

A Study of Academic Achievement of Secondary School Students, Studying Through Regular & Open Mode in Relation to Problem Solving

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Abstract

Academic achievement is the indication of the entire educational growth & development of cognitive, affective & psychomotor domains of the students' personality. The present study has been carried out to know the relation between the academic achievement & problem solving ability of the secondary students studying through regular and open mode. The researcher tried his best to know the relation between problem solving ability & the academic achievement of the secondary students. The descriptive survey method was followed to carry out this research. The sample of 500 students studying in 10th class of CBSE and National open schools was selected through random sampling method. The marks obtained by the students in 10th class were considered as the academic achievement of the students. Mean, SD, t test and correlation were applied for data analysis. The findings of this research reveals that there is positive moderate relation between the academic achievement & problem solving ability of the secondary students studying through regular as well as open mode. Through this study, it was also revealed that there is significance difference between the academic achievement and problem solving ability of the secondary students studying through regular and open mode.

Keywords:- Academic Achievement, Problem solving ability, Open education, Regular education

Introduction :-

The aim of education is to do the whole round development of the cognitive, affective & psychomotor domains of the personality of a human being. Various modes of education help at different stages & different degrees in achieving the above mentioned aim. These modes of education can be categorized in three categories like regular or formal mode of education, informal mode of education & distance or non-formal mode of education. Lot of activities are performed in regular & open education mode to enhance the academic achievement of the students. In the present era, academic achievement is the center point of discussion among educators because it has become the criterion for selection in many fields of life.

Significance of The Study :-

Education either regular or open, is generally concerned with the medium to improve students' academic achievement. Large numbers of researches like **Holliday, 1981; Okoye, 2008** support the above stated statement. Academic achievement may be specified as performance, knowledge or skill gained after teaching & training in subjects of study often decided by marks assigned by the teacher (**Dictionary of Education, 2003**). There are several factors like interest, aptitude, motivation, environment & learning experiences that have an impact on academic achievement of the students. Despite these, the problem solving ability of the student also affects

the academic achievement. Problem solving ability plays a dominant role in students' academic performance & construction of concepts. Because till now, no study has been carried out to assess academic achievement in relation to problem solving ability of secondary students studying through regular and open mode.

Keeping this thing in mind, the investigator tried to study academic achievement of secondary students studying through regular & open mode in relation to problem solving ability.

Statement of The Problem :-

The present research plans to study the academic achievement of secondary students studying through regular and open mode in relation to problem solving ability.

So the study is “A Study of Academic Achievement of Secondary School Students, Studying Through Regular & Open Mode in Relation to Problem Solving.”

Objectives of The Study :-

1. To analyse the academic achievement of secondary school students studying through regular & open mode.
2. To analyse the problem solving ability of secondary school students studying through regular & open mode.
3. To study the relationship between the problem solving ability & academic achievement of secondary school students studying through regular mode.
4. To study the relationship between the problem solving ability & their academic achievement of secondary school students studying through open mode.
5. To study the difference between the problem solving ability of secondary students studying through regular & open mode.

Hypothesis of The Study :-

Ho1- Secondary students studying through regular and open mode possess moderate magnitude of academic achievement.

Ho2- Secondary students studying through regular and open mode possess moderate magnitude of problem solving ability.

Ho3- There exists a significant relationship between problem solving ability & academic achievement of secondary school students studying through regular mode.

Ho4- There exists a significant relationship between problem solving ability & academic achievement of secondary school students studying through open mode.

Ho5- There exists a significant difference between the problem solving ability of secondary school students studying through regular & open mode.

Delimitation of The Study :-

1. The study is delimited to the Muzaffarnagar district of Uttar Pradesh.
2. The present study is delimited to the secondary students of regular and open education of Muzaffarnagar district.
3. The present study is delimited to 500 sample sizes.

Operational Definition of Terms :-

- **REGULAR EDUCATION:** Regular education is that education where the student has to attend classes in regular mode.
- **OPEN EDUCATION:** Open education is that education that is designed for the participation of a large number of geographically dispersed students.
- **PROBLEM SOLVING ABILITY:** Problem solving ability is that ability that an individual uses to satisfy the demands of an unfamiliar situation on the basis of previously acquired knowledge and understanding.

Review of Related Literature :-

Review of related literature is one of the essential aspects of research activity to avoid duplicity. So, the researcher studied many research studies related to his topic.

Madhu Gupta (2015) revealed in his study that problem solving ability had a significant effect on mean achievement scores of high school students. A solving ability of high school significant difference was found in academic achievement among high, average & low problem students.

Prakash, S.(2000), Study of mathematical creativity and achievement of elementary school students in relation to problem solving ability, anxiety and socio demographic variables, Doctoral Dissertation in Education, Punjab University, Chandigarh, India.

Merten, S. (2013) Study of the academic achievement in Mathematics in relation to the problem solving ability of class x students in Jowai town, Doctoral Dissertation in Education, North-Eastern Hill University, Meghalaya.

Ali-Agili, Z. G. & Bin Mamat. M. (2012). The factors influence students' achievement in mathematics; A case for Libyans' students, World applied sciences journal 17(9), 1224-1230

Method :-

Descriptive survey method has been followed for the present study.

Population :-

The population of the present study consists of all the secondary students of Muzaffarnagar district studying through regular and open mode .

Sample :-

The present study is delimited to **500 sample** size of secondary regular and open education students of **CBSE board** and **National Institute Of Open Schooling** of Muzaffarnagar district where 250 students(125 boys+125 girls) are from CBSE board & 250 students(125 boys +125 girls) are from National Open Schools of Muzaffarnagar district respectively.

Tools :-

Problem solving ability test developed by **Dr. L. N. Dubey (2006)** has been used to find out the level of problem solving ability among secondary students studying through regular & open mode.

Collection of Data :-

Most of the data collection was done through research tools. First of all, this data was systematized, classified and tabulated to serve the purpose of doing systematic research. Frequencies were converted into percentage and data were analysed and synthesized. Statistical techniques like mean, standard deviation, chi test, t test and correlation were applied on the data to conclude the result.

Mean scores were used to know the magnitude of achievement, problem solving ability and learning engagement of the secondary students. Standard deviation was used to know the deviation of scores from mean in the distribution of scores. Chi test were used to know the normal distribution of the collected scores as per NPC and to make norms as per requirement. 't' test was used to know the difference between the mean scores of two variables. Correlation was used to know the relation between two variables.

Analysis & Interpretation of Data :-

Objective 1: To analyse the academic achievement of secondary school students studying through regular & open mode.

Ho1- Secondary students studying through regular and open mode possess a moderate magnitude of academic achievement.

(A) Academic Achievement of the Secondary Students Studying Through Regular Mode:

From the **table-2** in the previous chapter, it is evident that the mean value of academic achievement of the regular mode students is **321.34** and standard deviation is **51.9**. The obtained mean value was found to be higher than the mean value of total sample **310.06** and higher than the theoretical mean value **250** of the test. Furthermore, as the obtained mean value is higher than the mean value of the total sample and the theoretical mean, it can be shown that secondary students studying through regular mode have a high level of academic achievement.

(b) Academic Achievement of the Secondary Students Studying Through Open Mode:

From the **table-3** in the previous chapter, it is evident that the mean value of academic achievement of the open mode students is **298.78** and standard deviation is **52.8**. The obtained mean value was found to be lower than the mean value of total sample **310.06** and higher than the theoretical mean value **250** of the test. Furthermore, as the obtained mean value is lower than the mean value of the total sample and higher than the theoretical mean, it can be shown that secondary students studying through open mode have low level of academic achievement.

Objective2: To analyse the problem solving ability of secondary school students studying through regular & open mode.

Ho2- Secondary students studying through regular and open mode possess a moderate magnitude of problem solving ability.

(a) Problem Solving Ability of the Secondary Students Studying Through Regular Mode:

The mean value of problem solving ability of the regular mode students is **11.06** and standard deviation is **3.62**. The obtained mean value was found to be higher than the mean value of total sample **9.084** and higher than the theoretical mean value 10 of the test. Furthermore, as the obtained mean value is higher than the mean value of total sample 9.084 and higher than the

theoretical mean, it can be shown that secondary students studying through regular mode have a high level of problem solving ability.

(b) Problem Solving Ability of the Secondary Students Studying Through Open Mode:

The mean value of problem solving ability of the open mode students is **7.01** and standard deviation is **3.4**. The obtained mean value was found to be lower than the mean value of total sample **9.084** and lower than the theoretical mean value of the test, it can be rendered that secondary students studying through regular mode have low level of problem solving ability. Furthermore, as the obtained mean value is lower than the mean value of the total sample and lower than the theoretical mean, it can be shown that secondary students studying through open mode have a low level of problem solving ability.

Objectives3: To study the relationship between the problem solving ability & academic achievement of secondary school students studying through regular mode.

Ho3- There exists a significant relationship between problem solving ability & academic achievement of secondary school students studying through regular mode.

Table - 1

Relationship between the Problem Solving Ability & Academic Achievement of Secondary Students Studying through Regular Mode

Variables	df	Mean	'r'
Academic Achievement	248	321.34	.43
Problem Solving Ability	248	11.08	

***significant at 0.05 & 0.01 levels**

It can be inferred from the above table that the correlation between the academic achievement and the problem solving ability is **.43** for $df = 248$. It means that there is moderate positive correlation between these two variables. It implies that the problem solving ability of secondary students studying through regular mode affects the academic achievement positively and significantly. Statistically, it implies that academic achievement varies similarly to the problem solving ability. High problem solving ability may result into high academic achievement and vice versa. This study also matches with the researches done by the following investigators. **K. Bhagavathy (2015) A. Gansen (2000) M. Gupta & P. Pasrija (2015) M. Kanmani & N. Nagarathinam (2017) Pathak (2015)**

Objectives4: To study the relationship between the problem solving ability & their academic achievement of secondary school students studying through open mode.

Ho4 - There exists a significant relationship between problem solving ability & academic achievement of secondary school students studying through open mode.

Table - 2

Relationship between the Problem Solving Ability & Academic Achievement of Secondary Students Studying through Open mode

Variables	df	Mean	'r'
Academic Achievement	248	298.78	.44
Problem Solving Ability	248	7.1	

***significant at 0.05 & 0.01 levels**

It can be inferred from the above table that the correlation between the academic achievement and the problem solving ability is **.44** for $df = 248$. It means that there is moderate positive correlation between these two variables. It implies that the problem solving ability of secondary students studying through open mode affects the academic achievement positively and significantly. Statistically, it implies that academic achievement varies similarly to the problem solving ability. High problem solving ability may result into high academic achievement and vice versa. This study also matches with the researches done by **Bhagavathy (2015), A. Gansen (2000) & M.Kanmani & N. Nagarathinam (2017)**.

(c) Comparison of Problem Solving Ability of Regular and Open Mode Secondary Students:

Objective5: To study the difference between the problem solving ability of secondary students studying through regular & open mode.

Ho5- There exists a significant difference between the problem solving ability of secondary school students studying through regular & open mode.

't' Value of Problem Solving Ability of Regular and Open Mode Students

Table-3

Comparison of Problem Solving Ability of Regular and Open Mode Secondary Students

Group	Sample Size	Mean	S.D	Mean Difference	't' Value
Regular Mode Students	250	11.06	3.54	4.05	13.10
Open Mode Students	250	7.01	3.4		

***significant at 0.05 & 0.01 levels**

The above table shows that the calculated t' value is 13.10 which is significant at .05 & .01 level of confidence. Now it is to be safe to explain that there exists significance difference

in the problem solving ability of secondary students studying through regular and open mode. Furthermore, the mean value of regular mode students is higher than those of open mode students. This result leads us to this conclusion that problem solving ability of regular mode students is higher than the problem solving ability of open mode students. This study also matches with the researches done by the following researchers. **Kaur & Kaur (2017) & Kishor, V.(2013)**

Discussion, Conclusion, Implications & Suggestions

The main objective to do the research is to fetch the conclusion. Conclusion is essential for the study that tells about its result. This is derived from analysis and interpretation of collected data.

Discussion of the Result:

The results analysed and interpreted in the previous chapter require to be discussed for the verification of hypotheses constructed in the first chapter. The discussions for achieving the conclusions are as under.

1. Students studying through regular mode have higher academic achievement. The reason behind this conclusion is that regular students have higher problem solving ability. On the other side, students studying through open mode possess lower academic achievement. The reason behind this conclusion is that open students have lower learning engagement and problem solving ability.
2. The problem solving ability of regular mode students was found higher. The fact behind this conclusion is their higher involvement in learning activities. On the other side, the problem solving ability of open mode students was found lower. The fact behind this conclusion is their lower involvement in learning activities.
4. Positive moderate correlation between the problem solving ability and academic achievement of secondary students studying through regular mode was investigated. It means that academic achievement is directly correlated to the problem solving ability of regular mode students.
5. Positive moderate correlation between the problem solving ability and academic achievement of secondary students studying through open mode was investigated. It means that academic achievement is directly correlated to the problem solving ability of open mode students.
6. Students studying through regular mode have higher problem solving ability. This is due to the fact that they are cognitively involved in learning activities. On the other side, Secondary students studying through open mode have lower problem solving ability in comparison of regular mode students. This result may be due to this fact that open mode students are not as cognitively involved as regular mode students do.

Conclusions at A Glance:

The following conclusions can be drawn on the basis of analysis of the data:

1. Secondary school students studying through regular mode possess higher academic achievement while secondary school students studying through open mode possess lower academic achievement.

2. Secondary school students studying through regular mode possess higher problem solving ability while secondary school students studying through open mode possess lower problem solving ability.
3. There is a positive moderate correlation between the problem solving ability and academic achievement of secondary students studying through regular mode.
4. There is a positive moderate correlation between the problem solving ability and academic achievement of secondary students studying through open mode.
5. Students studying through regular mode possess higher problem solving ability than the open mode students.

Educational Implications of The Study:

This study is of utmost educational importance to teachers and curriculum constructors because moderate positive correlation was found between problem solving ability and academic achievement of secondary students studying through regular and open mode through this study. So, to improve problem solving ability of students in order to enhance the academic achievement of the secondary students studying through open mode, teachers may be suggested to adopt various teaching techniques like heuristic method, blended learning and experimental method.

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