



## A Study about Achievement of Students of Standard 11<sup>th</sup> in Chemistry Subject

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### Abstract:

*The present study was conducted to find out achievement of students in chemistry subjects with respect to the I.Q. level, gender, mother's educational qualification level and mother's educational qualification level of student's. The investigator used random sampling methods for selecting sample. The data was collected from 200 students with the help of Desai I.Q. test, Achievement Test in Chemistry. The statistical technique like mean, median, standard deviation and t-test was used to analyse the data. The study found that girls achieved more than the boys, students with high I.Q. achieve more than low I.Q. students, students with higher educational qualification of mother achieve more than low educational qualification of mother and students with higher educational qualification of father achieve more than low educational qualification of father.*

**Keywords:** *Achievement, Gender, I.Q. level, Qualification level*

### 1. Introduction

According to National Curriculum Framework for School Education (2000), +2 stage is very important. This is a stage where a student is in a position to exercise a choice of stream/course keeping in mind his/her own needs, interest, capability and aptitude while preparing to cope up with the future. For a majority of the students the higher secondary stage may prove to be terminal. For them it will serve as a doorway to life and more important to the world of work. For others, it will be a bridge to the tertiary stage of education, professional courses (Engineering, Technology and Medical etc.) or academic courses as the case may be. The +2 stage is made up of standard XI and XII. The standard XI is the first step towards higher education. There are mainly three streams-Science, Commerce and Arts at +2 level. Chemistry is one of the important subjects at +2 levels in science stream. As a subject, Chemistry also comes in majority of courses offered at higher education (e.g. B.Sc, Engineering, Technology and Medical etc.) so Chemistry at +2 level acts as a base for higher education courses. The objectives of teaching Chemistry at higher secondary level are as follows.

- To develop basic knowledge and understanding of the subject at higher secondary level.
- To develop inter-relation between chemical substances, their properties and application in life.
- To develop scientific attitude and scientific thinking.
- To develop scientific values such as honesty, accuracy, tolerance, respect for natural products and their properties.
- To develop laboratory skills in chemistry.
- To develop safety consciousness in practicing chemistry in school and life.
- To develop specific skills.

- To provide a sound foundation for those students who plan for higher studies in Science, Engineering or Applied areas of study at the College or University level.

Chemistry is a key subject for +2 stage. It is very important to obtain higher scores in chemistry because academic achievement of students in chemistry is directly affected to the admission to higher studies. During higher secondary, learning of chemistry is influence by various variables so the investigator has taken this study.

## 2. Statement of the Problem

A Study about Achievement of Students of Standard 11<sup>th</sup> in Chemistry Subject.

## 3. Objectives of the Study

- To study the achievement of students of standard 11<sup>th</sup> in chemistry subject.
- To study the achievement of students of standard 11<sup>th</sup> in chemistry subject with respect to their I.Q.
- To study the achievement of students of standard 11<sup>th</sup> in chemistry subject with respect to their gender.
- To study the achievement of students of standard 11<sup>th</sup> in chemistry subject with respect to their mother's educational qualification level.
- To study the achievement of students of standard 11<sup>th</sup> in chemistry subject with respect to their father's educational qualification level.

## 4. Hypotheses

1. There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their I.Q.
2. There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their gender.
3. There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their mother's qualification level.
4. There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their father's qualification level.

## 5. Methodology

The present study is aimed to finding the achievement of students of standard 11<sup>th</sup> in chemistry subject. Independent variables of the study are I.Q., Gender, Mother's qualification level, Father's qualification level. The dependent variable of the study is the achievement in chemistry subject. For this study survey method was implemented to achieve the objectives of the present study.

## 6. Sample

The present study was delimited to only Gujarati medium schools of Sabarkantha district. 200 students from different 10 schools of Sabarkantha district were selected by random sampling. I.Q test was administered on 200 students mean and median were calculated. The median was used as cut off scores for dividing students in two groups as high I.Q and low I.Q.

**Table 1**  
**Number of Students in Sample**

Sample	High I.Q.	Low I.Q.	Total
Boys	43	55	98
Girls	58	44	102
Total	101	99	200

## 7. Tools used for the Study

The following tools were used for the data collection for the present study. Achievement test for chemistry: The achievement test for students of standard 11<sup>th</sup> in chemistry subject was constructed by the investigator. The achievement test was of total 100 marks.

I.Q. test: To find out the I.Q. of students Desai Verbal & Non-Verbal I.Q. test in Gujarati was used. Mother's educational qualification level: For mother's educational qualification level information was asked in formal information sheet. Father's educational qualification level. For mother's educational qualification level information was asked in formal information sheet.

## 8. Data Collection

The investigator approached to different schools with prior permission of school administration. The investigator explained the purpose of the study, provided necessary instruction and distributed the Formal information sheet, I.Q. test, Achievement Test respectively. The investigator gave necessary time to students for filling the different tools and after completing, tools was taken back.

## 9. Scoring Procedure

I.Q. test by Desai was used and collected data about I.Q. were analysed as per instruction provided in the manual of the test. After that all students were divided in two groups using median of the I.Q. scores as High and Low I.Q. students. Information about mother's and father's qualification was converted in to two group as graduation and below graduation.

## 10. Statistical Techniques Used

For testing the formulated hypotheses descriptive statistics such as Mean, Standard Deviation and t-value were calculated. The software used for this purpose is MS Excel.

## 11. Testing of the Hypotheses

**Hypothesis 1:** There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their I.Q. For testing the above hypothesis first of all students were divided in two groups using median of the I.Q. scores.

**Table 2**  
**Test of Significance of the Difference between mean achievement scores of Standard 11<sup>th</sup> students in chemistry subject with respect to their I.Q.**

I.Q.	N	Mean	S.D.	t-test value	Level of Significance
High I.Q.	101	76.8	16.01	9.91	0.01
Low I.Q.	99	52.9	18.02		

From the above table it is found that the mean of achievement score of students in chemistry subject with high I.Q. is 76.8 and mean of achievement score of students in chemistry subject with low I.Q. is 52.9. The difference between mean achievement score of two group is found significant at 0.01 level as the t-test value is 9.91 which is more than the table value so the hypothesis is not accepted. Hence, it can be concluded that the achievement of students with high I.Q. is significantly higher than that of students with low I.Q.

**Hypothesis 2:** There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their gender

For testing the above hypothesis first of all students were divided in two groups Boys and Girls.

**Table 3**

**Test of significance of the difference between mean achievement scores of Standard 11<sup>th</sup> students in chemistry subject with respect to their gender**

Gender	N	Mean	S.D.	t-test value	Level of Significance
Boys	98	64.5	15.06	5.98	0.01
Girls	102	78.3	17.50		

From the above table it is found that the mean of achievement score of Boys in chemistry is 64.5 and mean of achievement score of Girls in chemistry is 78.3. The difference between mean achievement score of two groups is found significant at 0.01 level as the t-test value is 5.98 which is more than the table value so the hypothesis is not accepted. Hence, it can be concluded that the achievement of Girls is significantly higher than that of Boys.

**Hypothesis 3:** There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their mother's educational qualification level.

For testing the above hypothesis first of all students were divided in two groups with respect to their mother's educational qualification level as Graduation and Below Graduation.

**Table 4**

**Test of significance of the difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their mother's educational qualification level**

Educational Qualification Level	N	Mean	S.D.	t-test value	Level of Significance
Graduation or Above Graduation	46	79.5	14.63	6.27	0.01
Below Graduation	154	63.8	15.8		

From the above table it is found that the mean of achievement score of students in chemistry with respect to graduation or above qualification level of their mother is 79.5 and mean of achievement score of students in chemistry with respect to below graduation qualification level of their mother is 63.8. The difference between mean achievement score of two groups is found significant at 0.01 level as the t-test value is 6.27 which is more than the table value so the hypothesis is not accepted. Hence, it can be concluded that the achievement of students having higher educational qualification of their mother is significantly higher than that students having below graduation educational qualification level of their mother.

**Hypothesis 4:** There is no significant difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their father's educational qualification level.

For testing the above hypothesis first of all students were divided in two groups with respect to their father's educational qualification level as Graduation and Below Graduation.

**Table 5**  
**Test of significance of the difference between mean achievement scores of standard 11<sup>th</sup> students in chemistry subject with respect to their father's educational qualification level**

Educational Qualification Level	N	Mean	S.D.	t-test value	Level of Significance
Graduation or Above Graduation	118	79.8	14.8	5.10	0.01
Below Graduation	82	68.7	15.35		

From the above table it is found that the mean of achievement score of students in chemistry with respect to graduation or above qualification level of their father is 79.8 and mean of achievement score of students in chemistry with respect to below graduation qualification level of their father is 68.7. The difference between mean achievement score of two groups is found significant at 0.01 level as the t-test value is 5.10 which is more than the table value so the hypothesis is not accepted. Hence, it can be concluded that the achievement of students having higher educational qualification of their father is significantly higher than that students having below graduation educational qualification level of their father.

## 12. Findings

The findings of the study are summarised as follows.

- It was found that students of standard 11<sup>th</sup> have achieved average more than 69 percent score in achievement test in chemistry.
- It was found that students having high I.Q. achieve more in chemistry.
- It was found that the Girls scored higher in achievement test in chemistry than Boys.
- It was found that the father and mother's educational qualification level is significant factor for achievement of students in chemistry.

## 13. Conclusion

On the basis of results obtained from the present study several conclusions can be derived. Boys should be encouraged for higher achievement. Mother with low educational qualification level should be given necessary information for their children's academic activities so they take care and contribute in enhancing their children's academic performance. Father with low educational qualification level should be given proper guidelines for encouraging their children for higher achievement. For more confirmation of the present findings, a large scale study is required.

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