HIGHER SECONDARY STUDENTS' ACHIEVEMENT IN CHEMISTRY IN RELATION TO THEIR REASONING ABILITY

Dr. T.Manickavasagan
Assistant Professor
Department of Education
Annamalai University
Annamalainagar-608002
Tamilnadu.

Abstract: This study was conducted with the aim of finding out the level of Achievement in Chemistry and their Reasoning Ability of higher secondary students in Perambalur District of Tamilnadu. It is an attempt to see the relationship between Achievement and Reasoning Ability. For this study the investigator has included the Gender, Locality and Type of School as biographical variables for analysis. From the systematic analysis the investigator has arrived in results that the Achievement in Chemistry is average and Reasoning Ability of the entire sample is high. Further a significant difference found between the boys and girls of higher secondary school with respect to their Reasoning Ability. A positive relationship is also found between the Achievement in Chemistry and their Reasoning Ability. Based on the results obtained through this study the suitable recommendations also were made by the investigator to improve the Achievement and their Reasoning Ability.

Introduction

Education develops manpower for different levels of economy and empowers the poor masses to become self-reliant enough to participate in the process of national development. Education is thus an instrument for developing an economically prosperous society and for ensuring equality and social justice. The world is becoming more and more competitive. Quality of performance has become the key factor for personal progress, Parents desire that their children climb the ladder of performance to as high a level as possible. This desire for a high level of achievement puts a lot of pressure on students, teachers, schools, and in general, the educational system itself. In fact, it appears as if the, whole system of education revolves round the academic achievement of students, though various other outcomes are also expected from the system. Thus a lot of time and effort of the schools are used for helping students to achieve better in their scholastic endeavors. there are a lot of psychological variables favor the achievement of higher secondary students in chemistry, among which the reasoning ability is the most favorable factor so this is the right time to develop reasoning ability among students in more appropriate ways.

Achievement in Chemistry

Achievement is a general term for the successful attainment of some goal requiring a certain effort, the degree of level of success in some specified area or in general. It is the knowledge acquired and skills developed in school subjects generally indicated by marks obtained in test and examinations.

Encyclopedia dictionary of education defines as, "Successful accomplishment or performance in particular subjects, area, or courses usually by reasons of skill, hard work, and interest. Hence, the achievement of students in respect to knowledge, understanding, application, skill related to chemistry subject is said to be achievement in chemistry.

Reasoning Ability

Reasoning is an implicit act and involves problem solving behavior. Reasoning is regarded as the highest form of thinking It is a complex mental process that needs a well organized brain. Reasoning plays a significant role in one's adjustment to one's environment. Not only it controls one's cognitive activities, but also the total behavior and personality is influenced by proper or improper development of one's reasoning ability. Therefore proper care should be taken to develop reasoning powers of children. Therefore the ability to find the correct reason for particular process is known as reasoning ability.

Need and Significance of the Study

Students are the backbone of the educational process Education is a process and acts also as an instrument to bring out the innate behavior of the individual. The destiny of a nation lies in its classrooms. the strength of our nation depends on the teacher's ability to rear well educated, responsible, well adjusted youth who will step forward when the adult generation passes on to retirement. The students of today are the youths of tomorrow and future citizens of the country, therefore It Is the responsibility of teachers, society and government to see that they are physically, mentally, emotionally and educationally healthy. The needful steps taken at this period ensures a healthy democracy in the country.

It is believed that the adolescent stage correspondingly the higher secondary school stage have got significant role in one's life. It is a period there are many hormonal changes on both boys and girls at school. The achievement of the students at this stage depend many reasons such as family, socio-economic status, mental health, school environment and so on. But the investigator was interested to study the achievement of XI standard students in chemistry in relation to their reasoning ability.

Objectives of the Study

1. To find out the level of Achievement in Chemistry of Higher Secondary Students.
2. To find out the level of Reasoning Ability of Higher Secondary Students.
3. To find out if there exist any significant difference between the sub-samples of the higher secondary students under various categories with respect to their Achievement in Chemistry.
4. To find out if there exist any significant difference between the sub-samples of the higher secondary students under various categories with respect to their Reasoning Ability.
5. To find out if there exist any significant relationship between achievement in chemistry and reasoning ability of Higher Secondary Students.
6. To find out is there any relationship between achievement in chemistry and reasoning ability of higher secondary students.

Hypotheses of the Study

1. The higher secondary students' achievement in Chemistry is high.
2. The Reasoning ability of higher secondary students is high.
3. There is a significant difference between the sub-samples of higher secondary students under various categories with respect to their Achievement in Chemistry.
4. There is a significant difference between the sub-samples of higher secondary students under various categories with respect to their Reasoning Ability.
5. There is a significant relationship found out between the Reasoning ability and Achievement in Chemistry of higher secondary students.

6. There is a positive relationship between achievement in chemistry and reasoning ability.

Tool used

1. The tool Reasoning Ability Test – By Sadhana Bhatnagar.(1986)
2. For Achievement in Chemistry the half-yearly examination Marks from the School Records taken as achievement scores.

Sample of the Study

This study was conducted with 350 higher secondary students of Perambalur district of Tamil Nadu. The sample was selected by using simple random sampling technique.

Method of Study

For this investigation the researcher adopted Normative Survey Method. It involves describing, recording, analyzing and interpreting the data which are all directed towards a better understanding of the Achievement in Chemistry and Reasoning Ability of Higher Secondary Students.

Statistical Techniques Used in the Study

1. Descriptive Analysis
2. Differential Analysis
3. Correlation Analysis

Data Analysis

Table1: The Mean and Standard Deviation of Achievement in Chemistry Scores of Higher Secondary Students.

Sample	N	Mean	S.D
Entire sample	350	61.03	10.96

From Table-1, the Achievement in Chemistry of the entire sample of higher secondary students is Average.

Table-2: The Mean and Standard Deviation of Reasoning Ability scores of Higher Secondary Students in their Reasoning Ability.

Sample	N	Mean	S.D
Entire sample	350	21.66	5.63

From Table-2, the Reasoning Ability of the entire sample of higher secondary students is high.

Table-3: Significance difference between boys and girls students with respect to Achievement in Chemistry.

Gender	N	Mean	S.D	't' Value	Remarks
Boys	172	62.09	12.21	0.12	Not Significant
Girls	178	61.96	9.63		

From Table-3, there is no significant difference between the Achievement in Chemistry scores of higher secondary students based on Gender.

Table-4: Significance difference between Rural and Urban Students with respect to Achievement in Chemistry.

Locality	N	Mean	S.D	't' value	Remarks
Rural	183	62.15	10.73	0.21	Not Significant
Urban	167	61.89	11.23		

From Table-4, it is concluded that the Rural and Urban students do not differ significantly. Hence the hypothesis framed earlier is rejected.

Table-5: Significance difference among Govt., Private and Aided school students with respect to Achievement in Chemistry.

Type of Management	Sum of Square	df	Mean Square	'F'value	Remarks
Between Groups	177.10	2	15.29	0.74	Not Significant
With in Groups	41736.61	347	16.0		
Total	41913.71	349			

From Table-5, it is concluded that the Govt,, Private and Aided school students do not differ significantly. Hence the hypothesis framed earlier is rejected.

Table-6: Significance difference between boys and girls students with respect to their Reasoning Ability.

Gender	N	Mean	S.D	't' Value	Remarks
Boys	172	22.41	5.85	2.45	Significant (0.05Level)
Girls	178	20.94	5.33		

From Table-6, it is concluded that the boys and girls differ significantly in their Reasoning Ability. Hence the hypothesis framed earlier is accepted.

Table-7: Significance difference between Rural and Urban Students with respect to their Reasoning Ability.

Locality	N	Mean	S.D	't' value	Remarks
Rural	183	21.45	5.66	0.72	Not Significant
Urban	167	22.89	5.61		

From Table-7, it is concluded that the Rural and Urban students do not differ significantly in their Reasoning Ability. Hence thel hypothesis framed earlier is rejected.

Table-8: Significance difference among Gov, Private and Aided school students with respect to their Reasoning Ability.

Type of Management	Sum of Square	df	Mean Square	'F' value	Remarks
Between Groups	68.07	2	34.103	1.07	Not Significant
With in Groups	11006.47	347	31.72		
Total	11074.54	349	-		

From Table-8, it is concluded that the Govt, Private and Aided school students do not differ significantly in their Reasoning Ability. Hence the hypothesis framed earlier is rejected.

Table-9: Coefficient of Correlation between Achievement in Chemistry and reasoning Ability.

Correlation	**N**	**'r' Value**	**Remarks**
Achievement in Chemistry and Reasoning Ability.	350	0.70	significant

The above table shows that there is a significant positive relationship between Achievement in Chemistry and Reasoning ability of higher secondary students. Hence the hypothesis framed earlier is accepted.

Findings of the Study

1. Achievement in Chemistry of higher secondary students is average.
2. Reasoning Ability of higher secondary students is high.
3. No significant difference found between girls and boys with respect to Achievement in Chemistry.
4. No significant difference is found between Rural and Urban Students with respect to Achievement in Chemistry.
5. No significant difference found among Govt, Private and Aided school students with respect to Achievement in Chemistry.
6. Significant difference is found between Girls and Boys with respect to their Reasoning Ability.

7. No significant difference is found between Rural and Urban students with respect to their Reasoning ability.
8. No significant difference is found among Govt,, Private and Aided school students with respect to their Reasoning ability .
9. Significant relationship is found between Achievement in Chemistry and their Reasoning ability**.**

Recommendations

The present study gives a clear-cut view about the present position XI standard students Achievement in Chemistry and their Reasoning Ability. Based on the important findings stated earlier the following recommendations are suggested.

1. The achievement of XI standard students in Chemistry is average. So the teachers and parents encourage them to achieve more score in Chemistry subject, which leads them to acquire better knowledge in handling scientific problem in systematic manner.
2. The finding of the present study reveals that the students have positive correlation between achievement score and their reasoning ability. It reveals that the reasoning ability and their achievement scores are in same position. So if one want improve their reasoning ability or achievement in Chemistry that individual must develop skills in both of them.
3. The findings of the present study also reveals that the students belong to rural and urban school students do not differ significantly in their achievement and their reasoning ability. So the curriculum frame workers should not consider the locality factor while framing the Chemistry curriculum In addition with the above recommendation the government and concern authority should provide harmonious environment in their school for better living.

Conclusion

The present study made on higher secondary student's Achievement in Chemistry in relation to their reasoning ability The findings of the study reveal the present position of higher secondary school student's Achievement in Chemistry is average and their reasoning ability is high The study reveals that there is a significant relationship between achievement scores in Chemistry and their reasoning ability. The future teachers must keep in mind that their valuable time and work creates harmonious nation to provide suitable packages for the achievement of school students.

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