worrying chiefly because the most basic element for securing a decent job, irrespective of sector or position, continues to be employability skills (International Youth Foundation 2011). The reluctance of private and public industries to employ graduates from Rwandan higher learning institutions is not surprising because shreds of evidences at the national and international levels show that employers attach great significance to “generic business” or “catalytic” skills (MINEDUC 2013).

Given these challenges, higher educational institutions in Rwanda are invited to greatly contribute to the attainment of Rwanda’s aspirations by improving students’ study skills. In the present study, space was created to record a student-based understanding of their learning skills. The assumption is that this approach is likely to shed light on some of the reasons underscoring the fact that present-day graduates lack essential skills for the job market. It is essential to hear from students on how they self-report their study skills because this greatly impacts their academic performance. Regrettably, limited research has been carried out in Rwandan higher education on how students perceive their ways of studying. This study aims to address this knowledge gap. More precisely, it deals with variations of study skills among undergraduate students based on their demographic characteristics.

Study skills and students’ demographic features

It has been shown that good study skills – in conjunction with other factors – constitute a variable responsible for superior academic performance (Ossai 2012). In this regard, students’ demographic features such as age, gender, marital status, and year of study have been found to interact with study skills to direct academic success (Asikhia 2010). Findings on the level of

study skills as a function of students' demographic features have been varying and sometimes contradictory as it is shown in what follows. The present study arguably sheds light on this controversy.

Study skills and gender

Various studies have shown that gender is an essential element in influencing study skills at the undergraduate level (Naqvi et al. 2018). Research found out that study skills varied with gender (e.g., Bulent et al. 2015; Khan 2016; Koki and Abdullahi 2014; Ossai 2012) where female students reported more effective study skills than males (Bulent et al. 2015; Khurshid, Tanveer, and Qasmi 2012; Ogoemeka 2013; Ossai 2012). On the other hand, other studies (e.g., Koki and Abdullahi 2014) revealed that male students had good study skills than females. Interestingly, some studies did not get any difference among the two sex groups in terms of their study skills (Ayodele and Adebisi 2013; Dinçer and Akdeniz 2008; Ezeala and Siyanga 2015; Mushoriwa 2009; Sekar and Rajendran 2015). These contradictory findings suggest that investigating gender as a relevant category to students' study skills in different contexts calls for further consideration. In this study, we answer the following question: to what extent and in what ways does gender influence students' study skills in higher learning institutions in Rwanda? How different is the support required for male and female students?

Study skills and age

Some studies (e.g., Ossai 2012; Powell 2011) show age-based differences in undergraduate students' study skills while others indicate no differences (e.g., Ezeala and Siyanga 2015). For Ossai (2012), study skills improve with age since adult students testify good study skills. Besides, Powell (2011) also indicated that students with 23 years of age and above reported using a deeper level of study skills more frequently than young students. The latter mainly embraced a surface level of study skills associated with academic failure. In this study, we explore ways in which students' age influences study skills in Rwandan higher learning institutions.

Study skills and marital status

Several studies conducted on variations in study skills among students show that there is little evidence on differences brought about by marital status. For example, Ezeala and Siyanga (2015) demonstrated that marital status does not affect undergraduate pharmacy students' study skills. On the other hand, the results of Tambawal (2011) revealed a significant difference where female married students registered effective study skills than the unmarried ones. These contradictory findings suggest that there is a pressing need to explore the role of marital status

instudents' study skills. The current study seeks to find out if single and married students self-report the same levels of study skills and the extent to which students' marital status affect their levels of study skills.

Study skills and year of study

Comparative studies on students' study skills in terms of year of study offer contradicting findings as well. For instance, Didarloo and Khalkhali (2014) found that discontinuous undergraduates (i.e., university students with a college teaching experience of two years and pursuing further education) had better scores than the continuous undergraduates (who had not yet accomplished their first degree). Moreover, according to Naqvi et al. (2018), students' study skills improve as they pass from one semester to another and years of study. With this in mind, particular attention has been placed on fresh students' study skills (Papa et al., 2016) to support them earlier in terms of developing their study skills to enhance their performance (Naqvi et al. 2018). On the other hand, Ezeala and Siyanga (2015) found no variations in students' study skills by year of study. The presence of a linkage between students' study skills in some studies and the absence of it in others suggests that this area calls for further investigation, which is partly the object of the present study. In other words, to what degree do students in Rwanda improve their skills in studying as they progress in their upper levels of studies? We aim to establish whether the year of study is a relevant category for study skills among Rwandan students in higher education.

Study skills and programs of study

Studies on the correlation between study skills and programs of study offer varying results. For instance, Sekar and Rajendran (2015) found no differences in the way science and art students study at an Indian university. Similarly, Bavi et al. (2014) indicated that there was no important difference in the study skills of nursing, midwifery, and surgical technologist students in the Faculty of Medical Sciences at Ahvaz Jundishapur University in Iran. However, Koki and Abdullahi (2014) found that undergraduate students' study skills varied with four faculties investigated: Arts/Education, Social and Management Sciences, Sciences, and Law. But, the study did not specify the degree of variability among those faculties. In the same vein, Bulent et al. (2015) findings established that undergraduates' study skills vary in terms of departments: Primary School Teaching, Computer Instructional Technologies, Pre-School Teaching, and Science Teaching at the College of Education, Yildiz Technical University at Istanbul in Turkey. The difference was witnessed in favor of the Primary School Teaching and Computer Instructional Technologies departments. Moreover, Pepe (2012) found that the two departments

had different study skills (Physical Education and Sports Teaching Department, and Classroom Teaching department) at Mehmet Akif Ersoy University, Burdur in Turkey. Physical Education and Sports Teaching students had more negative learning skills than those of the Classroom Teaching Department. According to Pepe (2012), this may be motivated by the fact that Physical Education and Sports Teaching students are often given aptitude tests like sports skills, and their program of study mostly comprises applied subjects related to sports while the curriculum of the Department of Classroom Teaching consists of theoretical subjects. If this is the situation elsewhere, how is the situation about Rwandan university students? In what ways do they register different levels of study skills in terms of their program of study?

Study skills and working experience

It is apparent from the studies we reviewed that students' study skills differ in their work-related demographics. Ezeala and Siyanga (2015) found that mature students with working experience (parallel participants) had better study skills than young students from high school (regular students) mainly in time management and writing skills. The study attributed this discrepancy to the fact that most of the parallel participants had more experience and were mature compared to regular students who had little or no clinical experience. In our study, we sought to investigate whether work experience is a relevant category to study the skills of Rwandan university students.

THEORETICAL REVIEW

The present study is grounded in the Social Cognitive Theory proposed by Bandura (1989). It is also located in the approaches to learning (Prosser and Trigwell 1999). For learning to take place and be successful, the theory of Bandura emphasizes individual aspects such as personal efforts, peer support as well as other sources of influences (Bandura 1989). The main idea is that individuals are influenced by psychological and social factors resulting from indirect or direct processes including self-regulatory and self-reflective processes (Bandura 1986). In this regard, study skills such as time management, note-taking, reading, writing, test preparation, and test-taking skills are certainly influenced by individual features, mostly individual efforts, societal environment, and other sources of stimuli.

In return, these individual features can impact students' approaches to learning, resulting in qualitative differences in how students learn (Prosser and Trigwell 1999). The way students approach their learning has been extensively studied by scholars such as Biggs (2012); Herrmann, McCune, and Bager-Elsborg (2017); Marton and Säljö (1996); Prosser and Trigwell (1999). These scholars pointed out three approaches to learning namely surface, deep, and

strategic/achieving, all of which are determined by the intention that the student has for learning. The student who intends to understand the subject will adopt a deep approach to learning; the student intending to satisfy the requirements for assessment or to reproduce the material presented will opt for surface learning. A student whose intention is to achieve high grades will embrace a strategic/achieving approach, which is driven either by the achievement motivation or the sense of responsibility. However, with continuous research in approaches to learning, it was found that, in a strategic approach, the determination to do well is not driven by an element of competition. On the contrary, the determination to do well is a typical feature of organized effort which is measured in terms of efficient organization of time management, studying, concentration, and effort (Entwistle and McCune 2004). Besides, Entwistle (2009) demonstrated that organized effort can also be used in a deep or surface approach to learning. Combined with a surface approach, the organized effort has served students well before entering university and may well still lead to satisfactory levels of performance early in a degree course. But later on, it will become increasingly ineffective as tasks and assessment criteria change. For example, when assessment requires an understanding of the material, only a deep approach combined with organized effort will be successful. Therefore, for Entwistle (2009), to address the imbalance in the reasons of failure advanced by some students accusing their universities or colleges of being responsible for their failure with poor teaching and inadequate supervision, some higher learning institutions have been introducing students to the idea of “responsible learning right” from the beginning of the course with a moral imperative to put sufficient time and effort into their independent learning. Students are then reminded that study organization, time management, effort, and sustained concentration are their responsibility (Entwistle 2009). Of course, lecturers have the duty and responsibility to help students learn. But in the end, it is the students who have to do the learning (Entwistle 2009). Hence, in this study, we consider the extent to which NPC students’ demographics impact their approach to learning.

METHODS

Research design

This study follows a comparative quantitative cross-sectional design. It seeks to compare students’ study skills on the basis of demographic features mainly gender, age, marital status, working experience, year of study, and program of study.

Participants

The total study population was 398 undergraduate students of PPS, Law, and Computer Science

with the option of Information Security of the UR at NPC. This population was not sampled because it was found not large. The concerned students were those of the 2016–2017 academic year from all years of study, that is, Year One up to Year Four. Students were mostly taken as respondents since their views are currently seen as important in assessing the quality of education offered in higher education (Hakim 2014).

As Table 1 shows, both male and female students were involved in this research even if males (87.9%) outweighed females (12.1%). The limited number of females might have roots in long-lasting history of women discrimination in various social, economic, and political domains in the Rwandan society. It is an indication that, in Rwanda, female students are fewer in higher education than their male counterparts. As Tusiime et al. (2017) argue, there is an underrepresentation of females in Rwandan public universities (31.1% of female against 68.9% of males) mainly because male students generally perform better than females at the upper secondary level which is the main factor determining admission to public universities.

Concerning age, the study engaged predominantly with young students (18–35 years) who represented 89.2 per cent. A limited number of students were aged above 36 (10.8% only), which suggests that in Rwanda, university students are predominantly young. In terms of marital status – the majority of participants were single (78.4%) in comparison to married students (21.6%). This finding reveals that university students in Rwanda are predominantly single. With regard to work experience, results show that half of the respondents (50%) did not have any work experience while 29.6 per cent registered less than 5 years of work experience. As for respondents' years of study, all four years of study are represented and their size is relatively the same. Lastly, for the program of study, the PPS has a lower number of students (31.4%) than Law (34.7%) and Computer Science students (33.9%). This unequal number may be due to institutional needs, students' preferences and background studies.

Table 1: Respondents' demographic features

Variable	Category	Frequency	Percentage (%)
Gender	Female	48	12.1
	Male	350	87.9
Age	18–24	183	46.0
	25–34	172	43.2
	35–45	43	10.8
Marital status	Single	312	78.4
	Married	86	21.6
Working experience before joining the UR (years)	Zero	199	50.0
	< 5	118	29.6
	6–10	49	12.3
	11–15	18	4.5

Variable	Category	Frequency	Percentage (%)
	Over 15	10	2.5
	Missing	4	1.0
Year of study	Year 1	107	26.9
	Year 2	98	24.6
	Year 3	104	26.1
	Year 4	89	22.4
Previous status before joining the UR	A police officer	189	47.5
	A civilian	209	52.5
Program of study	PPS	125	31.4
	Law	138	34.7
	Computer Science with the option of Information Security	135	33.9

Source: Primary data 2018

Measures

A self-reported questionnaire was administered to gather quantitative data. Questionnaire items were adapted from Bajwa et al. (2011); Columbia Basin College (2011); and Sabbah (2016). The questionnaire was a five-point Likert-type scale survey (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). It encompassed six scales linked to the key components of study skills under inquiry: time management skills (13 items), notes-taking skills (11 items), reading skills (10 items), writing skills (14 items), test preparation skills (9 items), and test-taking skills (12 items). The questionnaire was piloted to 95 undergraduate students of the Forensic Science program. These were NPC students but UR students yet as the program begun a little later than the previous programs and process of including them in UR programs is still ongoing. The questionnaire was polished drawing on the responses from the piloting stage.

Procedure

Authorization to carry out research at NPC was acquired from the Inspector General of the RNP through the NPC Commandant. Targeted students agreed to take part in the study after being informed about the purpose, requirements, and advantages of partaking in the study. Data were collected at NPC/Musanze District in the 2nd semester of the 2017 academic year, in two weeks from May 1st to 12th, 2017. The data collection process took place in students' respective classrooms where questionnaires were distributed, completed and collected the same day. Data entry and analysis were done using SPSS software version 25. The questionnaire was set referring to the research objective and was validated by all authors of this article before and after being piloted. The instrument was trustworthy with Cronbach's Alpha higher than .72 for all investigated scales as shown in Table 2.

Table 2: Reliability of scales

Scale	Cronbach Alpha
Time management skills	.77
Notes taking skills	.78
Reading skills	.78
Writing skills	.86
Test preparation skills	.72
Test taking skills	.76

FINDINGS

The present study is intended to establish whether students' study skills vary with their demographic characteristics namely gender, marital status, work experience, year of study and program of study. Drawing on descriptive statistics generated about study skills scales, inferential techniques including the independent samples t-test and the one-way ANOVA were employed to establish the variability of students' study skills.

Table 3:. Descriptive statistics about study skills scales

Study skills scales	N	Mean	SD	Min.	Max.
Time management skills	398	49.91	6.89	29	65
Writing skills	398	49.52	8.66	24	70
Test taking skills	398	47.14	6.10	19	60
Reading skills	398	39.83	6.37	20	53
Notes taking skills	398	38.54	6.98	19	55
Test preparation skills	398	33.11	4.96	20	45
Study skills Total	398	258.05	30.95	161.0	337

Study skills and gender

Results indicate that study skills varied in relation to gender where males ($M = 259.00$; $SD = 30.65$) did better than females ($M = 251.12$, $SD = 32.51$). In particular, a statistically significant difference was found between female and male students in their test preparation skills [$t(396) = -2.026$; $p < .05$] and test-taking skills [$t(396) = -2.874$; $p < .05$]. Concerning test preparation skills, male students reported slightly higher levels of study skills ($M = 33.29$; $SD = 4.903$) compared to their female counterparts ($M = 31.75$; $SD = 5.229$). Cohen's D score [1] shows that the difference is medium (.30). With regard to test-taking skills, male students also reported relatively higher levels of study skills ($M = 47.47$; $SD = 5.825$) in comparison to females ($M = 44.79$; $SD = 7.483$). Considering Cohen's D score, this difference is medium (.40). Conversely, there was no statistically significant difference between females and males ($p > .05$) and other study skills (i.e. time management, notes taking, reading, and writing skills). Overall, results

indicated a moderate difference between males and females in two types of study skills only, that is, test preparation and test-taking skills where males did better than females. This finding infers that male students are likely to achieve higher grades than their female counterparts. These findings suggest that while strengthening UR students' study skills at NPC, gender should be considered as a relevant category. In other words, an emphasis should be placed on female students particularly in two categories of skills, i.e. test preparation and test-taking abilities.

Study skills and age

Results indicate that, except for test preparation skills ($F(2, 395) = 2.374; p > .05$), there is a statistically significant difference between the three groups of age (i.e., 18–24; 25–34; and 35–45) in relation to the rest of study skills under investigation: time management ($F(2, 395) = 4.244; p < .05$); notes taking ($F(2, 395) = 6.541; p < .05$); reading ($F(2, 395) = 4.405; p < .05$); writing ($F(2, 395) = 16.063; p < .05$); and test taking skills ($F(2, 395) = 4.667; p < .05$).

As Figure 1 shows, young students (18–24 years) had lower levels of study skills ($M = 250.50; SD = 32.05$) than adult ones ($M = 264.40; SD = 28.17$ for the 25–34 age group, and $M = 264.79, SD = 30.131$ for the 35–45 age group). This situation may be attributed to the fact that the group of young students comprises mainly those in Year One. It can be assumed that these newcomers are still struggling to get acquainted with the academic jargon. This finding implies that young students mainly enrolled in Year One, deserve special attention to make improvements in how they study, and, by extension, in their academic achievement.

Study skills and marital status

The findings indicate that single and married students differed in their study skills, where married students did better ($M = 266.02; SD = 27.06$) than single ones ($M = 255.85, SD = 31.62$). A statistically significant difference was particularly observed in time management, notes taking, reading and writing skills. However, there is no statistically significant difference in their test preparation [$t(396) = -.685; p > .05$], and test-taking skills [$t(396) = -.732; p > .05$].

In terms of time management skills, married students showed a slightly higher level of study skills ($M = 51.65; SD = 5.790$) than single students ($M = 49.43; SD = 7.097$). However, the difference carries a moderate weight because Cohen's *D* score is medium (.34). In relation to notes taking skills, married students also had relatively higher levels of study skills ($M = 40.28; SD = 6.177$) than single students ($M = 38.06; SD = 7.130$). Considering Cohen's *D* score, the difference is medium (.33). Similarly for reading skills, married students had slightly higher levels of study skills ($M = 41.24; SD = 5.26$) than single ones ($M = 39.45; SD = 6.61$). However,

the difference is medium (.30) considering Cohen's D score. Furthermore, with regard to writing skills, married students also had higher levels of study skills ($M = 51.85$; $SD = 8.15$) than single students ($M = 48.88$; $SD = 8.71$). The difference is medium referring to Cohen's D score whose value is .35.

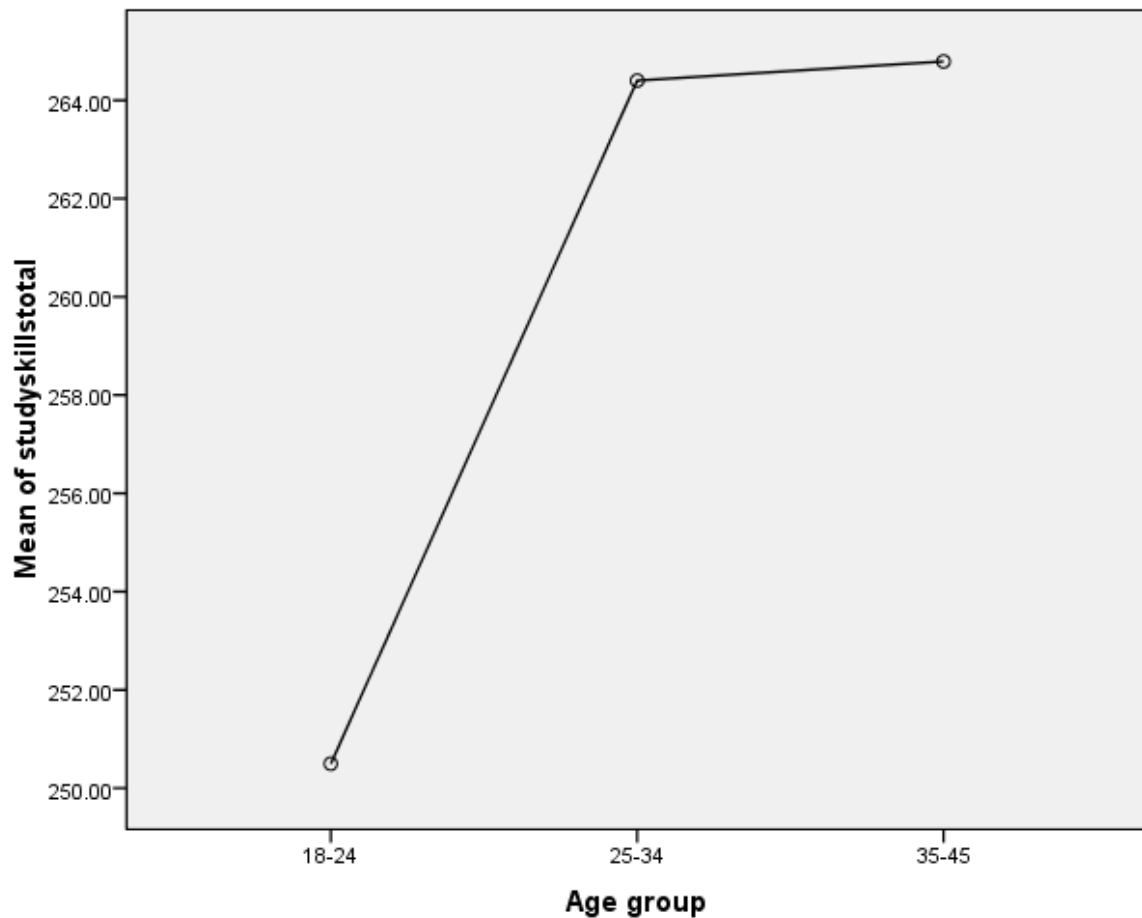


Figure 1: Means plot for total study skills according to age

Overall, it is seen that, according to students' marital status, there is a moderate difference in many students' study skills investigated (four out of six) i.e. time management, notes taking, reading, and writing skills. In other words, married students tend to possess slightly higher level of study skills than single ones. This finding implies that while improving students' study skills, single students must be given special support.

Study skills and working experience

The results indicate that, with the exception of test preparation skills ($F(4, 389) = .644$; $p > .05$), there is a statistically significant difference in study skills amongst the five categories of students in term of their work experience before joining the UR, that is, zero work experience, between 1–5, 6–10, 11–15, and over 15 years. Variances are observed in relation to time management ($F(4, 389) = 4.616$; $p < .05$), notes taking ($F(4, 389) = 4.822$; $p < .05$), reading ($F(4,$

389) = 2.937; $p < .05$), writing ($F(4, 389) = 5.424$; $p < .05$) and test-taking skills ($F(4, 389) = 1.619$; $p < .05$). Findings show that students who had over 15 years of working experience before joining UR had better time management skills ($M = 55.28$, $SD = 4.614$), note-taking skills ($M = 41.80$, $SD = 3.910$), and writing skills ($M = 54.40$, $SD = 8.695$) than the remaining categories.

However, students having between 11 and 15 years of experience registered better study skills than others in terms of reading skills ($M = 43.33$; $SD = 5.445$) and test-taking skills ($M = 49.00$; $SD = 6.417$). This difference could be attributed to the fact that these are mature students who were used to such transferable skills at the workplace. In addition, students, who did not have working experience before joining UR presented a lower level of study skills compared to others in time management skills ($M = 48.71$, $SD = 7.005$), note-taking skills ($M = 37.18$, $SD = 7.243$), reading skills ($M = 39.16$, $SD = 6.715$), writing skills ($M = 49.61$, $SD = 8.560$) and test-taking skills ($M = 46.54$, $SD = 5.672$).

In short, it was found that study skills vary according to the work experience of students before joining the UR in five out of six study skills investigated. Students who had more than 10 years of working experience had better study skills ($M = 275.01$; $SD = 26.650$) than those having no experience or having less than 10 years of working experience ($M = 258.22$; $SD = 29.240$). In other words, students who did not have work experience before coming to study at UR – NPC had a lower level of study skills than others. Thus, the results suggest that the work experience is a relevant category to student study skills. In the light of these results, it would be reasonable to suggest that, when strengthening students' study skills, particular attention should be directed to the identification and support of students with no previous work experience.

Study skills and year of study

The results show a statistically significant difference among the four years of study in all study skills investigated: time management ($F(3, 394) = 4.212$; $p < .05$), note-taking ($F(3, 394) = 13.577$; $p < .05$), reading ($F(3, 394) = 14.289$; $p < .05$), writing ($F(3, 394) = 43.661$; $p < .05$), test preparation skills ($F(3, 394) = 17.413$; $p < .05$) and test-taking skills ($F(3, 394) = 11.592$; $p < .05$).

As Figure 2 shows, students in Year Four have good study skills in all domains under consideration ($M = 277.89$; $SD = 24.01$). They are followed by year three ($M = 260.12$; $SD = 28.50$), then comes Year Two ($M = 253.69$; $SD = 28.50$). Year One students ($M = 243.52$; $SD = 31.79$) come last. This means that, as students advance in the year of study, their study skills improve because they get accommodated to academic life. In short, findings indicate unambiguously that study skills vary depending on the year of study because the difference was found in all study skills. This finding suggests that, while enhancing students' study skills, the emphasis has to be placed on first year students.

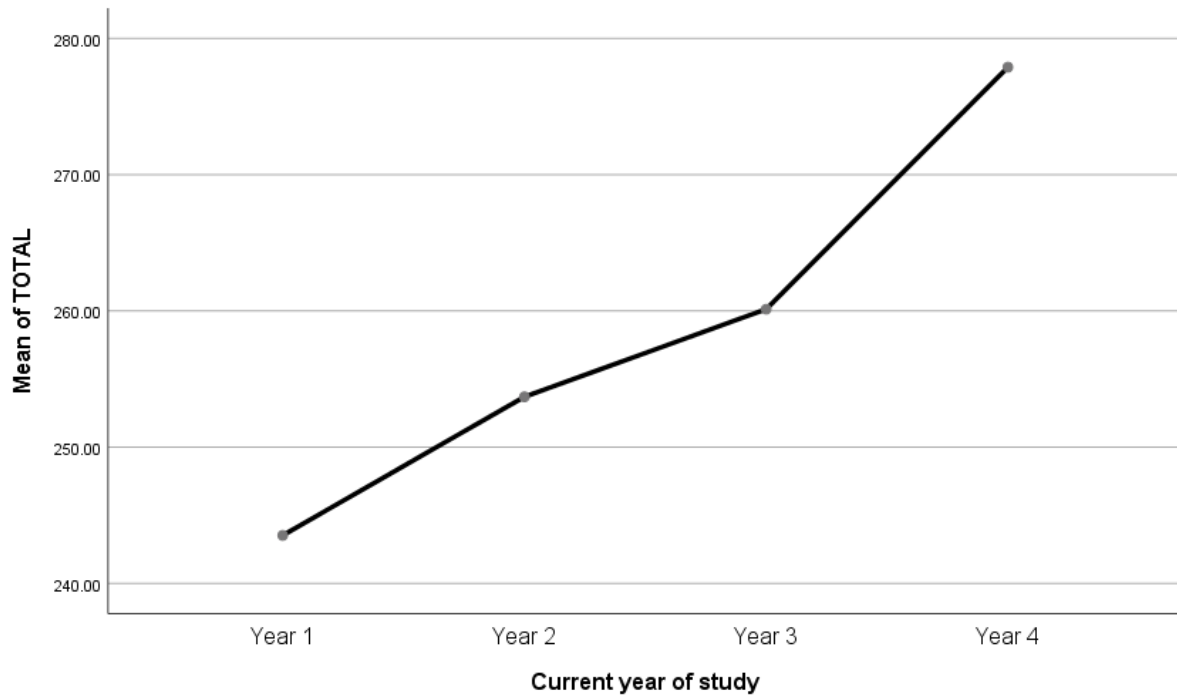


Figure 2: . Mean plot of total study skills according to level of study

Study skills and programs of study

The findings indicate differences in study skills in the three programs of study namely PPS, Law, and Computer Science with the option of Information Security. Concerning time management ($F(2, 395) = 7.404; p < .05$), note-taking ($F(2, 395) = 3.733; p < .05$), writing ($F(2, 395) = 13.681; p < .05$), test preparation ($F(2, 395) = 6.605; p < .05$) and test-taking skills ($F(4, 389) = 1.619; p < .05$), Law students fared better than their counterparts. However, there is no statistically significant difference in reading skills among the three programs ($F(2, 395) = 2.215; p > .05$).

For time management, there was a difference between Law and PPS, and between Law and Computer Science students. Undergraduate students from Law self-reported more skills in managing their time ($M = 51.53; SD = 6.12$) than PPS ($M = 49.78; SD = 6.37$) and Computer Science students ($M = 48.38; SD = 7.716$). Concerning note-taking skills, the difference was observed between Law and Computer Science, where Law students register higher skills in their habits of taking notes ($M = 38.22; SD = 6.78$) than CS students ($M = 37.55; SD = 7.99$).

There were also differences in writing skills between Law and PPS, Law and CS, and between PPS and CS. Law students had more writing skills ($M = 52.47; SD = 8.142$) than PPS ($M = 48.49; SD = 9.120$) and CS ($M = 47.44; SD = 7.96$). The difference was also observed in test preparation skills between (i) Law and PPS, and (ii) between Law and CS students. Law students reported high levels of test preparation skills ($M = 34.31; SD = 5.257$) than CS ($M =$

32.64; SD= 4.69) and PPS students (M = 32.27; SD = 4.68). For test taking skills, there were differences between (i) PPS and Law students; (ii) PPS and CS students; and (iii) Law and CS. In all cases, Law students self-reported higher levels of test taking skills (M = 48.75; SD = 5.75) than CS (M = 46.69; SD = 5.76) and PPS students (M = 45.86; SD = 6.46).

From these results, it is evident that study skills varied according to programs of study. Differences were found between all three programs of study and about five out of six areas. The overall findings indicate that Law students were better in study skills (M = 267.24; SD = 27.58) than PPS (M = 253.46; SD = 30.56) and CS students (M = 252.89; SD = 32.59) in all areas. Results also indicate that CS students self-reported low levels in study skills (M = 252.89; SD = 32.59) compared to PPS students (M = 253.46, SD = 30.56). This means that while improving students' study skills, special attention must be directed towards CS students.

DISCUSSION

The current study found that students' study skills vary depending on their age, marital status, work experience before higher education, year of study, and program. These findings are consistent with those observed in some earlier studies but also disagree with a few others. The findings in this study inform the theory and practice of learning in higher education.

Firstly, the results reveal that students' study skills moderately differ according to gender only in test preparation and test-taking skills where males do better than females but no difference was observed in time management, note-taking, reading, and writing skills. This result confirms other findings where undergraduates registered gender differences in study skills (e.g., Koki and Abdullahi 2014; Ogoemeka 2013; Ossai 2012). The results are also in line with other studies which did not establish any difference in the study skills of females and males (e.g., Ayodele and Adebisi 2013; Dinçer and Akdeniz 2008; Ezeala and Siyanga 2015; Mushoriwa 2009; Sekar and Rajendran 2015). The reason for this dual agreement might be because those studies did not provide precisions with regards to types of study skills as it is the case for the present study. Additionally, results of this study corroborate those of Koki and Abdullahi (2014), who found that males had better study skills than females. However, findings contradict the findings of Ossai (2012); Bulent et al. (2015); Khurshid et al. (2012), and Ogoemeka (2013) who found that female students reported more effective study skills than their male counterparts.

The fact that the findings of this study confirm some studies but contradict others is an indication that the relevancy of gender to study skills might be context-specific. In this study, the noticeable moderate difference in few study skills between males and females (test preparation and test-taking only) may be attributed to enormous efforts deployed by the

Government of Rwanda in order to promote girls' education at all levels. Thus, there is a need to devise strategies meant to eliminate the remaining gender disparities in test preparation and test-taking skills. More specifically, female students enrolled at UR in NPC deserve special care. Moreover, the moderate variance between males and females in two types of study skills only, that is, test preparation and test-taking skills where males did better than females, entails that male students are likely to achieve higher grades than their female counterparts. The academic results of 2016–2017 of PPS students (PPS Department database 2017) illustrate the implication. In fact, among the 76.6 per cent of PPS students who passed, 8 per cent were females against 68.6 per cent males. But study skills are not the only factors affecting female students' academic achievement. Tusiime et al. (2017) revealed other factors affecting female students in their academic pursuit including early motherhood, loss of parents or guardians, poor performance in A level examinations, family duties, and lack of counseling services related specifically to gender and gender stereotype.

Secondary, findings indicate that study skills vary with age because of a statistically significant age group difference (between 18–24; 25–34 and 35–45 years) in most of the study skills, that is, in five out of six study skills investigated. These results agree with Ossai's (2012) findings that demonstrated the contribution of age difference in students' study skills, but contradict Ezeala and Siyanga's (2015). The latter found no significant differences in students' study skills by age. The finding also contradicts Yahaya and Yalwa (2016) who found that students were not significantly different in most of the study skills by age group.

This confirmation and contradiction can be seen as an indication that the relevancy of age to study skills might be context-specific. The present study indicates that young students have a lower level of study skills than adult ones, which suggests that students' study skills improve as they grow old. The younger students' lower levels of study skills can be due to the fact that the group of young students comprises mainly those in Year One who are still struggling to get acquainted with the academic jargon. This finding implies that young students, that is, those aged 18–24 mainly enrolled in Year One, deserve special attention in order for them to improve the way they study, and, by extension, their academic achievement. The results of PPS academic year 2016–2017 (PPS Department database 2017) justify the need to support these young students. In fact, in Year One, 64.1 per cent passed; in year two 63.1 per cent passed; in year three 68.4 per cent passed, and in year four 70.1 per cent passed. Therefore, it is clear that their performance improves as they progress in their levels of studies. This demonstrates the urgent need to deal with students' study skills in their early years of studies in higher education because first year students take time to adjust to college life. Thus, they need skills that will enable them to study their lessons effectively.

Thirdly, the results show a moderate difference in study skills according to students' marital status in many students' study skills investigated (four out of six), that is, time management, note-taking, reading and writing skills. This finding agrees with Robert, Wooster, and Chen (2009) who indicate that there is a difference between study habits of married and unmarried students. A possible explanation for this situation may be that NPC married students are likely to focus on their studies because their responsibilities as heads of families oblige them to take their academic duties seriously in order to avoid disappointing their spouses and children in case of failure. Nonis, Hudson, and Philhours (2006) support the provided reasons that married students have a clear educational goal of supporting their family and, with that goal, they are determined to perform well and graduate. Most of the time, married students have other responsibilities in comparison to unmarried students and consequently have to be particularly well organized. Likewise, Meehan (2003) pointed out that married students are academically adjusted as a result of spousal backing and positive relationships leading to complete satisfaction in life. Besides, because of their maturity, married students are more determined to complete their schooling. Therefore, in terms of academic support, single students need more attention than their married counterparts. However, the finding contradicts that of Ezeala and Siyanga (2015), who concluded that there is no variance between students' study skills and their marital status. The context may have a big influence on marital status to be relevant for one's study skills.

The results of the current study also indicate that study skills vary according to the work experience of students before joining the UR as the difference was found in five out of six study skills investigated. The possible reason is that students who were employed as police officers before joining the UR were entrusted important responsibilities requiring them to apply some study skills such as managing their time as police officers, writing and reading reports, taking notes on criminal investigations, etc. This finding is similar to that of Ezeala and Siyanga (2015) who found that the parallel programme students had superior study skills than regular students. The same authors explained that the discrepancy was ascribed to the maturity and work experience of the parallel students. Similarly, the findings of Didarloo and Khalkhali (2014) agree with the present finding as they demonstrated that discontinuous undergraduates possessed effective study skills in comparison to continuous ones. The implication is that, firstly, study skills are important transferable skills that students need to possess to perform well, not only in school but also beyond. Secondly, students with no work experience should receive particular support about all study skills.

The findings further indicate unambiguously that study skills vary according to students' year of study because the difference was found in all study skills investigated. These findings

agree with the study of Didarloo and Khalkhali (2014) who indicated that students' study skills vary according to their academic level. However, this finding opposes Ezeala and Siyanga (2015) who did not find any students' study skills variations according to their level of study. Results show that Year Four students have good study skills, followed by Year Three, then Year Two, and lastly, Year One students. This means that, as students advance in the year of study, their study skills improve. Therefore, this finding indicates that while enhancing students' study skills, emphasis should be placed on first year students. These students are still struggling to adapt to academic life. Cook and Leckey (1999) argue that first year students lack self-regulatory skills that a higher learning institution requires because they are used to the planned and controlled milieu of secondary schools. This deficiency in regulatory abilities could end in creating adjustment problems at university. Abott-Chapman, Hughes, and Wyld (1992) clarify that students with inadequate study skills are susceptible to academic adjustment difficulties. Thus, attention has to be paid to study skills development not only in first year of studies but also in high school.

Furthermore, the study shows that study skills differ in terms of programs of study. Differences of study skills were observed in three programs of study, namely PPS, Law, and CS regarding the five out of six areas investigated. Other scholars voiced similar findings. For instance, Koki and Abdullahi (2014) revealed that undergraduates' study skills varied with faculties. Bulent et al. (2015), and Pepe (2012) also found variations in respect of departments. But the finding opposes Sekar and Rajendran's (2015) findings that arts and science students do not diverge in their study skills. This discrepancy among various study findings shows that the program of study is a relevant context-specific category to student study skills.

Lastly, the findings show that Law students possess a high level of study skills while CS students have low levels of study skills. This may be explained by the fact that the CS program has more practical than theoretical courses compared to Law and PPS students. These course do not call for the frequent use of some of the study skills such as note-taking, writing skills, and so on. Pepe (2012) also provides similar reasons that students studying in the Department of Physical Education and Sports Teaching register low level of study skills because they are frequently exposed to aptitude tests such as sports skills, with a program comprising mainly practical subjects compared to the department of Classroom Teaching that comprises of theoretical subjects. This means that among the three programs, CS students need more support in study skills as they reported poor study skills. While improving students' study skills, special attention should be directed towards CS students. This is because, even though some of the study skills may not be frequently used during their studies, they will need all of them once on the job market.

CONCLUSION

The results of this study indicate that the study skills of Law, PPS, and CS students at the University of Rwanda, National Police College vary according to their demographics in most of the study skills investigated. However, gender was found to affect test preparation and test-taking skills only. Therefore, continuous support in fostering undergraduates' study skills at all levels of study should take into consideration their demographic differences. It is desirable to raise awareness about students' differences in study skills. In this regard, policy makers and managers of institutions of higher learning should take into account demographic characteristics while enhancing undergraduate students' study skills.

The study tries to give a pertinent, accurate, and detailed understanding of the variability of undergraduate study skills concerning students' demographics. However, given its survey-based nature, this study has got some limitations. Firstly, the study does not give qualitative reasons for the identified differences. Therefore, a study which would investigate and analyse the factors shaping the variability of study skills is highly recommended. Secondly, the research area was limited and consequently a small number of the population was included. It was carried out among UR students who are also police officers. These have a social status and living conditions that differ from their colleagues. With this in mind, the results in the current study cannot be generalized to all the students of UR because not all of them display the same characteristics. Thirdly, the study used a self-reported questionnaire to collect data. Thus, responses might have been influenced by social desirability motives. Respondents might have overrated or underrated their actions.

Regardless of these concerns, the results of this study add great value to the prevailing literature on undergraduate students' study skills. More importantly, the differences identified would help designing intervention programs for improving study skills in higher learning institutions in Rwanda and beyond. The findings from this study demonstrate that study skills are influenced by students' demographics. Findings also inform us that there are qualitative dissimilarities in how students study and learn. Some students do not adopt a deep approach to learning and their learning efforts are not well organized. In other words, during their studies, some students are lacking in study skills. This may explain the widespread complaints that some graduates from higher learning institutions in Rwanda lack expected employability skills. The study also shows that studying at university is an art, and that students should be supported at all levels. The provision of support should take cognizance of students' demographic features.

NOTE

1. According to Cohen (1992), Cohen's $D = \frac{M_1 - M_2}{SD}$. M_1 = Mean of the 1st group; M_2 = Mean of the second group, and SD = Standard Deviation (when $SD_1 = SD_2$). In case $SD_1 \neq SD_2$, Cohen's $D = \frac{M_1 - M_2}{(SD_1 + SD_2)/2}$. Cohen provided that a small difference is $\leq .20$; medium difference is $\leq .50$ and large difference is $\leq .80$.

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