



## Study Skills Assessment among Undergraduate Students at a Private University College in Oman

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### Abstract

*This paper reports findings of a small-scale descriptive study that was conducted to assess the level of study skills possessed by undergraduate students enrolled in Engineering, Business Studies and Computing programs at a private University College in Oman. The study explored whether there is any correlation between study skills and academic performance and whether study skills vary in terms of gender, specialization and levels of study. A pre-tested Study Skills Inventory developed by Dennis Congo was administered on the sample. Data were analysed using both descriptive and inferential statistical methods. Among other things, the study established that most of the students lack some fundamental study skills such as critical and creative thinking as well as time management and test preparation.*

**Keywords:** study skills; academic performance; specialization; gender; level of study

### 1. Introduction

Arguably, the development of study skills plays a significant role in students' academic performance in the learning process. Study skills are considered to be important in judging students' overall potential and attainment levels (Nuthana & Yenagi, 2009). Understandably, to achieve academic excellence, students need to possess essential study skills which include time-management, organization, note taking, reading and critical thinking. Some studies have asserted that student success depends on the study skills they adopt to achieve the expected outcomes (Maribeth & Jill, 2002; Meneghetti, et al., 2007).

Today, higher education institutions are enrolling large numbers of students who come from diverse educational backgrounds and attainment levels. While this diversity enriches the student learning experience, universities appear to be grappling to maintain the desired progression rate (Wingate, 2006). It is known that a number of factors including students' intelligent quotient, physical and mental health, level of motivation, teaching aids and mental capabilities are associated with students' academic achievement. However, psychologists find study skills to be the most contributing factor in students' performance at the university level (Gholiazdeh, 2001). Students who are able to judiciously select and use the required study skills for various academic tasks are usually higher achievers as compared to the ones who are not able to do so (Meneghetti et al.,

2007). Such students manage their time effectively, use active learning methods to maintain interest and motivation by connecting reasons for study to their life goals and values.

Lack of study skills puts students at a disadvantage and they suffer tremendously at various stages along their student journey. Such students are often victims of procrastination, overconfidence, mismanagement, and stress. Most of them have expectations from home, workplace, families, and they end up juggling between these. This often has a negative reaction as they indulge in academic procrastination. They start complex assignments which demand a huge amount of time and concentration at the eleventh hour and undergo unnecessary stress and slither into the category of underachievers. This could lead to the realization that they have not developed the desired thinking and learning strategies (Alexander & Onwuegbuzie, 2007). Students with adequate study skills to perform at the tertiary level and a hard working attitude with a clear focus on achieving targets have an edge above others. Use of effective study skills is linked to positive outcomes across multiple academic content areas. Students who are exposed to a variety of study strategies and are able to execute them in an appropriate manner are typically higher achievers (Meneghetti et al., 2007).

Due to a consistent rise in student numbers and increased diversity in the student population in the recent past, a major challenge facing higher education institutions is ensuring a smooth progression of students through different levels of study. This challenge is often associated with the lack of required study skills among students which are fundamental to succeed at the tertiary level. Higher education level students face severe academic stress as the expectations are usually high demanding them to multi-task under time constraints. Hence, study skills support is an important aspect to consider in helping students achieve success and withstand the challenges they face in the academic context (Wernersbach, et al., 2014).

Different approaches are being used in higher education institutions to help students develop study skills. As argued by Madhavi et al. (2014), "students have different study skills practices which are based on their study habits, their interest in subject and type of learning they follow for schooling" (p.16). Some Universities consider the lack of desired study skills to be a problem of students who are in the 'at risk' category and therefore, focus on helping these students only, an approach referred to as 'remedial approach' by Cottrell (2001, p.40). However, there have been calls to adopt an inclusive approach in dealing with study skills. Thomas (2002) cited in Wingate (2006) contends that the educational institutions should be cautious of restricting support to the students in the 'at risk' category only. In the same vein, Blythman & Orr (2002) argue that students from all backgrounds need support for smooth progression through the academic semesters.

While some studies on study skills have been conducted elsewhere, there is a dearth of similar studies in Oman. As a result, this project is an effort to understand the level of development of study skills among undergraduate students enrolled on different academic programs in Oman. The key question was "where do our students stand in terms of study skills?" In line with this, the present study sought to establish answers to the following specific questions:

1. What are the study skills possessed by students of three disciplines (Engineering, Computing, and Business Studies)?
2. Is there any correlation between study skills and academic performance of students from the three disciplines?
3. How do study skills vary among students in terms of gender, specialization and levels of study?

## 2. Literature review

The study started with a desk-based literature review which focused on an exploration of the existing research on study skills. In this article, study skill is defined as a "competence in acquiring, recording, organizing, synthesizing, remembering, and using information and ideas" (Proctor et al., 2006, p. 37). When discussing study skills it is common to link this with academic performance. Academic performance refers to how well students score in their assessments during a term of study. This is mainly indicated by the grades students achieve in their assessments. Academic performance is often associated with the knowledge and application of effective study skills

(Meneghetti et al., 2007). The following section provides a review of studies that have focused on analysing the relationship between study skills and academic performance.

### 2.1 Study skills and academic performance

One of the key assumptions in our study was that possessing study skills is a pre-requisite for good academic performance. A number of studies have been conducted to examine the relation between study skills and academic achievement (Fazal et al., 2012; Awang, & Sinnadurai, 2011; Demir, Kilnic & Dogan, 2012; Hassanbeigi et al., 2011). Some researchers argue that study skills and academic performance have a strong relationship while others believe that it is a combination of various factors that affect students' academic performance. However, most of the researchers have documented a positive relationship between study habits and academic success at the high school (Stanley et al., 1999) as well as undergraduate levels (Jones et al., 1995; Kleijn et al., 1994). Jones et al. (1993) established that 15% of the discrepancy in undergraduate students' grades is due to study skills. Jiao & Onwuegbuzie (2002) report that similar to public school students, insufficient academic skills have been observed among undergraduate level students, with only between 50% and 58% (Agnew et al., 1993; Jones et al., 1992) of appropriate behaviors being used, on average. Similar results were reported by Lammers et al. (2001) who concluded that undergraduate students at a mid- southern university showcased only 53.0% of appropriate study behaviors. The study findings revealed that the students mainly lacked the skills of note-taking, reading, and time management. Rwehumbiza (2013) cited in Kumar et al. (2016) also asserts that most students fail in examinations simply because they lack study skills.

### 2.2 Study skills and gender

Our study sought to examine how study skills were portrayed among the male and female students. Research has proved that gender is an important variable in studies concerning students' learning. Most of the studies appear to show that female students possess better study skills as compared to males claiming that they record notes carefully and can recall more from lectures (Risch & Kiewra, 1990), spend greater amount of time on homework (Hagborg, 1991), and are more serious in goal setting and planning (Zimmerman & Martinez-Pons, 1990). However, there have been studies which report male students having better logical and analytical skills (Gledhill & Van der Merwe, 1989).

Charles-Ogan (2015) researched the influence of gender on the study skills of mathematics students in Rivers State of Nigeria. The study concluded that female students have better study habits than males. The researcher recommends counseling strategies to be adopted by teachers to improve male students' study skills. Similarly Ossai (2012) also found that female students possessed better study skills as compared to their male counterparts. Salami (2013) also established that female students were more careful when it comes to avoiding unethical acts such as cheating in the examination. He further noted that females have a greater sense of responsibility and they are more principled in areas such as attending lecturers, seeking academic assistance, adherence to timetable and note-taking.

A cross sectional study by Al-Shawwa et al. (2014) concluded that 64.7% of the female students attended almost all lectures compared to 45.7% of the male students. In addition, 45.7% of the females study for 3 to 4 hours during week days as compared to 31.4% of the males. About studying daily, 26% of the male students said that they do not study daily as compared to 17% of the females.

### 2.3 Study skills and areas of specialization

Although differences in study skills have been studied from various angles and in varied contexts, there is very limited evidence on the ways these differ between students enrolled in different disciplines. One study which explored these differences explicitly was conducted by Biberman and Buchanan in 1986 who examined differences in study skills and learning styles of students across

different specializations and found major differences in terms of both study skills and learning styles. However, a study by Sekar and Rajendran (2015) did not find any difference in study skills of Humanities and Science cohorts in an Indian university. A study by the National Survey of Student Engagement concluded that on average, students enrolled in Engineering programs study five hours more than social science or business students (Helfand, 2011). Similarly, Chitkara et al. (2014) reported that 60% of Engineering students prefer to study daily as opposed to the mere 40% who like to study at the end. In addition, most of them follow the timetable set by themselves with 21% students rigorously following their schedule and 50 % students who try to stick to the timetable.

#### 2.4 Study skills and level of study

It is often asserted that students' study skills are enhanced as they progress through academic semesters and levels of study and therefore most of the studies are conducted on freshman students' study skills (Papa et al., 2016) so that timely support can be provided in terms of developing students' skills and enhancing their performance. There is limited evidence of comparative study on study skills of students from different levels of study. Our study explores the relationship between study skills and level of study, among other things.

### 3. Methodology

This is a small-scale study that involved working in partnership with 201 undergraduate students enrolled on Engineering, Computing and Business studies courses at a tertiary institute in Oman. Using a combination of focus group discussions and a questionnaire, students were encouraged to share their experiences and to indicate the study skills they possessed. However, due to the paucity of space, the scope of this paper is limited to presentation of the quantitative data only. Below is a description of how the quantitative data were generated for the study.

The quantitative data were collected through use of an adapted version of Study Skills Inventory created by Dennis Congo which was found to be the most appropriate inventory for our study. The original inventory which is based on self-rating of skills by students consists of six domains namely reading, note-taking, memory, test preparation, concentration, and time management. We decided to include an additional domain namely 'critical and creative thinking' to the original inventory. Once the adapted version was ready, it was translated from English language into Arabic before being administered to students. Each student was given a copy of the questionnaire and they were asked to rate each study skill. Each skill had a number of questions where students had to assess themselves using a five-point rating scale. Responses ranged from 1 to 5 with the following interpretations: 1-almost never; 2- less than half of the time; 3- about half of the time; 4- more than half of the time; and 5- almost always. Based on their own rating, students added their scores to get a collective total for each skill. Once the students finished rating themselves, they were supposed to calculate and then summarize their scores in a table which helped them to verify whether they reach the benchmark or not. A benchmark score was allotted to each skill depending on the number of questions. For example, the skill of concentration is rated through 10 questions and a student getting 5 for each question might reach a total of 50 which is an exceptional rating. A benchmark score of 35 is given for concentration which denotes that if a student scores less than 35, there is a need to work on improving this skill.

Quota sampling technique was adopted to reflect the diversity of the student population. The three departments, Engineering, Computing and Business Studies, were requested to select two cohorts, one from year 1 and one from year 4 so that students' skills at the entry and exit level can be tracked. A total of 201 students (139 females and 62 males) filled the inventory (refer Table 1 below). The data were analyzed using SPSS. Analysis focused on describing the patterns in the data, for e.g. the frequencies, the mean scores, and standard deviation for each skill. Statistical analysis was conducted using Chi-square test to explore the relationships between variables such as cumulative GPA, gender, and level of study and the students' study skills.

**Table 1:** Participants of the study

| Department   | Level of study | Gender |        | Total |
|--------------|----------------|--------|--------|-------|
|              |                | Male   | Female |       |
| Computing    | First year     | 0      | 32     | 32    |
|              | Fourth year    | 1      | 30     | 31    |
|              | Total          | 1      | 62     | 63    |
| Eengineering | First year     | 6      | 15     | 21    |
|              | Fourth year    | 13     | 17     | 30    |
|              | Total          | 19     | 32     | 51    |
| Business     | First year     | 20     | 20     | 40    |
|              | Fourth year    | 22     | 25     | 47    |
|              | Total          | 42     | 45     | 87    |
| Grand Total  |                | 62     | 139    | 201   |

#### 4. Results

The study results show a mixed picture with a considerable majority of students thinking that they do possess most of the study skills that were assessed, whilst acknowledging a lack of some of the skills such as test preparation and critical thinking skills. The results obtained from each department, showing different specializations are presented in Table 2 below.

**Table 2:** Responses of students for all study skills

| Department<br>(Specialization) | Year of study | Gender | Frequency | Average CGPA | Core Skills (Average scores) |                  |             |                       |                    |                      |                                   |
|--------------------------------|---------------|--------|-----------|--------------|------------------------------|------------------|-------------|-----------------------|--------------------|----------------------|-----------------------------------|
|                                |               |        |           |              | Reading [30]                 | Note taking [20] | Memory [30] | Test Preparation [40] | Concentration [35] | Time Management [20] | Critical & creative thinking [20] |
| Computing                      | 1             | M      | -         | -            | -                            | -                | -           | -                     | -                  | -                    | -                                 |
|                                |               | F      | 32        | 2.07         | 29.5                         | 19.9             | 36.7        | 44.3                  | 39.6               | 21.3                 | 18.6                              |
|                                | 4             | M      | 1         | 1.65         | 24.0                         | 15.0             | 24.0        | 32.0                  | 39.0               | 14.0                 | 15                                |
|                                |               | F      | 30        | 2.21         | 29.5                         | 18.2             | 35.6        | 40.0                  | 38.7               | 19.2                 | 16.6                              |
| Engineering                    | 1             | M      | 6         | 2.97         | 32.5                         | 19.7             | 34          | 48                    | 40                 | 19.2                 | 23                                |
|                                |               | F      | 15        | 2.40         | 29.9                         | 21.7             | 34.5        | 45.1                  | 39.5               | 20.1                 | 18.6                              |
|                                | 4             | M      | 13        | 2.37         | 32.2                         | 19.5             | 36.2        | 31.1                  | 30.5               | 33.5                 | 19.4                              |
|                                |               | F      | 17        | 3.01         | 34.5                         | 19.9             | 30.9        | 30.0                  | 30.6               | 30.9                 | 16.8                              |
| Business                       | 1             | M      | 20        | 3.62         | 27.3                         | 18.4             | 29.9        | 27.7                  | 30.2               | 22.9                 | 22.2                              |
|                                |               | F      | 20        | 2.37         | 24.2                         | 19.3             | 31.5        | 28.1                  | 29                 | 21.1                 | 23.9                              |
|                                | 4             | M      | 22        | 2.45         | 31.9                         | 21.8             | 34.1        | 28.8                  | 29.4               | 23                   | 18.9                              |
|                                |               | F      | 25        | 2.07         | 32.9                         | 20.5             | 33.4        | 32.2                  | 32.3               | 20.6                 | 18.7                              |

□ Scores in brackets are the benchmark scores, that is, the minimum score that students are expected to achieve in each skill.

#### 4.1 Study skills in terms of specialization and level of study

##### 4.1.1 Computing

In the first year cohort, there were only 32 female students. All of them rated themselves above the benchmark average score in 4 study skills namely memory, test preparation, concentration and time management. On the other hand, the results show that the students lacked study skills including reading (slightly below the benchmark), note taking (slightly below the benchmark), critical and creative thinking. In the fourth year, the cohort had only one male student and 30 female students. The male student rated himself below the benchmark score in most of the study skills except the

'concentration skill'. The fourth year female student scores showed that they lacked reading, note taking, time management, critical and creative thinking skills. One striking observation is that first year students rated themselves highly in all skills compared to fourth year students' ratings.

#### 4.1.2 Engineering

Similarly to students in Computing, it was observed that first year Engineering students rated most of their study skills highly compared to fourth year students. In general, the first year students rate themselves highly in most of the skills. For instance, male students only indicate two skills below the benchmark average score namely note-taking and time-management. Interestingly, the males in this group think they have good critical and creative thinking skills while the female students indicate that they are below the benchmark average score in two skills: reading (slightly below the average score) and critical and creative thinking. In the fourth year cohort, both male and female students indicated that they are below the benchmark score in note taking (slightly below average) and in critical and creative thinking skills.

#### 4.1.3 Business Studies

For the first year cohort, both male and female students indicated scores above benchmark in time management and critical thinking and creativity, however, they are all below the benchmark scores in the rest of the skills. For the fourth year cohort, despite the male students having a higher CGPA compared to female students, the results show that both male and female students rated themselves the same in almost all the study skills. They all rated themselves above the benchmark average score in reading, note taking, memorization and time management skills while they are weak in test preparation, concentration and critical thinking. In contrast to the pattern in the other two departments, in Business studies, fourth year students rated themselves highly in most of the skills compared to the ratings by first year students.

#### 4.2 Study skills and academic performance

An analysis of the relationship between the students' academic performance (shown by their CGPA) and the development of study skills was conducted using Chi-Square test. We were keen to establish whether it is true that students with a high CGPA score will have a high score in each of the skills or vice versa. The Chi-Square test results showed that there was no evidence for us to come up with a reasonable conclusion that such a relationship exists. One example of analysis involved the analysis of CGPA and the reading skill of all students. In all the specializations, Computing, Engineering and Business Studies, the data revealed a mixed picture, some students with high CGPA had a low score in reading skills and in some cases, students with low CGPA scores had a high score in reading skills. The Chi-Square test results show that there is no statistically significant relationship between CGPA and reading skills ( $\chi^2=16.2$ ,  $df=16$ ,  $p=0.05$ ). Similar tests were conducted with each study skill and the results did not reveal any significant relationship between CGPA and study skills.

#### 4.3 Study skills and Gender

An analysis of the relationship between gender and the development of study skills was conducted using Chi-Square test. It was not possible to analyse the pattern in the Computing department because the sample was skewed, however, analysis of responses of students from Engineering and Business Studies revealed that there is no statistically significant difference between male and female students when it comes to the development of study skills.

### 5. Discussion

All the participating students were able to articulate the extent to which they believed they had

developed study skills. It emerged clearly that most of the students in the study felt that they lack critical and creative thinking as well as test preparation skills. These results are consistent with previous studies. For instance, a study by Madhavi et al. (2014) revealed that students had problems with test preparation, time management and note taking. Anecdotal evidence shows that a sizeable number of students in the college where the study was conducted do not perform well in the examinations. On the other hand, a considerable majority of students indicated that they had very good memorisation skills. This might be a reflection of their dominant study habits and the learning approaches promoted by the education system they have gone through. This resonates with what Madhavi et al. (2014, p.16) say: "students have different study skills practices based on their study habits, their interest in the subject and type of learning they follow from schooling".

A study conducted by Sekar and Rajendran (2015) in India reported that there is a significant difference between undergraduate and postgraduate students' study skills. Similarly, in our study there was a notable difference in the ratings of first year and fourth year students. First year students tend to rate themselves highly in all skills compared to fourth year students. This study could not ascertain whether the first year students actually possessed the skills but it simply reflects the confidence that the students have compared to fourth year students. In contrast, we expected fourth year students to feel more confident about the level of their skills development as suggested by Papa et al. (2016) who assert that students' study skills are enhanced as they progress through different academic levels. If it is the case that fourth year students feel less confident about their level of development, more work needs to be done to ensure that these final year students feel adequately prepared to pass their examinations.

No differences in study skills were observed between male and female students across the different departments. In the same vein, Amatobi and Amatobi (2013) found no significant difference in the performance of boys and girls in Mathematics achievement, however, they observed differences between boys and girls in terms of their attitude to the subject. Our study findings are inconsistent with most of the studies that appear to suggest that female students have higher levels of study skills compared to male students. On the other hand, our study findings resonate with studies that suggest that there is no evidence of differences among students from different specializations (Biberman & Buchanan, 1986; Sekar & Rajendran, 2015).

Lastly but not the least, our study did not provide sufficient evidence of any relationship between academic performance and study skills. This result appears to contradict a number of studies that suggest a positive correlation between academic performance and study skills. As noted earlier, when discussing study skills it is common practice to link this with academic performance (Meneghetti et al., 2007). For instance, Rwehumbiza (2013) asserts that most students fail examinations because of lack of study skills. If academic performance was only influenced by the development of study skills, students with high CGPA would have shown well developed study skills, however, there was no evidence to support this notion. As argued by other researchers, our study findings show that academic performance is a combination of various factors.

## 6. Conclusion

While our study is a small-scale study conducted at only one private institution in Oman, it does provide some important insights into the development of study skills among higher education students in Oman. The development of study skills is influenced by different factors including the type of learning approaches used and the students' interest in the subject being studied. Most of the students consider that they have good memory skills and yet, they lack critical and creative thinking skills. As argued by other researchers, it is significantly important to provide students with support to ensure the development of effective study skills as they go through different levels of study. This can help to improve their learning (Meneghetti et al., 2007). Providing study skills support is likely to be considered by students as more appropriate, and their engagement with studies might increase when they are trained on how to study within their own subject area rather than through supplementary study skills courses (Appleton, 2005; Durkin and Main, 2002). Based on the results from our study, it is vitally important to acknowledge that students have different



study skills and that support should be extended to all students to help enhance their learning. A number of studies confirmed that study skills and attitudes play an important role in students' success. Hence, it is necessary that further studies into the pattern of study skills and their integration into the curriculum are conducted. We strongly feel that results of this study can form the basis for intervention programs which target improving students' study skills and their subsequent academic performance.

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