

# **From Classroom to Society: Exploring Educational Outcomes, Aspirations, and Social Perspectives Among Polytechnic Students of Diverse Backgrounds**

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## **ABSTRACT**

**This study embarks on an extensive exploration of the multifaceted influences of socio-economic status (SES), gender, and their interplay on educational achievements, levels of aspiration, and attitudes towards social issues among students from polytechnic institutes. Through a methodical approach, the research delineates the academic performance and aspirations of students across different SES brackets—upper middle class, middle class, and lower middle class—and examines the nuances between male and female students within these categories. The study further delves into the comparative analysis of educational achievements among male and female students, aiming to uncover any disparities and their potential underpinnings. It meticulously segments the participants into six distinct groups based on their SES and gender (upper middle class male students, upper middle class female students, middle class male students, middle class female students, lower middle class male students, and lower middle class female students) to offer a granular insight into the dynamics at play. Additionally, the research assesses the level of aspiration and the attitude towards social issues among these students, providing a holistic view of how socioeconomic factors and gender not only influence academic outcomes but also shape students' aspirations and social perspectives. By integrating these dimensions, the study aims to illuminate the intricate relationships between educational achievement, aspirations, and social attitudes, offering a comprehensive overview of the experiences of polytechnic students. Employing quantitative and qualitative methodologies to analyse the data collected from a significant sample of polytechnic students, the study offers evidence-based findings that highlight the critical role of socio-economic and gender factors in shaping educational trajectories and societal viewpoints. The implications of this research are vast, providing valuable insights for educators, policymakers, and stakeholders in crafting more inclusive and supportive educational environments that recognize and address the diverse needs of students from various socio-economic and gender backgrounds.**

**Keywords-** *Socio-Economic Status (SES), Educational Achievement, Polytechnic Students, Gender Differences, Level of Aspiration, Attitude towards Social Issues, Comparative Analysis, Upper Middle Class, Middle Class, Lower Middle Class, Quantitative Methodology, Qualitative Methodology, Inclusive Education, Academic Performance, Socio-Economic Influences*

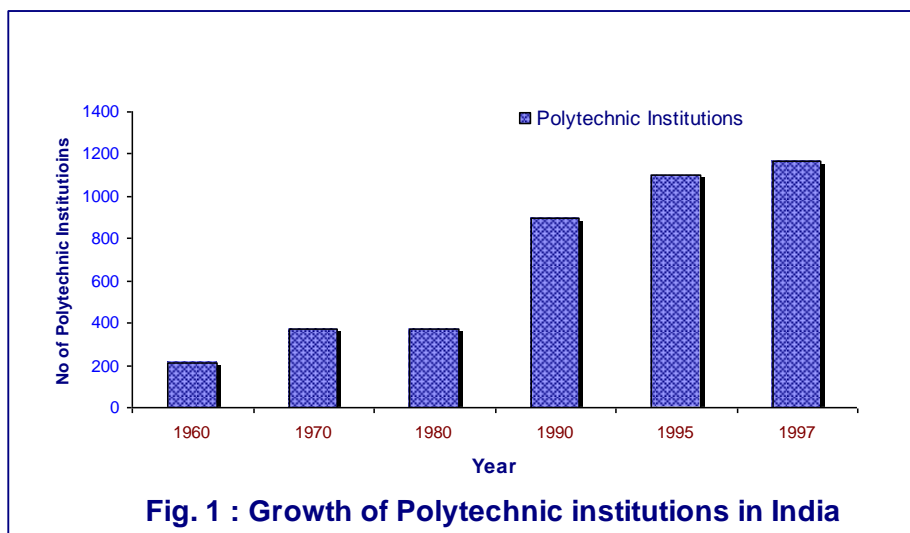
## **1. INTRODUCTION**

Education is not merely a phase of life but a lifelong process that begins at birth and continues to shape an individual's journey, guiding them out of darkness, poverty, and despair towards personal development in physical, mental, emotional, and social dimensions. It not only molds individuals but also contributes to the progress and evolution of society as a whole. Ayn Rand's perspective emphasizes that the ultimate aim of education is to equip individuals with the ability to navigate reality, develop their minds, and live purposefully. This underscores the importance of teaching individuals to think critically, understand complexities, integrate knowledge, and seek further learning autonomously. Traditionally, education was synonymous with the memorization of facts and principles, prioritizing spiritual and moral development over practical knowledge. However, contemporary education emphasizes a holistic approach, focusing on practical application and comprehensive development at every stage of life. The modern educational paradigm aims to prepare individuals for livelihoods, ensuring that education meets the practical needs of individuals. This shift is particularly evident in developing nations like India, where economic development through technology adoption underscores the importance of job-oriented education, especially technical education.

The history of formal technical education in India dates back to the mid-19th century but gained significant momentum in the 20th century with the establishment of various committees and councils dedicated to technical education. Post-independence, India witnessed an industrial revolution, leading to the proliferation of technical institutions staffed with trained personnel. The Education Commission of 1964-66 laid the groundwork for a transformation in the education system, with its recommendations finding resonance in subsequent policies such as the National Policy of Education (NPE) of 1968 and NPE 1986, which acknowledged the relevance and significance of technical education. The term "technology," derived from the Latin word "texere," meaning to weave or construct, encompasses any practical art utilizing scientific knowledge. The progress of any nation is often gauged by advancements in technical education, which directly contributes to economic prosperity. Studies have consistently highlighted the favorable attitudes of stakeholders, including teachers,

parents, and students, towards vocational and technical education, recognizing its job-oriented nature and its role in enhancing employability and national development. In the context of rapid technological advancements and their pervasive impact on society, it becomes imperative to integrate technological subjects into the curriculum and accord them due importance. Initiatives to familiarize students with technological learning and the world of work have been undertaken globally, recognizing the necessity to address economic crises and unemployment threats. Countries like France, Britain, Netherlands, and Spain have introduced technological instruction into their educational systems, even at the compulsory schooling level. Technical education in India operates at various levels, including engineering colleges offering undergraduate and postgraduate degree courses, polytechnic institutes conducting diploma courses for middle-level technicians, and industrial training institutes (ITIs) providing trade courses for skilled workers. Diploma courses offered by polytechnics hold particular significance in India's technical education landscape, as they produce technicians who occupy supervisory roles in industries, serving as a vital link between technologists and craftsmen. The figure speaks for themselves. The number of polytechnics is increasing rapidly to cope with the growing demand for technically, skilled people, due to rapid industrialization and infrastructure development in the country. Students are joining polytechnic courses expecting to get a gainful employment immediately after completion of the course. One of the studies reported is by **Pillai, S. S. and Srinivasan, R.**<sup>6</sup> (1989 b) who surveyed the student's priorities in technical education. 354 Polytechnic students from 9 polytechnics in the four southern states formed the sample. The study revealed that nearly 2/3rd of the male students joined the courses to get a job and start earning early for supporting their families.

Keeping in view of the importance of technical education in present scenario, the researcher decided to focus her study towards future technicians (i.e. Polytechnic Students) of different socio-economic status. The present study concentrates upon their Educational Achievement, Level of Aspiration, and Attitude towards Social Issues. The study will go a long way in contributing to the welfare of polytechnic students of different socio-economic status.



In conclusion, education, especially technical education, plays a pivotal role in shaping individuals and societies, equipping them with the necessary skills and knowledge to thrive in a rapidly evolving world. By embracing a holistic approach that emphasizes practical application, critical thinking, and lifelong learning, nations can harness the transformative power of education to drive economic prosperity and social progress.

## **2. LITERATURE SURVEY**

The standard of education in polytechnic institution is reflected by performance of the pupil in the subjects for which they have taken instructions and training. Test scores, marks or grades assigned to the students determine the status of pupil. In recent years the attention of educators has been increasingly drawn towards academic achievement because it has become vital as a criterion for selection in various walks of life (i.e. educational institutions at every level, in business, industry, researches, educational and psychological-clinical diagnosis evaluation and judgment for placing in government/private services etc.). The educational achievement of a student is influenced by his social background and socio-economic status. **Srivastava, Laxmi**<sup>7</sup> (1988) in his study found that vocational development is related to academic achievements and socio-

economic status but not to gender and levels of education. The studies on socio-economic and familial correlates of achievements (**Ramaswamy, R.<sup>8</sup> 1988; Ganguli, Malabika<sup>9</sup> 1989 ; and Usha, P.<sup>10</sup> 1992**) show that socio-economic conditions of the family are fairly closely associated with the academic achievements of the children, whatever be the level of education that we consider. Whereas, **Saraswat, Anil<sup>11</sup> (1988)** concludes that it is the school environment factors which are more important than socio-economic background factors for the students so far as the academic achievements of adolescents in different types of school climate are concerned. Education itself has a tendency to take away the children from their familial backgrounds (**Verma, B.P. and Nayak, R.L.<sup>12</sup> 1990**). Socio-economic status was also not found to be significant in its effect on the learning style of students (**Verma, B.P. and Tikku, Asha<sup>13</sup> 1990**). The philosophical and empirical investigations of this relationship have a long history. The results of these studies are not very consistent as some find very strong relationship between socio-economic conditions and academic achievement, but some studies indicate that socio-economic status has negligible or no relationship with academic achievement.

No doubt a number of studies were taken up in India to find out the socio-economic status and its impact on educational achievement. In India after independence, government has introduced many schemes to uplift the technical education and economic condition of poor class. Beside this, the poor students are given many facilities, in the form of scholarships, books, free-ship etc., so that they may continue their education. In present situation, it seems that the impact of socio-economic status on academic achievement is continuously changing. Through educational achievements, we can easily access about the future performance and capability of students. Thus, the researcher decided to study about the educational achievement of students belonging to different socio-economic status.

Every individual wants to get success in his life, but success depends upon the intensity of his level of aspiration. The level of aspiration is the level of future performance of a familiar task which an individual expects to achieve. Aspiration is that force which impels or incites individual's actions, determine the direction of actions. The level, to which an individual believes that he will perform the task, is defined as expectation. Previous failures establish low level of aspirations and previous success high level of aspirations. A number of research workers have also noted that the level of aspiration differs with person to person. The level of aspiration is also influenced by socio-economic status. A significant positive relationship was noticed between parent's occupation, parent's education, monthly income of father or socio-economic status and the level of aspiration (**Srivastava, Laxmi<sup>14</sup> 1988; Tara, P.<sup>15</sup> 1980 ; and Kaur, D<sup>16</sup> 1990**). However, some findings of a few studies (**Gupta, J.P. and Gupta, V.K.<sup>17</sup> 1980; Bhatnagar, Asha<sup>18</sup> 1983; Teachman, Jay. D.; Paasch, Kathleen<sup>19</sup> 1998**) have shown contradictory results. Thus, it is very important to know about the level of aspiration of polytechnic students belonging to different socio-economic status.

When an individual performs a task, he may obtain a score. If he repeatedly works on the same task, he develops an expectation concerning his future. **Bhargava, V.P.<sup>20</sup> (1972)** noticed students were goal oriented having realistic approach to achievement / attainment in his study. **Bisht, G.S.<sup>21</sup> (1972)** found a positive relationship between attainment and the level of educational aspiration. Whereas, **Muthayya, B.C.<sup>22</sup> (1960)** found the educational level and past performance had no influence over one's aspiration level. **Hussain, M.Q.<sup>23</sup> (1977)** reported the level of aspiration bore a curvilinear relationship with academic achievement. High and low aspiration showed unrealistic and defensive attitude resulting in low achievement. Some pupil set level of aspiration in keeping view of their performance (i.e. educational achievements) and they get success while others set level of aspiration much higher than they deserve so they get failure and frustration. One must set level of aspiration in keeping view of their performance (i.e. educational achievement). Educational achievement and level of aspiration are correlated with each other. Both the factors are influenced by social background and socio-economic status. Thus, it becomes indispensable to know about the relationship between educational achievement and level of aspiration of polytechnic students of different socio-economic status.

The products of technical education like technicians / engineers do not operate in vacuum; they practice their profession in social context. Thus, polytechnic students require not only adequate technical ability but must also be endowed with social relationship. Since, in their professional activities technicians are constantly interacting with both people and society. Their awareness in societal concerns can help them in becoming a successful citizen of society. In polytechnic institutions, students belonging to different class of society are admitted for imparting education, they may have different views towards social issues. Thus, it becomes indispensable to study about their views, towards social systems and their sensitivity to some aspects of social issues such as cultural aspects, social aspects, political aspects, educational aspects, economic aspects, problems of corruption and terrorism.

Although, a number of studies have been conducted by **Ojha, R.S.<sup>24</sup> (1968); Mehta, V.<sup>25</sup> (1974); Nirmala, M.<sup>26</sup> (1990); Khare, Anupam<sup>27</sup> (1992); Sodhi, Harleen<sup>28</sup> (1992); Kumari R.<sup>29</sup> (2002)**; on social issues, but a few number of studies has been made so far in the field of polytechnic students. Therefore, the present study is an attempt to throw light on this neglected area of research.

### **3. RESEARCH METHODOLOGY**

Research serves as a powerful tool for advancing knowledge and fostering progress in various fields. It involves systematic inquiry aimed at discovering answers to problems through the application of specific methods to the knowable universe. Educational research, like any other form of research, follows scientific principles of investigation, including hypothesis

development, research design, data collection, analysis, interpretation, and reporting. This methodology section outlines the research methods employed in a study focusing on educational achievement, level of aspiration, and attitude towards social issues among polytechnic students of different socio-economic statuses.

**Introduction to Educational Research** Educational research aims to develop a science of behavior in educational settings, providing knowledge to educators to achieve their goals effectively. It encompasses the same general goals and scientific principles as other research fields, including hypothesis development, research procedures planning, data collection, analysis, conclusions drawing, and report writing.

**Classification of Research Methods** Educational research methods can be classified into three main types:

(a) **Historical Research Method:** This method involves investigating, describing, and interpreting past events to gain insights into the present and predict the future. It utilizes documents, records, and other historical artifacts to understand social and political conditions of different periods.

(b) **Descriptive Research Method:** Descriptive research focuses on describing and interpreting current phenomena without manipulating variables. It includes survey methods, individual and community studies, causal-comparative studies, job and activity analysis, library research, follow-up studies, and trend studies.

(c) **Experimental Research Method:** Experimental research involves controlled systematic inquiry into a specific area of knowledge. It includes deliberate manipulation of independent variables to study their effects on dependent variables under controlled conditions. Experimental research follows a systematic process, including problem selection, literature review, experimental design, data collection, analysis, interpretation, conclusion drawing, and reporting.

**Table No. -3.1**

**Blue - Print of the Items of Educational Achievement Test  
(Preliminary Drafts)**

Subjects Outcomes → ↓	No. of items in Physics	No. of items in Biology	No. of items in Chemistry	No. of items in Maths	No. of items in General Knowledge	No. of items in Reasoning	No. of items in Computer Science.
<b>Knowledge</b>	8	4	7	5	2	1	2
<b>Understanding</b>	5	3	6	8	2	2	2
<b>Application</b>	6	3	6	6	2	2	3
<b>Total</b>	19	10	19	17	6	5	7

**Table No. – 3.2**

**Blue - Print of the Items of Educational Achievement Test  
(Final Drafts)**

Subjects Outcomes → ↓	No. of items in Physics	No. of items in Biology	No. of items in Chemistry	No. of items in Maths	No. of items in General Knowledge	No. of items in Reasoning	No. of items in Computer Science.
<b>Knowledge</b>	5	3	5	4	2	1	1
<b>Understanding</b>	3	3	4	3	2	2	2
<b>Application</b>	4	2	3	3	1	1	2
<b>Total</b>	12	8	12	10	5	4	5

Application of Research Methods in the Present Study In the present study, descriptive research methods, specifically survey methods, were employed to investigate educational achievement, level of aspiration, and attitude towards social issues among polytechnic students of different socio-economic statuses. The survey method allowed for extensive cross-sectional data collection from a large sample of students.

3.1 Descriptive Method in the Present Study- Descriptive research aims to secure evidence about existing conditions, identify standards for comparison, and determine next steps. The study utilized the survey method to collect data from polytechnic institutions in Kanpur and Lucknow, focusing on different socio-economic statuses, male and female students.

3.2 Variables- The independent variables in the study were sex and socio-economic status, while the dependent variables included educational achievement, level of aspiration, and attitude towards social issues. Control variables included the type of institutions (polytechnic institutions in Kanpur and Lucknow), while personal variables encompassed factors such as caste, occupations of family members, hobbies, income, and social values.

3.3 Tools of the Study- Several tools were employed in the study to collect data, including:

1. Educational Achievement Test: Constructed, standardized, and validated by the researcher to assess academic performance.
2. Level of Educational Aspiration Scale: Developed by Dr. V.P. Sharma and Anuradha Gupta to measure students' aspirations.
3. Attitude Scale towards Social Issues: Constructed, standardized, and validated by the researcher to gauge students' attitudes towards various social issues.
4. Socio-Economic Status Scale (Urban): Utilized to categorize students based on their socio-economic backgrounds.

3.4 Construction of Educational Achievement Test- The construction of the educational achievement test involved four steps: planning, preparation, trial, and evaluation. The test aimed to measure students' proficiency in various subjects, including physics, biology, chemistry, mathematics, and general studies. Objectives were identified based on behavioral terms, and subject matter was selected through expert consultation and literature review.

Conclusion This research methodology outlines the systematic approach employed in conducting a study on educational achievement, level of aspiration, and attitude towards social issues among polytechnic students. By utilizing descriptive research methods and employing various tools, the study aimed to gather comprehensive data to understand the educational landscape and social dynamics among polytechnic students of different socio-economic backgrounds.

#### **4. DATA COLLECTION**

The According to **International Encyclopedia of Education (1985)**, “the populations which are of interest to educational researchers are generally finite populations that may be defined jointly with the elements that they contain”.

The population of the present study consists of male and female students of polytechnic institutions located in Kanpur and Lucknow belonging to different S.E.S. The population being large, it was not possible to deal with every individual in it, so a small but a representative sample had to be selected from the population.

The sample is a small group which represents the whole population in some specific trait or traits. The need for sample in research arises from the fact that the whole population is usually a very big group, and dealing with each population elements is very difficult and not possible. The sample must be representative of the whole population and must be unbiased. The extent, to which the sample represents the whole population, also depends upon the procedure by which the sample has been drawn. There are, in the main, two categories of sampling namely; Probability Sampling and Non-probability Sampling.

The three types are Probability Sampling is:

- (i) Simple Random Sampling.
- (ii) Stratified Random Sampling.
- (iii) Cluster Sampling.

Under Non-Probability Sampling is again of three types:

- (i) Quota Sampling.
- (ii) Purposive Sampling.
- (iii) Incidental Sampling.

It is needless to discuss all the types of sampling as they are commonly found in all standard books on Educational Statistics. In the present study stratified random sampling technique has been used.

There were 18 polytechnic institutions in Kanpur and Lucknow.

**List of Polytechnics located in Kanpur & Lucknow.**

1. Government Polytechnic, Kanpur.
2. Government Leather Institute, Kanpur.
3. Dr. Ambedkar Institute of Technology for Handicapped, Kanpur.
4. Smt. Ram Devi Ram Dayal Tripathi Women Polytechnic, Kanpur.
5. United Institute of Designing, Kanpur.
6. Future Academy, The Institute of Professional Studies, Naveen Nagar, Kanpur
7. Government Polytechnic, Ghatampur (Kanpur-Dehat).
8. Aeronautical Training Institute, Lucknow.
9. Government Polytechnic, Lucknow.
10. Hewett Polytechnic, Lucknow.
11. Lucknow Polytechnic, Lucknow.
12. G.B. Pant Polytechnic, Lucknow.
13. Government Women Polytechnic, Lucknow.
14. Lal Bahadur Shastri Institute of Management, Lucknow.
15. Institute of Environment and Management, Lucknow.
16. Motilal Rastogi Management School, Lucknow.
17. Sewari Institute of Management and Technology, Lucknow.
18. Mother Teresa Girls Institute of Technical Education, Lucknow.

The number of students studying in these institutions is very large. The study was restricted to the following polytechnic institutions for the sake of convenience.

**Table 4.1 List of Polytechnics located in Kanpur and Lucknow**

S.N.	Name of Polytechnics	Male Students	Female Students	Total
1.	Mother Teresa Girls Institute of Technical Education, Lucknow	0	46	46
2.	United Institute of Designing, Kanpur	0	41	41
3.	Government Women's Polytechnic, Lucknow	0	67	67
4.	Smt. Ram Devi Ram Dayal Tripathi Women Polytechnic, Kanpur	0	64	64
5.	G.B. Pant Polytechnic, Lucknow	30	0	30
6.	Government Polytechnic, Kanpur	35	13	48
7.	Lucknow Polytechnic, Lucknow	53	23	76
8.	Government Polytechnic, Lucknow	39	08	47
9.	Government Leather Institute, Kanpur	17	0	17
10.	Dr. Ambedkar Institute of Technology for Handicapped, Kanpur	34	09	43
11.	Hewett Polytechnic, Lucknow	31	22	53
12.	Sewari Institute of Management and Technology, Lucknow	5	7	12
13.	Aeronautical Training Institute, Lucknow	17	00	17
14.	Motilal Rastogi Management School, Lucknow			

		39	00	39
	<b>Total</b>	<b>300</b>	<b>300</b>	<b>600</b>

**5. TEST OF HYPOTHESIS**

In the above list, it is apparent that 14 polytechnics were selected for the purpose. It is always a tedious job to collect data for research purpose from rural polytechnic institutions especially because apart from conveyance problem, it is not always possible to get the students needed for the purpose especially when, the numbers of tests administered are several. In that case every school has to be visited at least two or three times to collect data. Therefore, the data were collected from the polytechnic institutions located in urban areas of Kanpur and Lucknow. While collecting the data, the researcher could not make equal balance in all the polytechnic institutions. The following tests were administered on the sample of 600 polytechnic students. In this research work the factors, whose effect on the different variables of the students of polytechnic Institutions have been studied, have been given below along with other details :

**Factors**

1. ‘S.E.S.’ Socio – Economics Status at three levels
  - (i) Upper Middle Class ( $A_1$ ).
  - (ii) Middle Class ( $A_2$ ).
  - (iii) Lower Middle Class ( $A_3$ ).
2. ‘Sex’ at two levels
  - (i) Male Students ( $B_1$ ).
  - (ii) Female Students ( $B_2$ ).

**Table No.5.1**  
**Groups with Their Frequencies**

	<b>B<sub>1</sub></b>	<b>B<sub>2</sub></b>	<b>Total</b>
<b>A<sub>1</sub></b>	64	74	138
<b>A<sub>2</sub></b>	159	136	295
<b>A<sub>3</sub></b>	77	90	167
<b>Total</b>	<b>300</b>	<b>300</b>	<b>600</b>



**fig. 2 Showing groups with their frequencies**

In the upper class of S.E.S. one female student was observed and in the lower class of S.E.S. two students (1 female and 1 male) were found. Accordingly, one female student of upper class of S.E.S. was merged with the female students of upper middle class and two students of lower class (1 male and 1 female) were merged with male and female students of lower middle class of S.E.S. Thus, the upper class and lower class S.E.S. has been ignored.

The six groups formed by three levels of S.E.S (A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>) and two levels of sex (B<sub>1</sub>, B<sub>2</sub>) are as follows.

- A<sub>1</sub> B<sub>1</sub> : Upper middle class male students.
- A<sub>1</sub> B<sub>2</sub> : Upper middle class female students.
- A<sub>2</sub> B<sub>1</sub> : Middle class male students.
- A<sub>2</sub> B<sub>2</sub> : Middle class female students.
- A<sub>3</sub> B<sub>1</sub> : Lower middle class male students.
- A<sub>3</sub> B<sub>2</sub> : Lower middle class female students.

**5.2 Variables**

- (i) Educational Achievement ( V<sub>1</sub>).
- (ii) Level of Aspiration ( V<sub>2</sub>).
- (iii) Attitude towards Social Issues ( V<sub>3</sub>).

**5.3 Statistical Techniques Used**

- (i) Analysis of Variance for the comparative study of group means.
- (ii) Adjusted Analysis of Variance for the study of main effects of A and B, and their interaction effects.
- (i) Study of Correlation-coefficient.

**5.3(a) Analysis of Variance for Group Means**

- (1) The following table is the blank table of Analysis of Variance with proper sources of variation and degree of freedom (D.F.)

**Table No. 5.2**  
**Blank Table for Analysis of Variance**

Source	D.F.	S.S.	M.S.	F
<b>Between Groups</b>	5	-----	-----	-----
<b>Within Groups (Error )</b>	594	-----	E.M.S.	-----
<b>Total</b>	599			

Significant value of F will indicate significant differences among group means

- (2) Standard error of the difference (SE<sub>D</sub>) between two group means, X<sub>1</sub> and X<sub>2</sub> based on N<sub>1</sub> and N<sub>2</sub> number of scores -

$$S.E_D = \sqrt{E.M.S. \left( \frac{1}{N_1} + \frac{1}{N_2} \right)}$$

Where, E.M.S.= Error Mean Square

- (3) t- test of significance for (X<sub>1</sub> - X<sub>2</sub>)

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S.E_D}$$



D.F. = Error D.F. = 594

Significant value of t will declare  $(X_1 - X_2)$  to be significant.

**5.3(b) Adjusted Analysis of Variance**

This is for the study of the main effects of the factors A and B, and their interaction effect. In this study 600 students of polytechnic institutions have been distributed among the six groups formed by  $(A_1, A_2, A_3) \times (B_1, B_2)$ . Here it is observed that the group frequencies are unequal and disproportionate.

In this way, the whole data of 600 students becomes non-orthogonal and therefore, the ordinary method of analyzing of a factorial experiment will not be applicable.

In the present case, the non-orthogonal data of  $3 \times 2$  factorial experiment have been analyzed by the method explained by **G.W. Snedecor** and **W.G. Cochran**, in their book entitled “**Statistical Methods**” sixth edition, chapter 16 page no. 484 – 489). Following the procedure described in the book, the adjusted analysis is completed in the following 3 steps.

**Table No. 5.3**  
**Step - 1 Adjusted Analysis of Variance**  
**(Blank table given below)**

Sources	D.F.	Adj. S.S.	M.S.	F
A	2	-----	-----	-----
B	1	-----	-----	-----
A X B	2	-----	-----	-----
Error	594	-----	-----	-----

**Steps – 2** Adjustment of A and B Means

**Steps – 3** (a) Comparison of adjusted A- means with the help of t- test

(b) Comparison of adjusted B- means with the help of t- test

**5.3(c) Correlation-coefficient (r)**

(i) If N individuals are measured for two variables X and Y whose means are  $\bar{X}$  and  $\bar{Y}$ , the Correlation coefficient between

X and Y is given by the following expression.

$$r = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

Where,  $x = X - \bar{X}$

$y = Y - \bar{Y}$

(ii) Test of Significant of correlation coefficient,

It is tested by t -test, given by

$$t = \frac{r\sqrt{N - 2}}{\sqrt{1 - r^2}}$$

D.F. = N - 2

Significant value of ‘t’ will indicate Correlation-coefficient to be significant.

Besides t-test, significance of ‘r’ can also be tested by comparing the observed value of ‘r’ with critical value of ‘r’ given in the Table prepared by Fisher and Yates for different degrees of freedom and at different levels of significance.

In this research work the significance of 'r' has been tested by comparing it with the proper critical value of 'r'(critical values of 'F' , 't' and 'r' are given in Table No.8 and 9 attached in Appendix-A).

In this research work the effects of factor S.E.S. at three levels (A<sub>1</sub> – Upper middle class, A<sub>2</sub> – Middle class, A<sub>3</sub> – Lower middle class) and the factor sex at two levels (B<sub>1</sub> –Male students, and B<sub>2</sub> Female students) of polytechnic institution on the variables (V<sub>1</sub> – Educational Achievement, V<sub>2</sub> – Level of Aspiration and V<sub>3</sub> – Attitude towards Social Issues) have been studied for which the analysis of variance of the data has been worked out. The results and their interpretation have been presented in the following paras one by one.

**Table No. 5.4**  
**Analysis of Variance for Group Means**

Source	D.F.	S.S.	M.S.	F
<b>Between Groups</b>	5	16581.379	3316.276	38.394***
<b>Within Groups (Error)</b>	594	51306.686	86.375	
<b>Total</b>	599	67888.065	113.336	

\*\*\*Significant at 0.1% level of significance

**5.4(a) Results of Analysis of Variance for Educational Achievement**

From the Table No.5.4, it is observed that the value of F for 'Groups' is highly significant at 0.1% level of significance. It indicates that significant differences among the six group means are present.

The differences in the means which are significant have been studied below.

**Table No. 5.5**  
**Means and Numbers**

Groups	A <sub>1</sub> B <sub>1</sub>	A <sub>1</sub> B <sub>2</sub>	A <sub>2</sub> B <sub>1</sub>	A <sub>2</sub> B <sub>2</sub>	A <sub>3</sub> B <sub>1</sub>	A <sub>3</sub> B <sub>2</sub>
<b>Means</b>	28.625	33.743	39.868	42.809	31.403	30.811
<b>Numbers</b>	64	74	159	136	77	90

**Table No. 5.6**  
**Comparison of Means (DOM = Difference of Means)**

	B <sub>1</sub>		B <sub>2</sub>		Difference (B <sub>1</sub> – B <sub>2</sub> )	S.E. of Difference	t– value
A <sub>1</sub>	28.625		33.743		-5.118	1.587	- .226**
A <sub>2</sub>	39.868		42.809		- 2.941	1.086	- .709**
A <sub>3</sub>	31.403		30.811		0.592	1.443	0.410 <sup>NS</sup>
	<b>DOM</b>	<b>t-value</b>	<b>DOM</b>	<b>t-value</b>			
A <sub>1</sub> -A <sub>2</sub>	- 1.2429	-8.172***	- 9.066	-.753***	<sup>NS</sup> Non Significant *Significant at 5% level of significance **Significant at 1% level of significance ***Significant at 0.1% level of significance		
A <sub>1</sub> -A <sub>3</sub>	- 2.7776	- 1.767 <sup>NS</sup>	2.932	2.011*			
A <sub>2</sub> -A <sub>3</sub>	8.4653	6.561***	11.998	9.501***			

From the Table No.5.6, it is observed that the average educational achievement (42.809) of S.E.S. is significantly higher than that of female students in the upper middle (33.743) and lower middle class (30.811) of S.E.S. Whereas, in the lower middle class of S.E.S. average educational achievement of male (31.403) and female students (30.811) is statistically the same.

It is also observed that the average educational achievement of male students of middle class of S.E.S. (39.868) is significantly higher than that in the upper middle class of S.E.S. (28.625). Similarly, the average educational achievement of male students of the middle class S.E.S. (39.868) is also higher than that in the lower middle class of S.E.S. (31.403). The average educational achievement of male students of upper middle class (28.625) and of lower middle class S.E.S. (31.403) is statistically the same.

The average educational achievement of female students of middle class of S.E.S. (42.809) is statistically higher than that of upper middle class (33.743) and lower middle class female students (30.811). It is also observed that the average educational achievement of the female students of upper middle (33.743) is significantly higher than that of female students of lower middle class (30.811) of S.E.S.

**Table No. 5.7**  
**Adjusted Mean of Variance for Main Effects of a Socio – Economic Status (S.E.S.) B- (Sex) and their Interaction Effect.**

Sources	D.F.	S.S.	M.S.	F
A	2	15513.838	7756.919	89.805***
B	1	901.667	901.667	10.439***
A X B	2	645.860	322.930	3.739**
Error	594	51306.686	86.375	

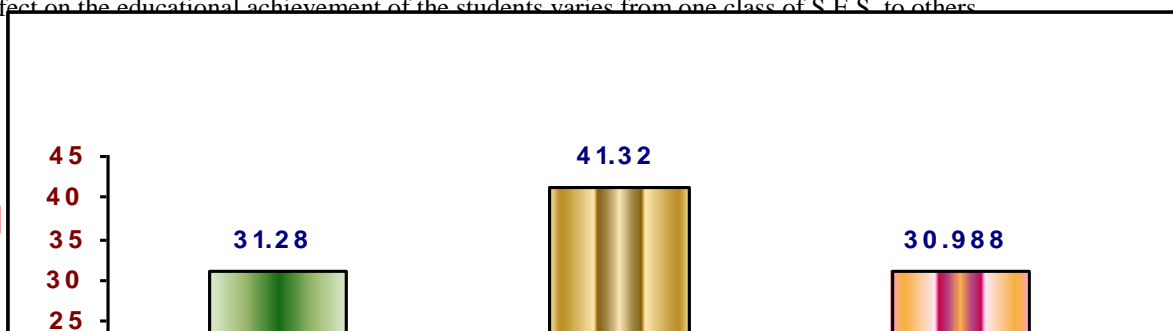
\*\*Significant at 1% level of significance

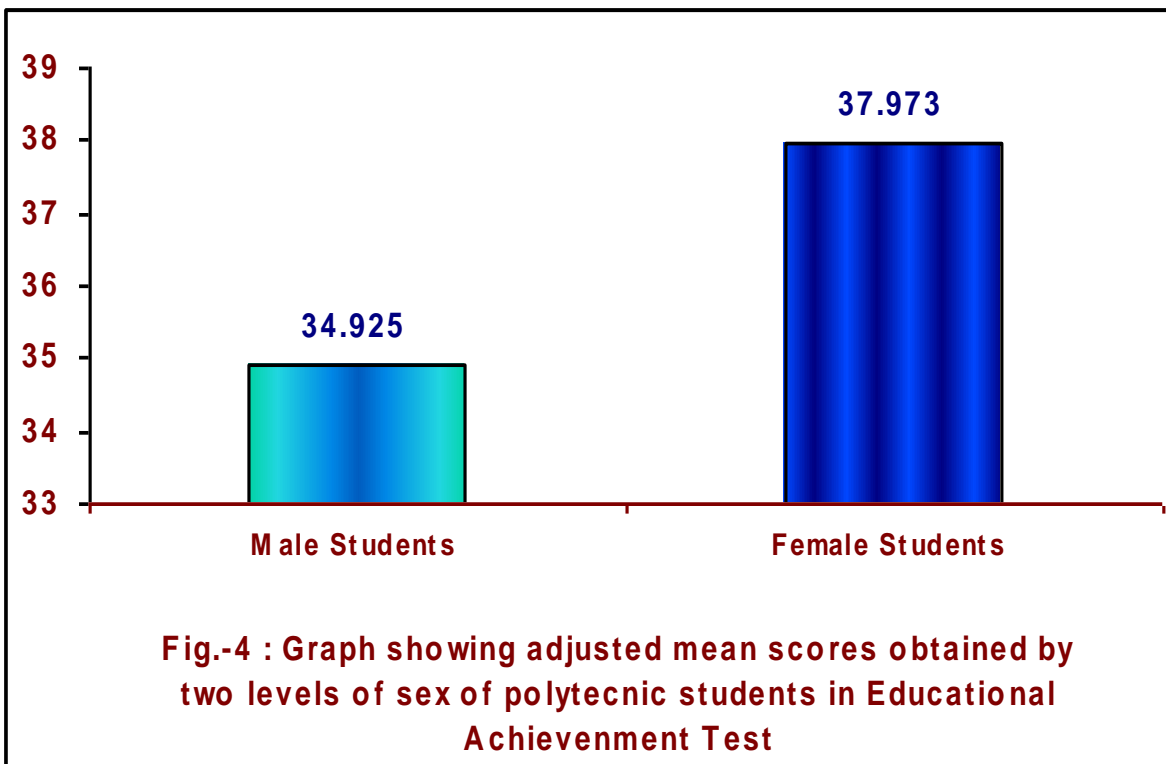
\*\*\*Significant at 0.1% level of significance

**5.4(b) Results of Adjusted Analysis of Variance for Educational Achievement**

From the Table No.5.7, it is observed that the F-value for the main effects of A is highly significant at 0.1 % level of significance. This indicates that there are highly significant differences among A – means. Highly significant value of F for B (male and female students) indicates that the difference between the means of B<sub>1</sub> (male students) and B<sub>2</sub> (female students) is highly significant.

The highly significant value of F for the interaction effect A X B (different level of S.E.S. and Sex) indicates that the sex effect on the educational achievement of the students varies from one class of S.E.S. to others.





**Table No. 5.8**  
**Adjusted Means**

A–Levels	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
Means	31.280	41.320	30.988
B–Levels	B <sub>1</sub>	B <sub>2</sub>	
Means	34.925	37.973	

**Table No. 5.9**  
**Comparison of Adjusted Means**

Diff. of means	S.E. of Diff.	t – value
$A_1 - A_2 = -10.0391$	0.9602	-10.455***
$A_1 - A_3 = 0.2923$	1.0692	0.273 <sup>NS</sup>
$A_2 - A_3 = 10.3315$	0.9020	11.455***
$B_1 - B_2 = -2.459$	0.7611	-3.231**

<sup>NS</sup> Non Significant

\*Significant at 5% level of significance

\*\*Significant at 1% level of significance

\*\*\*Significant at 0.1% level of significance

From the Table No.5.9, the following points have been observed.

- (i) The average educational achievement of the students of the middle class of S.E.S. (41.320) is highest and significantly higher than those of upper middle class (31.280) and lower middle class of S.E.S. (30.988).
- (ii) The average educational achievement of the students of upper middle class (31.280) and lower middle class S.E.S. (30.988) are statistically at par.
- (iii) The higher average educational achievement (37.973) is that of female students and is significantly higher than that of male students (34.925).

**Table No. 5.10**  
**Analysis of Variance for Level of Aspiration**

Source	D.F.	S.S.	M.S.	F
Between Groups	5	9529.286	1905.857	20.154***
Within Groups (Error)	594	56172.787	94.567	
Total	599	65702.073	109.686	

\*\*\*Significant at 0.1% level of significance

**5.5(a) Results of Analysis of Variance for Level of Aspiration**

From the Table No.5.10, it is observed that the value of F for 'Groups' is highly significant at 0.1% level of significance. It indicates that significant difference among the six group means is present.

The differences in the means which are significant have been studied below.

**Table No. 5.11**  
**Means and Numbers**

Groups	A <sub>1</sub> B <sub>1</sub>	A <sub>1</sub> B <sub>2</sub>	A <sub>2</sub> B <sub>1</sub>	A <sub>2</sub> B <sub>2</sub>	A <sub>3</sub> B <sub>1</sub>	A <sub>3</sub> B <sub>2</sub>
Means	59.469	55.392	62.358	56.735	53.623	50.767
No.	64	74	159	136	77	90

The Table No.5.12 reveals that the average level of aspiration of male students of middle class of S.E.S.(62.358) is significantly higher than that of female students in the upper middle class (53.469) and lower middle class (56.623) of S.E.S. Whereas, in the lower middle class of S.E.S. average level of aspiration of male students (53.623) and female students (50.767) is statistically the same. It is also observed that the average level of aspiration of female students of middle class (56.735) is significantly higher than that in the lower middle class (50.767) of S.E.S. The average level of aspiration of female students of upper middle class of S.E.S.(55.392) is significantly higher than that of female students of lower middle class (50.767) of S.E.S. The average level of aspiration of male students of upper middle class (62.358) is the highest and is significantly higher than that of female students of (56.735) of the same S.E.S. The average level of aspiration of male students of upper middle class (59.469) is significantly higher than that of the female students (55.392) of the same S.E.S. Whereas, the average level of aspiration of female students of upper middle class (56.735) of S.E.S. is statistically the same.

**Table No. 5.12**  
**Comparison of Means (DOM = Difference of Means)**

	B <sub>1</sub>		B <sub>2</sub>		Difference (B <sub>1</sub> – B <sub>2</sub> )	SE of Difference	t – value
A <sub>1</sub>	59.469		55.392		4.077	1.660	2.456*
A <sub>2</sub>	62.358		56.735		5.624	1.136	4.950***
A <sub>3</sub>	53.623		50.767		2.857	1.511	1.892 <sup>NS</sup>
	DOM	t-value	DOM	t-value	<sup>NS</sup> Non Significant *Significant at 5% level of significance **Significant at 1% level of significance ***Significant at 0.1% level of significance		
A <sub>1</sub> -A <sub>2</sub>	-2.089	-2.007*	-1.343	-0.956			
A <sub>1</sub> -A <sub>3</sub>	5.845	3.554***	4.625	3.031**			
A <sub>2</sub> -A <sub>3</sub>	1.769	1.117 <sup>NS</sup>	5.969	4.517***			

**Table No. 5.13**  
**Adjusted Mean of Variance for Main Effects of a Socio – Economic Status (S.E.S.) B- (Sex) and their Interaction Effect.**

Sources	D.F.	SS	MS	F
A	2	5736.682	2868.341	30.313***
B	1	3016.201	31.89486	10.439***
A X B	2	210.678	105.339	1.114 <sup>NS</sup>
Error	594	56172.787	94.567	

<sup>NS</sup> Non Significant

\*\*\*Significant at 0.1% level of significance

- Educational Achievement Across Socioeconomic Classes:** The analysis revealed a significant difference in educational achievement among students from different socioeconomic classes. Middle class students consistently exhibited higher academic performance compared to upper middle and lower middle class students. This suggests that socioeconomic status plays a crucial role in shaping educational outcomes, with students from more affluent backgrounds often having access to better resources and opportunities.
- Gender Disparities in Educational Achievement:** Gender disparities were evident in educational achievement, particularly among middle class students. Male students in the middle class demonstrated higher academic performance compared to their female counterparts. However, among lower middle class students, there was no significant difference in academic achievement between genders. This highlights the intersectionality of socioeconomic status and gender in influencing academic success.
- Impact of Socioeconomic Status and Gender on Aspirations:** The level of aspiration varied significantly across different socioeconomic classes and genders. Middle class students exhibited higher aspirations compared to upper middle and lower middle class students, indicating the influence of socioeconomic background on students' future goals. Additionally, male students displayed higher aspirations compared to female students, particularly among middle class students. However, among lower middle class students, there was no significant gender-based difference in aspirations.
- Interaction Effects:** The interaction effects of socioeconomic status and gender on educational achievement and aspirations were examined, revealing nuanced relationships between these factors. The impact of gender on academic outcomes varied across different socioeconomic classes, suggesting that the intersection of socioeconomic status and gender creates unique challenges and opportunities for students.
- Implications for Policy and Practice:** The findings underscore the importance of addressing socioeconomic disparities and gender inequalities in education. Policymakers and educators should consider the specific needs of students from different socioeconomic backgrounds and genders when designing interventions and allocating

resources. Promoting equity and inclusivity in education is essential for fostering positive academic outcomes and empowering all students to reach their full potential.

Overall, the results provide valuable insights into the complex interplay of socioeconomic status and gender in shaping educational outcomes and aspirations among students in polytechnic institutions. Further research and targeted interventions are needed to address disparities and promote equity in education.

## **5. CONCLUSION & FUTURE RESEARCH**

The research aimed to investigate the impact of socioeconomic status (S.E.S.) and sex on various variables among students in polytechnic institutions. Through the application of statistical techniques such as analysis of variance and correlation coefficient, significant insights were gained.

The findings revealed significant differences in educational achievement and level of aspiration among students belonging to different socioeconomic classes and genders. The results underscore the importance of considering socioeconomic status and gender as influential factors in understanding academic outcomes and aspirations among students.

Firstly, in terms of educational achievement, it was found that the middle class students demonstrated higher academic performance compared to upper middle and lower middle class students. Additionally, male students in the middle class outperformed their female counterparts, while among lower middle class students, there was no significant difference in academic achievement between genders.

Secondly, regarding the level of aspiration, it was evident that male students from the middle class exhibited higher aspirations compared to female students, while among lower middle class students, there was no significant gender-based difference in aspirations. Furthermore, middle class students displayed higher aspirations compared to upper middle and lower middle class students.

The interaction effects of socioeconomic status and gender on educational achievement and level of aspiration were also examined. The results highlighted variations in the impact of gender across different socioeconomic classes, indicating a nuanced relationship between socioeconomic status, gender, and academic outcomes.

### **Recommendations:**

1. **Policy Implications:** Educational policymakers should consider the socioeconomic background and gender of students when designing interventions to improve academic achievement and aspirations. Targeted initiatives aimed at addressing the specific needs of students from different socioeconomic classes and genders can lead to more equitable outcomes.
2. **Resource Allocation:** Allocate resources such as funding, mentorship programs, and academic support services based on the identified disparities in educational achievement and aspirations. Providing targeted support to students from lower socioeconomic backgrounds and underrepresented genders can help narrow the achievement gap.
3. **Promote Gender Equality:** Implement strategies to promote gender equality in education, including initiatives to encourage female students to pursue STEM fields and leadership positions. Addressing societal stereotypes and biases can create a more inclusive learning environment where all students feel empowered to reach their full potential.
4. **Parental Involvement:** Encourage parental involvement and support, particularly among families from lower socioeconomic backgrounds. Parental engagement has been shown to positively impact student outcomes and can serve as a protective factor against socioeconomic disadvantages.
5. **Longitudinal Studies:** Conduct longitudinal studies to monitor the long-term effects of socioeconomic status and gender on educational trajectories and career outcomes. Understanding the persistence of disparities over time can inform targeted interventions and policy adjustments.
6. **Teacher Training:** Provide professional development opportunities for educators to recognize and address the diverse needs of students from different socioeconomic backgrounds and genders. Culturally responsive teaching practices can enhance student engagement and academic success.

In conclusion, addressing the complex interplay of socioeconomic status and gender in educational outcomes requires a multifaceted approach involving policymakers, educators, families, and communities. By prioritizing equity and inclusivity in education, society can foster a more equitable and prosperous future for all students, regardless of their background or gender.

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