

## PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT AMONG THE STUDENTS BELONGING TO SCHEDULED TRIBE AND SCHEDULED CASTE CATEGORIES

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### ABSTRACT

*The present study was conducted to ascertain the main and interactional effects of Sex and Caste on the problem solving ability and academic achievement of students. A random sample of 200 students (Boys and Girls) belonging to scheduled tribe and scheduled caste categories was selected from govt. high schools of urban areas of Jammu District. Problem Solving Ability Test prepared and standardized by Dr. L.N. Dubey, Professor Deptt. of Psychology, University of Agra was administered to all of them individually and regarding the academic achievement, the investigator obtained annual examination marks of previous two classes (VIII and IX). The marks were pooled together, added and then percentages found in order to obtain academic achievement index scores of boys and girls belonging to scheduled tribe and scheduled caste categories. The data was analyzed by using two-way analysis of variance technique (ANOVA). The results revealed that Sex and Caste had significant impact on the problem solving ability of students. Sex had no significant impact on the academic achievement of students. Caste had significant impact on the academic achievement of students. However, no interactional effect of sex and caste was found on the problem solving ability and academic achievement of students.*

*Keywords: Problem Solving Ability, Academic Achievement and Examination.*

### INTRODUCTION:

As we all know that man comes into this world endowed with his drives, emotions and many others abilities which enable him to adjust adequately with his environment. As he grows in a social medium, he comes to acquire new drives, motives and goals which he constantly strives to achieve by his efforts. In this encounter with reality, he faces many problems. Whenever he finds himself in a moral situation in which he is motivated to achieve certain goals but where his progress towards those goals is blocked by some difficulty, barrier or obstacle, he may be confronted with a problem. A solution of the problem consists in the development of some mode of responses, which will eliminate

the obstacles. Since frustration is an evitable outcome of failure to solve the problems of life, an individual is always motivated to solve them and reduce anxiety and frustration. Thus, a large part of an individual's life is spent in a struggle to find effective solution to his problem. It is in this sense that he is always motivated to think towards some ends.

With the advancement in socio-economic and technological fields, the life of an individual is becoming more and more complex with a number of problems which the individual and society have to face in near future. The responsibility of school becomes increasingly important to develop scientific attitude in students so that they may solve their problems independently for better adjustment in the future complex society. The procedure of overcoming difficulties or problems which interfere with the satisfaction of wants is called problem solving ability. The nature and procedure of problem solving varies from person to person. It varies with the difficulty of the problem and its relation to the ability of the learners. The animals solve their problems by habitual behaviour or by following trial and error method. At the higher level of evolution, the animals also solve their problems by insight. In human beings, reasoning is the most important method of problem solving.

Problem solving is a mental process and is a part of the larger problem process that includes problem finding and problem shaping. Considered the most complex of all intellectual functions, problem solving has been defined as higher-order cognitive process that requires the modulation and control of more routine or fundamental skills. Problem solving occurs when an organism or an artificial intelligence system needs to move from a given state to a desired goal state. Problem solving activities get students more involved in the process of learning and enhance the use of higher level thinking process. Problem solving involves the application of principles and facts to explain new phenomena or predict consequences from known conditions. The task of problem solving requires prediction, analysis of facts and principles to develop cause and effect relationship in physical phenomena. Generally, our daily life activities are followed in routine and we do not face any problem to perform our routine duties. But this is not always so, sometimes we are confronted with a problematic situation which acts as an obstacle to reach the goal. These obstacles may be physical,

social and economic which may hinder the progress of an individual towards the goals. Problem solving is an alternative to assessments and diagnostic categories as a means to identify students who need special services (Andrea Canter, 2004).

Problem solving is the frame work or pattern within which creative thinking and reasoning takes place. It is the ability to think and reason on given levels of complexity. The state of tension created by unsatisfied wants and drives enable the individual to exercise his greatest effort and to use his best language techniques, observations, predictions and interferences to control the difficulties that hinder the progress towards his goal of wants and satisfaction. Problem solving ability plays an important role in the academic achievement of students. It has also a great influence on the academic achievement of students.

Academic Achievement means knowledge, understanding or skill acquired after instructions and training in courses or subjects of study. It is generally measured by means of total marks of the students obtained by them in a particular class. Academic achievement depends upon different factors which directly or indirectly influence it. In the past a strange notion possessed in the minds of a great as well as common people was that academic achievement is only dependent upon intelligence. But with the exploration of new knowledge, it has been noticed that there are other factors, which are as important as intelligence.

Academic Achievement is of paramount importance particularly in the present socio-economic and cultural contexts. Obviously, in the school, great emphasis is placed on achievement right from the beginning of formal education. The school has its own systematic hierarchy which is largely based on achievement and performance rather than ascription or quality. Thus, the school tends to emphasize achievement which facilitates, among other things, the process of role allocation for the social system. The school performs the function of selection and differentiation among students on the basis of their scholastic and other attainments and opens out avenues for advancement, again, primarily in terms of achievement.

Achievement signifies the accomplishment or gain or a performance carried out successfully by an individual or a group on the completion of a task whether it be academic, personal or social. Thus, achievement means all those behavioural changes which take place in the individual as a result of learning experience of various kinds. By academic achievement we also mean proficiency of performance generally measured by standardized tool or test, the act of attaining an end or of carrying out a purpose. Achievement is commonly applied to performance in educational test rather than psychological test i.e. it implies demonstration of required ability, skill, knowledge or understanding than inherent capacity. As per Webster's New World Dictionary (1976) "Achievement means achieving a desired result especially by skill, work etc."

### NEED AND IMPORTANCE

Problem solving is the key to success and has been regarded as the most significant aspect of human behaviour. One of the major aims of education is to develop the ability to attain better performance. No two individuals are alike. There are individual differences in the problem solving ability. Some individuals can handle a situation, but others cannot. A large part of an individual's life is spent in a struggle to find effective solution to his problems. A student having good problem solving ability will be properly adjusted in the class as well as at home. A problem cannot be solved without thinking. The need of problem solving behaviour is to create the power of thinking which helps to find out the solution of the problem. The main objective of problem solving is to go through the physical, psychological, social and environmental factors which hinder the progress of an individual to attain certain goals.

It is usually seen that the students belonging to scheduled tribe category have better problem solving ability than the students belonging to scheduled caste category. High problem solving ability among the students belonging to scheduled tribe category makes them psychologically and emotionally stable. Such students become well adjusted in the society as well as in the school. However, the students who have low problem solving ability become recessive, withdrawn, nervous and prone to anxiety, which ultimately is not desirable for their sufficient positive growth.

There is likely to be difference between boys and girls in their problem solving ability. The main reason behind this is typical parental attitudes, like rejection and favouritism towards their children. In spite of their claims that they love all their children equally, most parents have their favourites and apparently the male child. Moreover, rejection may be expressed by unconcern for child's welfare and open hostility. This often happens with the adolescent girls in the most Indian families. This leads to low problem solving ability among the adolescent girls. The difference in the problem solving ability of the students is also due to the indifferent attitude of teachers. Moreover, the psychological and physical make up of the child also effects his problem solving ability.

The students belonging to scheduled tribes and scheduled castes have been neglected in all spheres of life including education. This is the reason that they perform academically poor. In certain areas, Untouchability is still prevailing and this sometimes proves an impediment for all the parents to send their children to schools. Scheduled tribes are not fully aware about the significance of education in social development of the societies. In certain situations when the children of scheduled tribes and scheduled castes are ignored in the schools by their classmates and sometimes by the teachers, as a result of which there is a psychological pressure on their thinking. It is the duty of teachers to provide congenial atmosphere to such students in order to ensure their development of good study habits and performing academically better. When the parents are educated they guide their children properly. Such children will have higher level of aspiration and they will also perform better in the examination as compared to other children whose parents are illiterate and maladjusted. Keeping in view the importance of the study, the present problem was undertaken by the investigator.

#### OBJECTIVES:

1. To find out the effect of "Sex" on the problem solving ability and academic achievement of students.

2. To find out the effect of “Caste” on the problem solving ability and academic achievement of students.
3. To find out the interactional effect of “Sex and Caste” on the problem solving ability and academic achievement of students.

### HYPOTHESES

1. There is no significant effect of “Sex” on the problem solving ability of students.
2. There is no significant effect of “Caste” on the problem solving ability of students.
3. There is no significant interactional effect of “Sex and Caste” on the problem solving ability of students.
4. There is no significant effect of “Sex” on the academic achievement of students.
5. There is no significant effect of “Caste” on the academic achievement of students.
6. There is no significant interactional effect of “Sex and Caste” on the academic achievement of students.

### DELIMITATIONS:

1. The study was limited to a sample of 200 students only i.e. (100 scheduled tribe and 100 scheduled caste students).
2. The study was limited to govt. schools of urban areas only.
3. The study was limited to Jammu district only.

### METHODOLOGY:

#### Sampling-

In the present study, a sample of 100 scheduled tribe and 100 scheduled caste students studying in class X<sup>th</sup> was randomly picked up from govt. high schools of Jammu district.



**TOOLS EMPLOYED:**

(a) Problem Solving Ability Test: In the present study, the tool employed for the collection of data was Problem Solving Ability Test prepared and standardized by Dr. L.N. Dubey, Professor in the Department of Psychology, University of Agra. This test is in Hindi and contains 20 unsolved questions. Every question has four given responses out of which only one answer is correct. If the pupil ticks the correct answer then he/she is given 'one' mark and if he/she ticks a wrong answer 'zero' is given. At the end all the marks are added. The maximum marks are 20. The high the score earned on this test, the high is the problem solving ability.

(b) Academic Achievement: Regarding the academic achievement, the investigator consulted the examination incharge of each selected school and enquired about the marks obtained by X<sup>th</sup> class students in previous two annual examinations (VIII and IX classes). The examination incharge teacher was kind enough to assist the investigator and in this way, the investigator obtained annual examination marks of two classes (VIII and IX) of the students belonging to scheduled tribe and scheduled caste categories. The marks were pooled together, added and then percentages found in order to obtain academic achievement index scores of boys and girls belonging to scheduled tribe and scheduled caste group.

**STATISTICAL TECHNIQUE EMPLOYED:**

Two-way analysis of variance technique for 2x2 factorial design was applied to the data concerned.

Table 1 : Summary of two-way Analysis of Variance for 2x2 factorial design showing the sum of squares and F-ratios for problem solving ability scores, taken as criterion.

Sources of variance	SS	df	MS	F-ratios	Level of Significance
Sex (A)	52.9	1	52.9	7.94	Significant at 0.01 level
Caste (B)	90	1	90	13.51	Significant at 0.01 level
AXB	0.9	1	0.9	0.14	Not Significant
Within	239.8	36	6.66		
Total	383.6	39			

#### INTERPRETATION AND DISCUSSION:

Table 1 indicates the influence of sex and caste on the problem solving ability of high school students. F-ratio value for the first main factor i.e. 'Sex' (7.94) has come significant as the value has come more than the table value (4.11 and 7.39 against 1 and 36 df). It indicates that there is found significant difference in the problem solving ability of boys and girls. This finding is thus rejecting the first null hypothesis completely. Similar results have been found by Kiran, U. (1983), Kour (2010) and Sharma (2010). However, Ajwani (1979) found contrary results in his study. The mean problem solving ability score of boys (15.4) has come higher than the girls (13.4). The reason of low problem solving ability among the girls may be due to the wrong upbringing done by the parents, poor home atmosphere, cultural taboos and restrictions etc.

F-ratio value for the second main factor i.e. 'Caste' (13.51) has come significant at 0.01 level as the value has come more than the table value (4.11 and 7.39 against 1 and 36 df). It indicates that there is found significant difference in the problem solving ability scores of the students



belonging to scheduled tribe and scheduled caste categories. This finding is thus rejecting the second null hypothesis completely. The mean problem solving ability score of the students belonging to scheduled tribe categories has come higher (14.4) than the students belonging to scheduled caste categories (11.4). It means that the students belonging to scheduled tribe categories possess high problem solving ability than their counterparts. The reason behind is that the parents of scheduled tribe students provide more facilities and opportunities to their children in developing their problem solving ability through seminars, discussions and other play-way techniques. They motivate and help their children to excel in various fields and this develops high problem solving ability among them where as the parents of scheduled caste students are mostly illiterate and economically poor and hence they do not help their wards in developing high problem solving ability. They do not know how to develop problem solving ability among their children, which is of utmost importance. They do not take interest in how their children learn or develop problem solving ability in comparison to scheduled tribe students.

F-ratio value for the third factor i.e. double interactional effect of 'Sex and Caste' (0.14) has come insignificant as the value has come less than the table value (4.11 and 7.39 against 1 and 36 df). This finding is thus accepting the third null hypothesis completely. It means that there is found no significant interactional effect of sex and caste on the problem solving ability of students.

Table 2 : Summary of two-way Analysis of Variance for 2x2 factorial design showing the sum of squares and F-ratios for academic achievement scores, taken as criterion.

Sources of variance	SS	df	MS	F-ratios	Level of Significance
Sex (A)	2.02	1	2.02	0.02	Not Significant
Caste (B)	1311.02	1	1311.02	13.77	Significant at 0.01 level

AXB	3.04	1	3.04	0.03	Not Significant
Within	3428.29	36	95.23		
Total	4744.37	39			

### INTERPRETATION AND DISCUSSION:

Table 2 indicates the influence of sex and caste on the academic achievement of high school students. F-ratio value for the first main factor i.e. 'Sex' (0.02) has come insignificant as the value has come less than the table value (4.11 and 7.39 against 1 and 36 df). It indicates that there is found no significant difference in the academic achievement scores of boys and girls. This finding is thus accepting the fourth null hypothesis completely. Similar results have been found by Narula (1979), Chakrabati (1988) and Singh (2004). However, Misra (1986) found contrary results in his study.

F-ratio value for the second main factor i.e. 'Caste' (13.77) has come significant at 0.01 level as the value has come more than the table value (4.11 and 7.39 against 1 and 36 df). It indicates that there is found significant difference in the academic achievement scores of the students belonging to scheduled tribe and scheduled caste categories. This finding is thus rejecting the fifth null hypothesis completely. Similar results have been found by Rani (1980), Vyas (1992), Shukla and Agrawal (1997) and Chattopadhyay (1998). However, Verma (2004) found contrary results in her study. The mean academic achievement score of the students belonging to scheduled tribe categories (63.6) has come higher than the students belonging to scheduled caste categories (52.2). It means that the students belonging to scheduled tribe categories possess high academic achievement than their counterparts.

It may be due to the reason that the students belonging to scheduled tribe categories enjoy good educational facilities in good educational institutions with good teachers. The parents help their

wards in their studies which ultimately help them in increasing their academic performance, where as the parents of scheduled caste students are not properly educated and well employed. They have no awareness in the process of upbringing of their children which can ultimately help them in performing academically higher. So, the children of scheduled caste categories lag behind than their counterparts. The students belonging to scheduled caste categories are not able to avail proper educational opportunities by the formal educational set up due to their socio-cultural backwardness and the gap between the school environment and family. Their poor socio-economic conditions sometimes forces them to do manual labour. This is also the reason responsible for the low academic achievement among the students belonging to scheduled caste categories.

F-ratio value for the third factor i.e. double interactional effect of Sex and Caste (0.03) has come insignificant as the value has come less than the table value (4.11 and 7.39 against 1 and 36 df ). This finding is thus accepting the sixth null hypothesis completely. It means that there is found no significant interactional effect of sex and caste on the academic achievement of students.

#### EDUCATIONAL IMPLICATIONS:

In order to increase the problem solving ability of the adolescent girls, congenial home environment need to be created by the parents for their desirable sufficient positive growth. The parents should pay special attention to them. They should encourage their daughters to solve their day to day problems by using their cognitive abilities. Moreover, the parents should also provide rich and balanced diet to their daughters, so that they remain physically fit and mentally alert and they have high problem solving ability. It is the responsibility of the teachers to identify such girls who have low problem solving abilities and try to modify their learning and thinking power through various audio-visual aids.

The students belonging to scheduled caste categories were found to have low problem solving ability and low academic achievement. In order to increase the problem solving ability and

academic achievement of these students, qualified and well-trained teachers should be appointed in the government schools so that they may understand the difficulties faced by the students and help them in developing their cognitive abilities. The teachers should inform the parents regarding the poor academic achievement of their children. Parents should help their children in solving their problems independently at their own pace. They should engage their children in specially designed problem solving activities to increase their problem solving ability. It is desirable to organize problem solving contexts and competitions in the society especially for these students. The students should be encouraged to participate in these contexts which will definitely increase their problem solving activities.

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