

Factors showing impact on high school student's academic performance using ANOVA

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Abstract: - This study investigated the factors that shows impact on high school student's academic performance. 357 (Male =182; Female =158) high school students were randomly chosen as the sample of the study in government high school located in rural area of Tirupati. The demographic questionnaire was used to collect respondents' bio-data while their half yearly examination results were used as a measure of academic performance. The focus of this research is that student performance in Half yearly examination is linked with students' outline consisted of his approach towards communication, learning facilities, proper guidance and family stress. Analysis of Variance and t-test Analysis were used to analyse the data.

Keywords: - Students performance, High school, Factors, impact, Academic, ANOVA

1 Introduction

Education is one of the social factors whereby gender disparity is reflected. The number and proportion of educated people is very low. In the current era of globalization and technological revolution, education is considered as a crucial step for every human activity (Farooq et al., 2011) and it is considered as the lifeline for efficient and suitable stable development of human[1] society. Education helps to develop individual personality by making knowledgeable, competent, capable and skillful. It plays a vital role in the development of human capital and is linked with an individual's well-being and opportunities for better living (Memon et al., 2010; Farooq et al., 2011; Ababa et al., 2012; Oginni et al., 2013; Gouda et al. 2013). This means, education is considered as a[3] first step for every human activity and development of a nation at large. As a result, educators and researchers have long been interested in investigating variables contributing effectively for quality of performance of

learners (Farooq et al., 2011). Hosts of inside and outside factors, like individual and household characteristics, socioeconomic situation, school related factors and government policies, would have impact on the academic performance of students (Dayioglu and Türüt -Asik, 2004; Farooq et. al, 2011). The educational attainment of school success is which can lead to be very specific expertise or specialization of branch of knowledge. In educational system achieving educational is progress in[2] achieving educational goals in the certain course. According to the model of Levine factors of school and family are factors affecting the achievement of individual achievement [9]. Certainly, a series of factors (Interest in the field of study, study skills, learning style, cognitive and metacognitive skills, personality characteristics, field of study, marital status, economic poverty, family problems and employment during studying, etc.) Influence on academic achievement.

2 Literature review

Many empirical studies in the education literature have researched on factors that could influence students' performance. Most of these studies supported the hypotheses that student's performance could be affected by different socio-economic, psychological and environmental factors (Hijazi and Naqvi, 2006). These factors include gender (Anderson, Benjamin and Fuss, 1994; Deboer, 1994; Horne, 2000), similar learning styles between the students and instructors (Borg and Shapiro, 1996), sitting location in the[4] class (Topping, 1994), attendance (Park and Kerr, 1990; Romer, 1993; Topping, 1994; Devadoss and Foltz, 1995; Durden and Ellis, 1995) and their previous results (Nordstrom, 1990).

Other studies have examined the effect of personal problems such as financial and emotional problems (Muhammad, 1989; Ainley, Graetz, Long and Batten, 1995), accommodation (Tsige, 2001) father's level of [5]education (Sabot and Wakeman-Linn, 1991; Geleto, 2007), study technique (Sansgiry et al., 2006), time spent in study (Geleto, 2007) and geographical location (Cheers, 1990) among others. However, there are few studies with contradict or mixed results such as geographical location in Chansarkar and Mishaeloudis (2001), gender in Jackstadt and Grootaert (1980), pre-requisite course as in McConnell and Sosin (1984) and time spent in studying the course (Schidmt, 1983).

The contradictory results could be attributed to the research design and sample selection. The studies conducted

the examination of the[7] factors that influence students' performance in various fields such as in economics (Sabot and Wakeman-Linn, 1991; Durden and Ellis, 1995), chemistry (Tai, Sadler and Loehr, 2005), pharmacy (Sansgiry, Bhosle and Sail, 2006), medicine (Khan, Khattak, Mahsud, Munir, Ali and Khan, 2003), mathematics (Deboer, 1994), psychology (Thatcher, 2007) and languages (Sabot and Wakeman-Linn, 1991). Further, these studies were also conducted in various countries such as in the USA (Tai et al., 2005); Pakistan (Hijazi and Naqvi, 2006), Ethiopia (Geleto, 2007), Australia (Considine and Zappala, 2002), South Africa (Thatcher, 2007) and Saudi Arabia (Abdulrahman, 2007).

Within the accounting education literature, there are also studies that have examined the link between factor variables and university students' performance. The factors being examined are self-efficacy (Christensen, Fogarthy and Wallace, 2002, Tho, 2007); motivation (Yamamura, Martin, Campbell, Campbell and Frakes, 2000; Chen, Maksy[6] and Zheng, 2006), study style (Chen et al., 2006), class length (Ewer, Greer, Bridges and Lewis, 2002) and pre-requisite of another subject (Campbell and Glezen, 1989). Examining these factors is consistent with the attribution theory that defines how individuals attribute their performance to events and behaviour (Weiner, 1986). For example: If students attribute their failure to stable factors such as the difficulty of a course subject, they would expect to fail in that subject in the future.

A recent study by Maksy and Zheng (2008) in the USA found target score, motivation, pre-requisite subject of

accounting and GPA could influence students' performance in AFA in a public university. Using ANOVA, Pearson and Spearman analyses, the results of their study showed the factors chosen are significant influence on the students' performance. However, other than Maksy and Zheng's study, there is limited number of studies on this area relating to AFA courses. This warrants for researching this issue since AFA [8] course often involving preparation of consolidated financial statements. Due to the nature of the course, it is expected that apart from having good CGPA and putting much study effort, the way the information being delivered to the students is also important.

3 Significance

Previous studies focuses on different factors such class schedules, class size, English text books, homework, environment of the class, technology used in the class[9] and exams systems, extracurricular activities, family and work activities, financial, and etc. The study may helpful for both school's policy makers and parents of the students. It helps the college administration to design and implement the policies to improve the students' performance and the quality of education by changing the attitude of students towards learning, facilitating students and improving the teaching procedures. Parents can use the outcomes of the study to solve the students' problems especially financial problems and to look after them. It may also create awareness among students about their rights and responsibilities to achieve quality education.

3.1 Research Question

What are the important factors that affect students' academic performance?

3.2 Research Objectives

The objective of this research paper is to explore the important factors that affect the academic performance of the students.

4 Methodology of research

4.1 Research design

The study was conducted using the correlation research design because the study was intended to investigate the relationship between school and academic performance. According to Fraenkel and Wallen (1996), [10] correlation research describes an existing relationship between variables. The study took the quantitative approach because it was based on variables measured with numbers and analysed with statistical procedures.

4.2 Population

The School Analysis report 2015-2016 showed the total number of students is 1263. Therefore the target population consisted of [11] 1263 students. The respondents in this study were school students because the study was about academic performance of High school students.

4.3 Sample size and Sampling technique

The sample consisted of 357 undergraduate students selected from 1263 students of government high school. The 357 respondents were selected from the 6th, 7th, 8th, 9th and 10th classes. However only 340 questionnaires were correctly filled and returned. The number of 357 respondents was chosen basing on the sampling table guide for sample size decisions provided by [12] Krejcie and

Morgan (1970) to estimate the sample size. This study employed simple random sampling techniques. Simple random sampling was used in order to avoid bias and to ensure that each student had an equal chance of being selected.

4.4 Research instruments

All the respondents filled in questionnaires. The researcher used the questionnaires because the population was literate and large [13] and time for collecting data was limited. The researcher developed closed-ended questions because they are easy to fill, save time and keep the respondents focused on the subject. The questionnaire was divided into sections delineating personal information, questions about the independent variable and the dependant variable. Questionnaires were used because they are the main method of data collection (Sarantakos, 1997).

4.5 Procedure

A letter of permission to carry out the research was obtained from the Head Master, Government high school in order for the researcher [14] to carry out the study. The researcher obtained documents such as students' lists and numbers and records on admission and academic performance from the academic office. The researcher administered the questionnaires to 357 respondents. This data was collected in the year 2015 using questionnaires, and documentary analysis.

5 Interpretation of data

5.1 Respondents by gender

Gender	Frequency	%
Male	182	53.5
Female	158	46.5
Total	340	100.0

Table 1 Respondents by gender

Table 1 illustrates that out of the total of 340 respondents, the male students had the highest representation of about 54% and the female respondents had less than 47%. This was because the male respondents were more cooperative than their female counterparts.

5.2 Respondents by Age

Age	Frequency	Percent	Cumulative Percent
Less than 12 years	11	3.2	3.2
13 years	250	73.5	76.8
14 years	44	12.9	89.7
15 years	21	6.2	95.9
More than 15 years	14	4.1	100.0
Total	340	100.0	

Table 2 Respondents according to age

Table 2 illustrates that the highest percentage of respondents (almost 74%) were aged 13 years, and the least number of respondents (less than four Percent) were below 12 years of age. Over three quarters (80%) of the [15] respondents were below 15 years, which is the right age bracket of government high school. Less than five Percent of the respondents were over 15 years old.

5.3 Respondents according to class of study

Year	Frequency	Percentage	Cumulative Percentage
6 th & 7 th	99	29.1	29.1
8 th	84	24.7	53.8
9 th	134	39.4	93.2
10 th	23	6.8	100.0
Total	340	100.0	Total

Table 3 shows respondents according to the class of study

Table 3 illustrates that the highest percentage of respondents were 9th class students (over 39%) and the least number of respondents were the 10th class students who were almost 7% of the respondents.

5.4 Level of academic performance as perceived by the students

Academic Performance	Frequency	Mean	Std. Deviation
In half-yearly examination	340	2.31	0.40

Table 4 Arithmetic mean and standard deviation

Academic performance in one index with arithmetic mean = 2.31 and standard deviation = 0.40 as shown in Table 4

5.5 Variation of Academic Performance with Gender

Sex	Frequency	Mean	Std. Deviation	t	Sig
Male	182	2.31	0.42	0.956	0.439
Female	158	2.31	0.39		

Table 5 Summary of the t-test results for the relationship between gender and Academic performance

Means in Table 5, suggest that there is no difference between academic performance of male and female students. This is proved by the t value of 0.956 and its calculated sig = 0.439, which is greater than alpha = 0.05. The conclusion therefore is that there is no significant difference in academic performance between male and female students.

5.6 Variation with Age

The relationship between age and academic performance was determined using [16] ANOVA. Table 6 shows a summary of the relationship between age and academic performance using ANOVA.

Age	Frequency	Mean	Std. Deviation	F	Sig
<12y	11	2.15	0.49	1.89	0.111
13y	250	2.34	0.37		
14y	44	2.23	0.42		
15y	21	2.24	0.56		
>15y	14	2.17	0.476		
Total	340	2.31	0.40		

Table 6 Summary of the descriptive statistics and ANOVA results for the relationship between age and academic performance

Means in Table 6, suggest that different age groups scored slightly differently on academic performance with age 13 years scoring highest and less than

12 years scoring lowest. To confirm whether the differences were significant we consider the F value 1.89, whose significance value of 0.111 is greater than $\alpha = 0.05$. The conclusion therefore is that there is no significant relationship between age and academic performance.

5.7 Variation with class of study

The study was interested in whether Academic performance varied with year of study. Table 7 shows a summary of the descriptive statistics and ANOVA results on how Academic performance varied with year of study.

Year	Frequency	Mean	Std. Deviation	F	Sig
6 th & 7 th	99	2.22	0.31	4.887	0.002
8 th	84	2.42	0.39		
9 th	134	2.29	0.46		
10 th	23	2.43	0.36		
Total	340	2.31	0.40		

Table 7 Summary of the descriptive statistics and ANOVA results for the relationship between class of study and academic performance

Means in Table 7, suggest that different years scored differently in academic performance with the 10th class scoring highest, and the 6th & 7th scoring lowest. To confirm whether the differences in the mean were significant we consider the F value of 4.887, whose significance (Sig) value of 0.002 is less than $\alpha = 0.05$. The conclusion therefore is that there is a

significant relationship between year of study and academic performance of students.

6 Conclusions

- The conclusion therefore is that there is no significant relationship between age and academic performance.
- Significant relationship between year of study and academic performance of students.
- There is no significant difference in academic performance between male and female students

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