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Achievement among Students of Arts & Science and Engineering Colleges: A Comparative Study

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Abstract

The present study has been designed to compare academic achievement and employability and to investigate the relationship between them among arts & science and engineering college students. A sample of 120 college students from Cuddalore district, Tamil Nadu, India was selected. The data was analyzed using percentage, average, mean, S.D., t-test and ANOVA-test. The aggregate score (percentage) of the sample students in the examination was taken to show their level of academic achievement. The results reported that academic achievement of Arts & science and Engineering graduates differ significantly. Self-motivation measures should be introduced in future research to effectively explain the ethnicity effect on study effort and college academic outcomes.

Keywords: College education, Academic Achievement, arts & science and Engineering students, Employability.

Introduction

Pursuing higher education is considered to be stressful, especially engineering education. A large number of studies have shown that student's educational achievement has a positive correlation with family socioeconomic status (SES), as determined by parent's educational attainment, household income, and family size (Becker & Tomes, 1976; Duncan & Brook-Gunn, 1999; Haveman & Wolfe, 1995; Loken, 2010; Plug & Vijverberg, 2005). These findings have inspired many scholars from sociology, psychology and economics domains to research the effects of different parenting styles and parental attitudes in various cultures on student's academic performance.

The profile of engineering students differs strongly from that of students in other disciplines. According to the graduate attributes defined by a number of engineering accreditation boards, an engineer must be able to: apply knowledge of mathematics, physics, and life sciences in order to understand, formulate, and solve engineering problems; design and conduct experiments; analyze and interpret data; develop designs that meet specified requirements; design solutions to new problems, possibly involving other disciplines; perform in multidisciplinary teams; understand engineers' responsibilities, as well as the ethical social, economic, environmental, and political impact of the engineer profession. What differentiates engineering from other disciplines is thus its strong focus on mathematics and physics, combined with a range of domain specific abilities and knowledge.

With India becoming one of the leading developing nations there is an increase in awareness among people for the need of higher education. Rising aspirations of the youth in India for better job opportunities and acute shortage of seats for general category students in government professional colleges due to various reservation policies has created a lot of stress and anxiety among Indian students aspiring to pursue medical and engineering courses. To meet the aspirations of the students a significant number of private colleges have been established across the country. But according to reports available on internet (Krishnaswamy, 2011; Chi, 2011) and newspapers (Alvi, 2012; Times of India, 2013) it has been observed that in past few years, suicide and depression cases have increased considerably in both government and private medical and engineering colleges.

Review of Litterature

Education is a continuing process to develop an individual's potential towards academic achievement with various skills that are holistic and integrated. Students' academic achievement acts as a gauge to measure what have been learnt in a specific duration of time. Each student is unique and different in all aspects (Chan, 2001).

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The learning styles of each individual are also different. These differences are seen as the factors or variables that influence students' academic achievement (Wang *et al.*, 2008). Therefore, employing the correct learning styles is very important in improving academic results. Similar findings were found by Baharin Abu (2007) where students' performances have increased when learning and teaching done suits their learning styles. If students' learning styles suit the course they are taking, it will be a positive effect towards their academic achievement (Yahaya & Abdul Karm, 2003). Thus, students who employ effective learning styles usually obtain excellent academic achievement and are able to secure a place in higher institutions or a position in the work sector.

The findings by Mohamad Jafre *et al.* (2011) posited that the importance of knowing one's learning styles is essential for every student. Teachers' teaching styles also need to be adjusted to the students' learning styles so as to build conducive learning and teaching environment. Teachers' teaching styles too need to be suited to the students' learning styles so that a conducive learning and teaching environment can be developed. Thus, it is vital that students' learning styles be known and used as a guide or reference for teachers to be more sensitive of their students' learning needs (Fiedler and Spurlin, 2005).

Academic reasons like enormous syllabus, the difficulty of the curriculum, long studying hours, and emotional factors like lack of peer support, competitive environment, rigid authoritative and non encouraging faculty, lack of recreational activities, staying away from home, financial problems, uncertain future, cultural and minority issues, mismatch between capability and expectation are some reasons of stress and anxiety among medical and engineering students (Wolf, 1994; Supe, 1998; Foster & Spencer, 2003; Schneider, 2007). However there can be other reasons for anxiety among the students like stress due to family problems, a natural disaster, victimization by crime, physical abuse, medical illness, intoxication etc. Students also have test anxiety, performance anxiety and choice anxiety. With so many options, students in the present era are faced with greater choice, more competition and less time to consider their options or seek out the right advice which many a time leads to anxiety (Downey, 2008).

Several recent researches showed that students' academic achievement is influenced by their learning styles (Rasimah & Zurina, 2008). In relation to that, it is very important to understand students' learning styles so as to increase students' performance in academic (Brown *et al.*, 2006; Graf and Kinshuk, 2007). Based on the study done by Sriphai, Damrongpanit and Sakulku, (2011) the effectiveness of learning styles is seen also as a factor towards success in the learning process besides effort and hard work. Learning problem is not only because of the level of difficulty of the subject but more to the learning styles and learning process that are needed in order to study (Keefe & Ferrell, 1990). Subsequently, this study seeks to understand the learning styles as a factor towards students' academic achievement.

Objective of the Study

The following objectives were formulated for the purpose of the present investigation-

1. To find out and to compare the academic achievements of Arts & science and Engineering graduates.
2. To analyse the income level of Arts & science and Engineering graduates.

3. To examine the course completion period of Arts & science and Engineering graduates.
4. To evaluate the employability of Arts & science and Engineering graduates.
5. To compare the socio economic conditions of Arts & science and Engineering graduates.

Hypotheses

From the above objectives the following hypotheses are framed and empirically tested.

H1: There is no significant increase in income pattern of Arts & science and Engineering course students.

H2: There is no significant difference in economic condition of Arts & science and Engineering course students.

Methodology

Research Design

The descriptive method of research has been deployed to elicit proper information on the selected research. The casual relationship between variables is being analysed in this study.

Respondents

To get the data for this study, a questionnaire was distributed and collected from 120 under graduate course completed college students in the Cuddalore district of Tamil Nadu using random sampling which covered most of the under graduate (aged 22 – 25 years from arts & science and engineering course) students. Participants in this research were 120 college students that dividend into two groups; 60 from an arts & science college and 60 from an engineering college. Among the 120 participants, 50% were from arts & science course and 50% were from engineering course. Academic achievement was also considered – high academic achievement students constituted 55.83% of the participants, and low academic achievement students made up 44.17%.

Data Collection Method

The study was carried out among the college students in Cuddalore district, Tami Nadu, who are pursuing their under graduate program in arts & science stream and in engineering stream. Arts & science and engineering streams have many commonalities in their curriculum, and yet have two different learning patterns. Therefore these two closely related streams were selected to achieve more concise and decisive inferences from the study. While arts & science stream deals with a more theory oriented curriculum, the engineering stream, as the name indicates, need to learn the theory with an ultimate objective of applying the scientific theories for solving practical engineering challenges. As it could be seen, the conceptual skills, analytical abilities and problem solving abilities which are required to be imbibed by the students of the engineering stream vary much from that of the students of arts & science stream.

Data Analysis

The six waves of the study interviewed students on background information with respect to their economic, social, and demographic characteristics, and recorded their academic progress, attitudes, aspiration, campus activities, and future plans throughout the course of their college education. College dropouts and transfer students were retained in the survey by follow-up interviews to eliminate selection biases. Only Cuddalore district or resident aliens were included in the study.

Sample Size

120 individual graduates of Cuddalore district were interviewed by scheduled method through convenience sampling method.

Tools for Analysis

The data were analyzed using various statistical tools like percentage, average, mean, standard deviation t-test and ANOVA- test.

Table 1: Average monthly income of the respondents

Classification	Arts & science Graduates		Engineering Graduates		Total
	Frequency	Percentage	Frequency	Percentage	
3000-5000	3	5.00	2	3.33	5
5001-7500	8	13.33	5	8.33	13
7501-10000	23	38.33	20	33.34	43
10001-15000	10	16.67	9	15.00	19
Above15000	16	26.67	24	40.00	40
Total	60	100.00	60	100.00	120

Source: Primary data from the field survey.

ANOVA-test

Source of Variation	SS	df	MS	F	P-value	F Critical
Between Groups	562	4	140.5	16.72619	0.004241	5.192168
Within Groups	42	5	8.4			
Total	604	9				

Source: Computed.

Inference

Now the income generation of the respondents is statically tested by one way analysis of variance has been employed to test. From the above result, it is obvious that the calculated value of “F” is greater than the critical “F” value, (16.72 >

5.19), Based on the ANOVA- test, the null hypothesis H_0 is rejected and the alternate hypothesis is accepted. It is concluded that there is significant difference between incomes earned by the Arts & science Graduates and Engineering Graduates.

Table 2: Course completion of the respondents

Classification	Arts & science Graduates		Engineering Graduates		Total
	Frequency	Percentage	Frequency	Percentage	
Within the duration	53	88.34	46	76.67	99
Duration extended	7	11.66	10	16.67	15
Drop-out	-	-	4	6.66	6
Total	60	100.00	60	100.00	120

Source: Primary data from the field survey.

Table no.2 shows the course completion of the students within the time limitation of Arts & science Graduates were 53(88.34percent) and Engineering Graduates were 46(76.67 percent), Period of duration extended by Arts & science Graduates were 7(11.66 percent) and Engineering Graduates were 10(16.67 percent), only the Engineering students 4 (6.66 percent) were discontinued their college education.

Table 3: Employability of the Respondents

Sl. no.	Employability	Arts & science	Engineering	Total
1	Yes	50	40	90
2	No	10	20	30
	Total	60	60	120

Source: Field survey.

Regarding occupation details of the selected respondents, as is noticed in table 3, it is observed that most 90(75 percent) of them have expressed a favourable opinion.

Table 4: Improvement in Economic Conditions of the Respondents

Sl. no.	Increase in Economic Condition	Arts & science	Engineering	Total
1	Yes	44	40	84
2	No	16	20	36
	Total	60	60	120

Source: Field survey.

Table no.4 depicts the economic conditions of respondents most 84 (70 percent) of them have expressed a favourable opinion.

Table 5: T-test for Improvement in Economic Conditions of the Respondents

Particulars	Improvement	No Improvement
Mean	42	18
Variance	8	8
Observations	2	2
Pooled Variance	8	
Hypothesized Mean Difference	0	
df	2	
t Stat	8.485281	
P(T<=t) one-tail	0.006803	
t Critical one-tail	2.919986	
P(T<=t) two-tail	0.013606	
t Critical two-tail	4.302653	

Source: Computed from the primary Data.

Inference

The calculated t- value is 8.48 which are higher than the t critical one tail, 2.91 at 5% level of significance showing that there exists a positive relationship between respondents and economic benefit. Based on the t- test, the hypothesis H_2 is rejected and the alternate hypothesis is accepted.

Table 6: Academic achievement of the Respondents

Sl.no.	Academic achievement	Arts & science	Engineering	Total
1	high academic achievers	40	27	67
2	low academic achievers	20	33	53
	Total	60	60	120

Source: Field survey.

The details of academic achievement of the selected graduates are shown in table no.6. Educational institution considers the total marks obtained in each semester examination to declare their academic achievement, where a score of 70% and above are considered distinction, 50% and below are considered as pass class. In the present study the same criteria is considered to determine the academic achievement. Students who have scored 70% and above were considered as “high academic achievers” and 50% and below were considered to be “low academic achievers”. Out of 120, 67(55.83 percent) respondents were high academic achievers and 53(44.17 percent) were low academic achievers.

Conclusion and Suggestions

Through this research a comparison study was done to identify the difference of Arts & science and Engineering graduates. Whether students are beginning their undergraduate education and pursuing a strong liberal arts foundation or seeking an advanced degree with a professional focus, the Universities and colleges adhere to the highest standard of academic enterprise and innovation. From the study it was found that the Arts & science graduates differ with Engineering graduates regard to income level, employability, economic condition, completion of course period, academic achievement, type of institution and nature of institution, age and current position.

The study therefore suggests that skill development is an urgent requirement for the socio and economic empowerment of graduates. However, individual attitudes, social changes and interest in accessing skill development Programmes are also becoming increasingly important issues in the placement. In conclusion, spreading awareness, budget allocation on education, providing opportunities to fresh enthusiastic graduates, and reduction in poverty rate can help government of India and educational institutions to be active students in the global market is terms of innovative technologies.

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