



A study on academic motivation and problem-solving skills of engineering college students in Theni region, Tamil Nadu, India

E S Uma Maheswari

Department of English, Government College of Engineering Bodinayakanur, Theni, Tamil Nadu, India

Abstract

In the present study, an attempt has been made to find out the academic motivation and problem-solving skills of engineering college students in the Theni region, Tamil Nadu, India. Theni region is located in the southern part of Tamil Nadu. Among the 38 districts of Tamil Nadu, the researcher selected the district of the Theni region for data collection. The questionnaire method was adopted for the collection of needed data. Statistical techniques of Arithmetic Mean and Standard deviation were used to analyze the collected data for testing the stated hypotheses. The outcome exposed that boys and girls students of engineering colleges of the Theni region had significant differences in respect of their academic motivation and problem-solving skills. But government and private engineering students, rural and urban area engineering students had no significant difference in respect of their academic motivation and problem-solving skills.

Keywords: academic motivation, engineering students, problem-solving skills, significant difference, students performance

Introduction

The word academic means gained or level of success attained by an individual or group on the completion of a task whether it is goal attainment, manual, personal or social. An academic test measures the extent to which a person has achieved something, acquired curtailed information or mastered certain skills usually as a result of specific instruction. Academic attainment is knowledge attained or skill developed in the college subjects typically designed by scores. The world is becoming more and more competitive quality of performance has become an important factor for individual development. College teachers expect good performance on the part of the students. These expectations for a high level of attainment put a lot of pressure on students and parents and in general, the education system, it appears as the whole system of education revolves around the academic attainment of the student, through various other outcomes are also expected from the system. Thus a lot of time and effort of the colleges are used for helping students to achieve better in their life career. Enquiring with engineering students about engineering troubles, crisis solving processes, their futures, and communications between their futures and problem-solving education hold tasks were analyzed using interpretive phenomenon analysis. Analysis of the ensuing transcripts recognized and clustered units of meaning into themes, first by boys students and then across girls students.

Significance of the study

The importance of this study is to evaluate the academic motivation levels and problem-solving skills of engineering college students in the Theni region, Tamil Nadu, India. This study seeks to identify and understand the factors that may promote students' academic motivation and problem-solving skills. This study may allow the college teachers to guide better of their students towards academic success in respect of their motivation and problem-solving skills for the betterment of their life careers. In engineering colleges' academic motivation and problem-solving skills takes part in a vital task for students. Moreover, this study explores how engineering students perceive problem-solving tasks, the future and the connections between the two. Training students to work out difficult troubles is a recognized domain of need in engineering education. Despite the acknowledged pressure of motivation on learning, a diminutive research study exists that examines how motivation and problem-solving skills in engineering are integrated.

Statement of the problem

The problem selected for the present study is entitled "A Study on Academic Motivation and Problem Solving Skills of Engineering College Students in Theni Region, Tamil Nadu, India.

Objectives of the study

- To find out the differentiation between boys and girls engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life career.

- To find out the difference between government and private engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life careers.
- To find out the difference between medium and average levels of engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life career.

The hypothesis of the study

- There is no major difference between boys and girls engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life careers.
- There is no major difference between government and private engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life careers.
- There is no major difference between medium and average levels of engineering students in respect of their academic motivation and problem-solving skills for the betterment of their life careers.

Tools used for the research study

The Academic Motivation scale was constructed and validated by Robert J. Vallerand and the academic motivation scale consists of 40 items. Every statement is followed by three different responses. The alternatives are arranged in order of one's indication towards attainment in the areas of academic, employability skills, professional communication, interpersonal skills, advanced reading and writing and skill weightage 1, 2 and 3 are respectively awarded for alternatives a, b, and c of any statement. Therefore, the scale value lies between 40 and 120. The scale used in this research study, to measure students' academic motivation has construct validity. Also, the intrinsic validity found by the author of this tool was 0.92 and the reliability was found to be 0.86 by the split-half technique and the intrinsic validity as 0.84. Consequently, academic motivation has reliability and validity.

Sample of the study

The sample of the study comprises 300 engineering college students selected purposively from the Theni region, Tamil Nadu, India. The subjects of the study belonged to both government and private engineering college students in and around the Theni region. The students belonged to various streams of study such as Civil, Mechanical, Electrical, Electronics and Computer Science courses.

Statistical techniques used

- The academic motivation and problem-solving scores of the samples were collected and their means and standard deviations were calculated and given in Table – 1
- The test of significance was used to test the hypotheses and the details of the calculations were given in Table – 2

Table 1: Academic Motivation and problem-solving scores samples

S. No.	Samples	No.	Mean	S.D.
1	Entire sample	300	82.19	3.36
2	Boys engineering student	160	80.80	3.03
3	Girls engineering student	140	83.57	3.35
4	Government engineering college students	180	82.61	3.86
5	Private engineering college students	120	81.38	2.17
6	Medium level of students in academic motivation and problem-solving skills	205	82.50	3.22
7	Average level of students in academic motivation and problem-solving skills	95	81.51	3.62

The means of academic motivation and problem-solving skills are found to range from 80.80 to 83.57 in respect of their entire samples. The mean of the academic motivation and problem-solving skills scores for the entire sample is 82.19. Its median is 82.08 and its mode is 82.61. Its kurtosis is found to be 1.432 which is greater than 0.263 and hence the distribution is platykurtic. Its skewness is found to be 0.166. It can be seen from Table -1 that the standard deviation range from 2.17 to 3.86 and the interval is not very wide, suggesting that the group is nearly homogeneous. For the reasons that the mean, the median and the mode do not vary much, the allocation can be considered nearly normal.

Table 2: Difference between the Means of academic motivation and Problem-solving skills scores of the samples

S. No.	Samples	No	Mean	S.D.	“t” value	Level of significance
1	Boys engineering student	160	80.80	3.03	4.52	0.01
2	Girls engineering student	140	83.57	3.35		
3	Government engineering college students	180	82.61	3.86	1.39	NS
4	Private engineering college students	120	81.38	2.17		

5	Medium level of students in academic motivation and problem -solving skills	205	82.50	3.22	1.52	NS
6	Average level of students in academic motivation and problem -solving skills	95	81.51	3.62		

The information of the calculations is given in Table -2. In respect of Boys and Girls engineering students (“t” value – 4.52) the “t” values are found to be significant at 0.05 level. But in respect of government and private engineering college students (“t” value – 1.39) and in respect of the medium level of students and the average level of students in academic motivation (“t” value – 1.52) the “t” values are not significant at 0.05 level. Therefore, the null hypotheses (1) are rejected but (2) and (3) are accepted. It is concluded that boys and girls engineering students have significant differences in respect of their academic motivation and problem-solving. Moreover, the girls’ engineering students (Mean – 83.57) are found to be better than boys engineering students (Mean – 80.80) in their academic motivation and problem-solving. The government and private engineering college students and medium and average level of engineering students have no significant difference in respect of their academic motivation and problem-solving skills.

Findings

- There is a significant difference between boys and girls engineering students in respect of their academic motivation and problem-solving skills.
- There is no significant difference between government and private engineering college students in respect of their academic motivation and problem-solving skills.
- There is no significant difference between the medium and average levels of students in engineering colleges in respect of their academic motivation and problem-solving skills.

Conclusions

The present study revealed that there is a significant difference between boys and girls engineering students in respect of their academic motivation and problem-solving skills. But, government and private engineering students, average and medium level of engineering students have no significant difference in respect of their academic motivation and problem -solving skills. As the medium of instruction has nothing to do with academic motivation and problem-solving skills, it is confirmed that irrespective of the medium of engineering college students should be provided with programmes to improve their academic motivation and problem-solving skills. The score-wise difference in the academic motivation and problem-solving skills may be considered as a natural phenomenon as knowledge advances, the students will be promoted to the next higher level studies and definitely, the academic motivation and problem-solving skills will be improved. Based on the present study the researcher suggests that it is mandatory to implement some special suitable programmes for engineering college students to empower their academic motivation and problem-solving skills for the betterment of their life careers.

Suggestions for future research

This research study is conducted at the micro-level. Therefore its findings cannot be generalized. There is a need to conduct the study at the macro level. This study is restricted to the students of engineering colleges in the Theni region, Tamil Nadu, India. It possibly extended to other areas of higher education such as students of education colleges and universities. Apart from gender other variables such as area of residence, family structure, socio-economic background and factors such as learning skills for enhancing employability for their life career may be attempted in the future. Engineering college students at all levels are now subjected to academic stress. Therefore, future studies may be attempted to examine the level of students’ academic stress and self-efficacy with gender, attitude of students and social maturity on scholastic attainment.

References

1. Benson L, Morkos B, Husman J. Motivation of First Year Engineering Students and Its Relation to Persistence in Engineering. *Journal of Engineering Education*; under review, 2013.
2. Benson L, Morkos B, Husman J. Motivation of First Year Engineering Students and Its Relation to Persistence in Engineering. *Journal of Engineering Education*; under review, 2013.
3. Yukselloglu SM, Karaguvan MH. Academic Motivation Levels of Technical High School Students. *Procedia Soc. Behav. Sci*,2013;106:282-288.
4. Steinmayr R, Weidinger AF, Schwinger M, Spinath B. The Importance of Students’ Motivation for Their Academic Achievement—Replicating and Extending Previous Findings. *Front. Psychol*,2019;10:1730.
5. Sánchez-Barroso G, González-Domínguez J, García-Sanz-Calcedo J, Zamora-Polo F. Analysis of Learning Motivation in Industrial Engineering Teaching in University of Extremadura (Spain). *Sustainability*,2020;2:4987.
6. Hakan K, Münire E. Academic Motivation: Gender, Domain and Grade Differences. *Procedia Soc. Behav. Sci*,2014;143:708-715.
7. Belski I. TRIZ course enhances thinking and problem-solving skills of engineering students. *Procedia Engineering*,2011;9:450-460.

8. Chaudhry N, Rasool G. A case study on improving problem-solving skills of undergraduate computer science students. *World Applied Sciences Journal*,2012:20(1):34-39.
9. Benson L, Morkos B, Husman J. Motivation of First Year Engineering Students and Its Relation to Persistence in Engineering. *Journal of Engineering Education* under review, 2012-2013.
10. Benson L, Morkos B, Husman J. Motivation of First Year Engineering Students and Its Relation to Persistence in Engineering. *Journal of Engineering Education* under review, 2013.
11. Gholami S, Bagheri MS. Relationship between VAK learning styles and problem-solving styles regarding gender and students' fields of study. *Journal of Language Teaching and Research*,2013:4(4):700.
12. Jonassen DH, Hung W. All problems are not equal: Implications for problem based learning. *Essential readings in problem-based learning*, 2015, 7-41.
13. Ramteke IV, Ansari J. Stress and Anxiety among first-year and final year Engineering students. *Stress*, 2016, 3(4).