

A STUDY ON PROBLEM DETERMINE DEXTERITY AMONG HIGH SCHOOL STUDENTS IN SCIENCE SUBJECT

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Abstract

Education is a conductive process which drags a person from darkness, poverty and misery by developing his individuality in all its aspects-physical, mental, emotional and social. With this type of all round development, he becomes a responsible, dynamic, resourceful and enterprising citizen of strong, good moral character who uses all his capacities to develop his own self. Education is greatly essential for the growth and development of individual as well as society. Education is regarded as the potential instrument of social transformation and an important means of national development. Education is a service commodity, which involves the process of acquisition of knowledge, skills and attitudes which are essential for achieving success in one's life.

Key words: Recall / recognition- Deduction- principle- Analysis- Logical thinking- Convergent thinking.

PROBLEM SOLVING AND STUDENTS

Student life is busy with a wide range of activities related to school, home, work, and friends. Throughout the course of any given day, students handle a variety of decisions and problems automatically. At times, however, situations arise which the student cannot solve automatically. In those situations the use of problem-solving skills becomes an invaluable asset that allows a student to make the best choices and decisions available. In addition, problem-solving is a life skill that will serve the student well throughout their life. Problem-solving is a tool, a skill, and a process. As a tool it helps the student to solve a problem or achieve a goal. As a skill the student can use it repeatedly throughout their life.

PRINCIPLES OF EFFECTIVE PROBLEM SOLVING SKILLS

Students' problem solving skills develop incrementally through a series of stages,

- identifying the problem
- defining the problem
- collecting, evaluating and organizing information about the problem
- creating or selecting a strategy to resolve the problem
- allocating resources to solve the problem
- monitoring the problem solving process and
- evaluating the final solution.

Problem solving skills,

- can be monitored by asking them to challenge and reflect on processes and progress;
- can be developed through real-world problems to which there are no correct answers;
- can be extended by asking them to view the problem from a range of perspectives;

- can be focused by using different problem solving strategies, such as: case studies, Designing problems for students to solve Students develop problem solving skills through tasks which:
have visible real-world value and use; are achievable;

THE IMPORTANCE OF PROBLEM SOLVING SKILLS

Students can learn how to be assertive verbally as a result of seeing and listening to how adults resolve conflict. Another simple way a students can learn how to be assertive verbally is by role-playing with puppets and through pretend play with an adult. When using these techniques, it is important to help the students think of constructive ways to respond to different situations. By using puppets and role-play, the students can also learn about how others may feel in specific situations. When using these techniques, it is important not to criticize or label the child for past misbehavior. There are some basic steps to problem solving skills.

- Identify the problem.
- List the possible solutions or courses of action.
- Weigh the possible solutions.
- Choose a solution to try.
- Put the solution into practice.
- Evaluate the solution.

Using effective problem solving techniques will help students avoid conflict with others in a school setting and in their everyday lives. It will also strengthen student's beginning empathy skills and help them learn more positive attributions about another person's intentions. Effective problem solving skills is essential for academic and social success.

NEED AND SIGNIFICANCE OF THE STUDY

Students often experience difficulties in solving problems in their subjects. These difficulties largely result from a lack of conceptual understanding of the topic. The processes of conceptual learning reflect the nature of the causal reasoning process. In this present world, almost all the disciplines need a strong foundation of the various subjects studied in high school level, after that the students go to higher secondary level. Most of the students prefer to go for professional education. In this context, a strong foundation in concepts and problem solving skills is needed for the high school students. This awareness will help him to modify his/her teaching methods and procedures.

STATEMENT OF THE PROBLEM

The statement of the present problem is "*A Study on Problem Determine Dexterity among High School Students in Science Subject*"

OBJECTIVES OF THE STUDY

1. To find out the level of problem solving skills of the high school students.
2. To find out there is any significant difference of problem solving skills of the high school students with respect to the following sub samples.
 - Gender
 - Type of School
 - Nature of School
 - Medium of Instruction

- Locality of the School
- Type of Family
- Order of birth
- Parent's educational qualification
- Parent's occupation
- Parent's annual income
- Hobby

HYPOTHESIS OF THE STUDY

1. The level of problem solving skills of high school students is low.
2. There is no significant difference between boys and girls high school students in their problem solving skills.
3. There is no significant difference between problem solving skills of high school students with respect to their type of school.
4. There is no significant difference between problem solving skills of high school students with respect to their nature of school.
5. There is no significant difference between Tamil and English medium high school students in their problem solving skills.
6. There is no significant difference between rural and urban high school students in their problem solving skills.
7. There is no significant difference between problem solving skills of high school students with respect to their nature of family.
8. There is no significant difference among problem solving skills of high school students with respect to their order of birth.
9. There is no significant difference between problem solving skills of high school students with respect to their parents education.
10. There is no significant difference between problem solving skills of high school students with respect to their parents occupation.
11. There is no significant difference between problem solving skills of high school students with respect to their parents annual income.
12. There is no significant difference between problem solving skills of high school students with respect to their hobby.

LIMITATIONS OF THE STUDY

Though every attempt has been made to make the study precise and objectives as possible, certain limitations have kept into it.

- The study is limited to Namakkal and Salem district.
- The study is limited to high school students.
- The investigator used only 303 samples for the present study.
- The study is limited to Govt, Aided and Matric high school.
- The investigator selected only six high schools for collecting data.

SAMPLE OF THE STUDY

The present study consists of ninth standard students studying in high schools in Namakkal and Salem District in Tamil Nadu. The sample was selected by using stratified random sampling technique. The stratification has been done on the basics of the students in the nature of school and type of school. Randomly six schools were selected for the sample.

Rural and urban students are selected randomly. Totally the sample consists of 303 high schools in ninth standard students.

Showing the details of the school wise distribution of the sample

S. No	Name of the school	Total
1	Govt. Boys higher secondary school, konganapuram, Salem.	37
2	Govt. Girls higher secondary school, konganapuram, Salem.	24
3	Govt. higher secondary school, pallakkapalayam, Namakkal.	46
4	Govt. Girls higher secondary school, Pallipalayam, Namakkal.	28
5	Sankar higher secondary school, ICL, Namakkal.	83
6	K R P higher secondary school, Pachampalayam, Namakkal.	85
Total		303

SAMPLE DISTRIBUTION

The sample was divided into different categories on the basis of Gender, type of school, Nature of school, Medium of Instruction, Locality, Type of family, Birth of Order, Parental education, Parental occupation, Parental income, Hobby. The sample distribution is shown the table 2.

The details of the sample

S.No	Variables	Sub-Variables	N	Percentage
1	Gender	Boys	142	47.0%
		Girls	161	53.0%
2	Type of School	Govt	135	45.0%
		Aided	83	27.0%
		Private	85	28.0%
3	Nature of School	Boys	37	12.0%
		Girls	51	17.0%
		Co-education	215	71.0%
4	Medium of Instruction	Tamil	135	45.0%
		English	168	55.0%
5	Locality	Rural	275	91.0%
		Urban	28	9.0%
6	Type of family	Joint	119	39.0%
		Nuclear	184	61.0%
7	Order of birth	First	104	34.0%
		Second	118	39.0%
		Third	81	27.0%
8	Parents education	10 th	118	39.0%
		12 th	40	13.0%
		Degree	54	18.0%
		Uneducated	91	30.0%
9	Parents Occupation	Govt	18	6.0%
		Private	51	17.0%
		Business	36	12.0%

		Coolie	198	65.0%
10	Annual Income	Below RS 25,000	220	72.0%
		50,000	66	22.0%
		Above RS 50,000	17	6.0%
11	Hobby	Gardening	41	13.0%
		Playing	151	50.0%
		Reading books	111	37.0%

TOOLS USED

The following tools are used for data collection.

- 1) Problem solving skill questionnaire constructed and standardized by M.Adhimoolam (2015).
- 2) Personal Data sheet constructed by the investigator.

DESCRIPTION OF THE TOOL

The above mention questionnaire consists of 16 Statements, with 5 point rating scale. The maximum score is 80 and minimum score is 0.

List of Positive and Negative items

Positive Items	1,2,3,4,7,8,12,13,14,15
Negative Items	5,6,9,10,11,16

SCORING PROCEDURE

The Problem solving skills consisted with 5 point rating scale. For positive statement the scores are 5,4,3,2 and 1 and for option “Very often”, “Often”, “Sometimes”, “Rarely”, and “Not at all”. For the negative statement, the order of the rating is to be reversed Table 3.

Scoring procedure of the Problem solving skills

Response	Scoring of the positive items	Scoring of the negative items
Very often	5	1
Often	4	2
Sometimes	3	3
Rarely	2	4
Not at all	1	5

PILOT STUDY

A Pilot Study was conducted for sixty high school students. The investigator administered the tool in person in the school. Precautions were taken to ensure normal

conditions for the study. No time limit was specified. All the students were given ample time to answer all the items in the rating scale.

RELIABILITY AND VALIDITY

Reliability

The Reliability of the Problem solving scale was determined by the split- half method. The odd numbered items were made into one test score and the even numbered items were made into another test and the help of Spearman Brown prophecy formula is found to be value 0.931. The highly significance of the reliability was tested with ‘t’ test. The ‘t’ value was significant at 0.01 level. Thus the reliability was highly significant at 0.01 levels.

Validity

The intrinsic validity is also called as index of reliability [Gilford, 1954]. The formula to be used to determine the intrinsic validity is the square root of its reliability. The significance of the validity was tested with ‘t’ test. The ‘t’ value 0.964 was significant at 0.01 level. Thus the validity was highly significant at 0.01 levels. Thus from the two co-efficient it may be inferred that this test is highly reliable and valid.

TOOL FOR THE STUDY

The norms of the tool having finalized after getting discussion with this subject experts. For the present tools, the norms have been arrived with help of the mean±1S.D property of the normal distribution curve which contributes 68.46 % of area in its total distribution. Those school students whose score ranges above the mean+1SD comes under high level category, Those school student whose score ranging between mean +1SD and mean-1SD comes under average level category and Those school student whose score ranges less than mean -1 SD comes under the low level category.

For the whole sample (N=303) for this research study. The mean and standard deviation values were found to be Mean value 52.40 and S.D value 5.799. The following norms for the different level of problem solving skills are given in Table 4.

The norms of Problem solving skills

S. No	Norms	Score Range	Score Limit	Level of Problem solving skills.
1	M+1 SD	58.18	58.18 to 80	High
2	M±1SD	58.18 to 46.60	58.18 to 46.60	Average
3	M-1SD	46.60	46.60 to 16	Low

STATISTICAL TECHNIQUES USED

For the analysis of the data the following statistical techniques have been used.

1. Descriptive statistical techniques

- Mean
- Standard deviation
- Skewness
- Kurtosis

2. Inferential statistical techniques

- ‘t’ test
- ‘F’ test

ADMINISTRATION OF THE TOOLS

The investigator administrated the tools Problem solving questionnaire with prior permission from the head of the schools in Namakkal and Salem district of Tamil Nadu state. The tools were distributed to the Ninth standard students with proper instruction. Whenever they need clarification the investigator provided proper information. In this way all the tools were collected from the sample.

DELIMITATIONS

Though every attempt has been made to make the study precise and objectives as possible, certain delimitations have kept into it.

- o The study is limited to Namakkal and Salem district.
- o The study is limited to 303 high school students only.
- o The study is limited to Govt, Aided and Matric high school.
- o Only six high schools for collecting data.

STATISTICAL ANALYSIS USED IN THE STUDY

Suitable descriptive and differential statistical techniques were used for the interpretation of the data to draw a more meaningful picture of result from the collected data.

DESCRIPTIVE ANALYSIS

Descriptive statistical analysis limits generalization to the particular group of individual observed. No conclusions are extended beyond this group and any similarity to those outside the group cannot be assumed. The data describes one group and that group only. Much simple research involves descriptive and provides valuable information about the nature of a particular group of individuals.

PRELIMINARY ANALYSIS

Problem solving skills scores obtained from the whole sample and sub samples were analyzed. The mean and standard deviation for the whole sample and sub samples are present in Table 1.

Table 1: Mean and standard Deviation values of problem solving skills for the whole sample and subsamples

S.No	Sample	Sub-sample	N	Mean	Std. Deviation
1	For the whole sample		303	52.4	5.79
2	Gender	Boys	142	51.46	5.47
		Girls	161	53.22	5.96
3	Medium of Instruction	Tamil	135	53.14	5.73
		English	168	51.8	5.79
4	Locality	Rural	275	52.33	5.77
		Urban	28	53.07	6.12
5	Type of family	Joint	119	51.34	4.95
		Nuclear	184	53.08	6.2
6	Type of school	Govt	135	53.14	5.73
		Aided	83	51.4	5.65
		Private	85	52.19	5.93
	Nature of school	Girls	51	53.92	6.24

7		Boys	37	50.65	5.28
		Co-education	215	52.33	5.7
8	Order of Birth	First	104	52.63	5.13
		Second	118	52.65	5.88
		Third	81	51.75	6.48
9	parents Educational qualification	10 th	118	52.2	6.01
		12 th	40	50.72	5.77
		Degree	54	51.67	4.94
		Un Education	91	53.81	5.76
10	Parents Occupation	Govt	18	50.81	7.21
		Private	51	52.27	6
		Business	36	51.24	4.29
		Coolie	198	52.78	5.86
11	Parents annual income	Below Rs 25000/-	220	52.63	5.64
		Rs 50000/-	66	52.08	6.15
		Above Rs 50000/-	17	50.87	6.69
12	Hobby	Gardening	41	50.32	4.49
		Playing	151	51.76	5.55
		Reading	111	53.99	6.18

From the table 1 among the group's high school girls students have 53.22 more mean score value than high school boys students in their problem solving skills. High school girls students have 5.969 greater deviation than high school boys students in their problem solving skills.

Tamil medium high school students have 53.14 more mean score value than English medium high school students in their problem solving skills. English medium high school students have 5.79 greater deviations than Tamil medium high school students in their problem solving skills.

Urban high school students have 53.07 more mean score value than rural high school students in their problem solving skills. Urban high school students have 6.12 greater deviations than rural high school students in their problem solving skills.

Nuclear family high school students have 53.08 more mean score value than joint family high school students in their problem solving skills. Nuclear family high school students have 6.20 greater deviation than joint family high school students in their problem solving skills.

Government high school students have 53.14 more mean score value than Private and Aided high school students in their problem solving skills. Private high school students have 5.93 greater deviations than Government and Aided high school students in their problem solving skills.

Girls high school students have 53.92 more mean score value than Boys and co education high school students in their problem solving skills. Girls high school students have 6.24 greater deviation than Boys and co education high school students in their problem solving skills.

Second Order of birth high school students has 52.65 more mean score value than first and third order of birth high school students in their problem solving skills. Third order of birth high school students have 6.48 greater deviation than first and second order of birth high school students in their problem solving skills.

High school students whose parent’s educational qualification is uneducated have 53.81 more mean score value than the degree and uneducated parents. High school students whose parent’s educational qualification is up to tenth have 6.01 greater deviations than the degree and uneducated parents in their problem solving skills.

High school students whose parent’s occupation is coolie have 52.78 more mean score value than other parent’s occupation. High school students whose parent’s occupation is government have 7.21 greater deviations than other parent’s occupation in their problem solving skills.

High school students whose Parents Annual Income is below 25,000 have 52.63 more mean score value than other Parent’s annual income. High school students whose parent’s annual income is above 50,000 have 6.69 greater deviations than other parent’s annual income in their problem solving skills.

High school students whose hobby is reading books have 53.99 more mean score value than other hobbies. High school students whose hobby is reading books have 6.18 greater than other hobbies in their problem solving skills.

DIFFERENTIAL ANALYSIS

Differential analysis is an important procedure by which the researcher is able to make inferences involving the determination of the statistical significance of difference between groups with reference to select variables. It involves the use of ‘t’ test and ‘F’ test.

Hypothesis - 1

The level of Problem solving skills among high school students is low.

Table 2: Showing Mean, S.D, Skewness and Kurtosis Values for the whole sample

Variable	N	Mean	S.D	Skewness	Kurtosis	Level
Problem solving skills	303	52.40	5.79	0.45	0.59	Average

INTERPRETATION

From the above table 4.2 it is found that the mean and standard Deviation scores of problem solving skills among high school students are 52.40 and 5.79 .The mean value 52.40 is found within the range from 46.60 to 58.18. Therefore the level of problem solving skills among high school students is found to be Average . In the present study the level of problem solving skills among high school students is found to be Average.

Hypothesis 2

There is no significant difference between boys and girls high school students in their problem solving skills.

Table 3: Showing the ‘t’ value of problem solving skills of boys and girls high school students.

Gender	N	Mean	S.D	't' value	Level of significance
Boys	142	51.46	5.47	2.65	S
Girls	161	53.22	5.96		

INTERPRETATION

It is clear from the table 4.3, that the obtained 't' value 2.65 is greater than that of the table value 1.96 at 0.05 level. Therefore the null hypothesis is not accepted. It is inferred that, there is significant difference between boys and girls high school students in their problem solving skills. In the present study, gender is found to be a determinant factor of problem solving skill.

Hypothesis 3

There is no significant difference between problem solving skills of high school students with respect to their type of school.

Table 4: Showing the 'F' value of high school student's problem solving skills of different type of school

Variable	Source of Variation	Sum of Squares	Df	Mean squares	F	Level of significance
Problem solving skills	Between groups	161.28	2	80.64	2.42	NS
	Within groups	9993.19	300	33.31		
	Total	10154.47	302			

INTERPRETATION

From the table 4.4, it is evident that the obtained 'F' value 2.421 is found to be less than that of table value 2.60 at 0.05 level. Therefore, the null hypothesis is accepted. It is inferred that there is no significant difference between problem solving skills of high school students with respect to their type of school. In the present study, type of school is not found to be a determinant factor of problem solving skills.

Hypothesis 4

There is no significant difference between problem solving skills of high school students with respect to their nature of school.

Table 5: Showing the 'F' value of high school students problem solving skills of different nature of school

Variable	Source of Variation	Sum of Squares	Df	Mean Squares	F	Level of significance
Problem solving skills	Between groups	232.46	2	116.23	3.51	S
	Within groups	9922.00	300	33.07		
	Total	10154.47	302			

INTERPRETATION

From the table 4.5, it is evident that the obtained 'F' value 3.514 is found to be greater than that of the table value 2.60 at 0.05 level. Therefore the null hypothesis is not accepted. It

is inferred that there is significant difference between problem solving skills of high school students with respect to their nature of school. As the obtained F-ratio was significant the ‘t’ test has been applied.

Table 6: Showing the ‘t’ value of high school students of problem solving skills of different nature of school

Nature of school	N	Mean	SD	‘t’ value	Level of significance
Girls	51	53.92	6.24	1.75	NS
Co- education	215	52.33	5.70		
Boys	37	50.65	5.28	1.67	NS
Co-education	215	52.33	5.70		
Boys	37	50.65	5.282	2.58	S
Girls	51	53.92	6.244		

INTERPRETATION

From the table 4.6 is evident that ‘F’ value for the problem solving skills difference between natures of schools Girls and Co education high school students Boys and Co education high school students have no significant difference in their problem solving skills. But boys and girls high school students have significant difference in their problem solving skills. The ‘t’ value is 2.58 is greater than that the table value 1.96 at 0.05 level. In the present study the nature of school is found to be determinant factor of problem solving skills.

Hypothesis 5

There is no significant difference between Tamil and English medium high school students in their problem solving skills.

Table 7: Showing the ‘t’ value of problem solving skills of Tamil and English medium high school students

Medium	N	Mean	SD	‘t’	Level of significance
Tamil	135	53.14	5.73	2.01	S
English	168	51.80	5.79		

INTERPRETATION

It is clear from the table 4.7, that the obtained ‘t’ value 2.01 is greater than that of the table value 1.96 at 0.05 level. Therefore the null hypothesis is not accepted .It is inferred that, there is significant difference between Tamil and English medium high school students in their problem solving skills. In the present study, medium of instruction is found to be a determinant factor of problem solving skills.

Hypothesis 6

There is no significant difference between rural and urban high school students in their problem solving skills.

Table 8: Showing the ‘t’ value of problem solving skills of rural and urban high school students.

Locality	N	Mean	S.D	‘t’	Level of Significance
Rural	275	52.33	5.77	0.64	NS
Urban	28	53.07	6.12		

INTERPRETATION

It is clear from the table 4.8, that the obtained ‘t’ value 0.64 is less than that of the table value 1.96 at 0.05 level. Therefore, the null hypothesis is accepted. It is inferred there is no significant difference between rural and urban high school students in their problem solving skills. In the present study locality is not found to be a determinant factor of problem solving skill.

Hypothesis 7

There is no significant difference between problem solving skills of high school students with their type of family.

Table 9: Showing the ‘t’ value of problem solving skills of high school students with their family type

Type of family	N	Mean	S.D	‘t’	Level of Significance
Joint	119	51.34	4.95	2.58	S
Nuclear	184	53.08	6.20		

INTERPRETATION

It is clear from the table 4.9 that the obtained ‘t’ value 2.58 is greater than that of the table value 1.96 at 0.05 level. Therefore, the null hypothesis is not accepted. It is inferred that there is significant difference between problem solving skills of high school students with their type of family. In the present study type of family is found to be a determinant factor of problem solving skills.

Hypothesis 8

There is no significant difference among problem solving skills of high school students with their order of birth.

Table 10: Showing the ‘F’ value of high school students problem solving skills of their order of birth

Variable	Source of Variation	Sum of Squares	df	Mean Squares	F	Level of significance
Problem solving skills	Between groups	51.13	2	25.56	0.75	NS
	Within groups	10103.33	300	33.67		
	Total	10154.47	302			

INTERPRETATION

It is clear from the table 4.10 that the obtained ‘F’ value 0.75 is less than that of the table value 2.60 at 0.05 level. Therefore, the null hypothesis is accepted. It is inferred that there is no significant difference between problem solving skills of high school students with their different order of birth. In the present study the order of birth is not found to be a determinant factor of problem solving skills.

Hypothesis 9

There is no significant difference between problem solving skills of high school students with respect to the parents education.

Table 11: Showing the ‘F’ value of problem solving skills of high school students according to their parents education

Variable	Source of Variation	Sum of Squares	Df	Mean Squares	F	Level of significant
Problem solving skills	Between groups	327.55	3	109.18	3.32	S
	Within groups	9826.91	299	32.86		
	Total	10154.47	302			

INTERPRETATION

It is clear from the table 11, that the obtained ‘F’ value 3.32 is greater than that the table value 2.60 at 0.05 level. Therefore the null hypothesis is not accepted .It is inferred that there is significant difference between problem solving skills of high school students with respect to their parents education. As the obtained F-ratio was significant the ‘t’ test has been applied.

Table 12: Showing the‘t’ value of problem solving skills of high school students according to their parents education

Variable	N	Mean	SD	‘t’ value	Level of significance
10 th	118	52.20	6.01	1.35	NS
12 th	40	50.72	5.77		
10 th	118	52.20	6.01	0.57	NS
Degree	54	51.67	4.94		
12 th	40	50.72	5.77	2.82	S
Un-education	91	53.81	5.76		
Degree	54	51.67	4.94	2.28	S
Un-education	91	53.81	5.76		
12 th	40	50.72	5.77	0.84	NS
Degree	54	51.67	4.94		
10 th	118	52.20	6.01	1.95	NS
Un-education	91	53.81	5.76		

INTERPRETATION

From the table 4.12 is evident that ‘t’ value for the difference between problem solving mean score of high school students 10th&12th, 10th& degree 12th°ree and 10th& un-educated parents educational qualification have no significant difference in their problem solving skills. But there is significant difference in 12th& un-educate and degree & un-educated parent’s educational qualification. In the present study Parents education is found to be determinant factor of problem solving skills of high school students.

Hypothesis 10

There is no significant difference between problem solving skills of high school students with respect to their parents occupation.

Table 13: Showing the ‘F’ value of problem solving skills of high school students according to their parents occupation.

Variable	Source of Variation	Sum of Squares	Df	Mean Squares	F	Level of significance
Problem solving skills	Between groups	120.79	3	40.26	1.20	NS
	Within groups	10033.68	299	33.55		
	Total	10154.47	302			

INTERPRETATION

It is clear from the table 4.13, that the obtained ‘F’ value 1.20 is less than that of the table value 2.60 at 0.05 level. Therefore, the null hypothesis is accepted. It is inferred that there is no significant difference between problem solving skills of high school students with respect to their parents occupation. In the present study parents occupation is not found to be a determinant factor of problem solving skills.

Hypothesis 11

There is no significant difference between problem solving skills of high school students with respect to parents annual income.

Table 14: Showing the ‘F’ value of problem solving skills among high school students of parents different annual income

Variable	Source of Variation	Sum of Squares	Df	Mean Squares	F	Level of significance
Problem solving skills	Between groups	50.60	2	25.30	0.75	NS
	Within groups	10103.86	301	33.68		
	Total	1015.47	302			

INTERPRETATION

It is clear from the table 4.14, that the obtained ‘F’ value 0.75 is less than that of the table value 2.60 at 0.05 level. Therefore, the null hypothesis is accepted. It is inferred that there is no significant difference between problem solving skills of high school students with respect to parents annual income. In the present study parents annual income is not found to be a determinant factor of problem solving skills.

Hypothesis 12

There is no significant difference between problem solving skills of high school students with respect to their hobby.

Table 15: Showing the ‘F’ value of problem solving skills among high school students of different hobby

Variable	Source of Variation	Sum of Squares	df	Mean Squares	F	Level of significance
	Between groups	517.68	2	258.84		S

Problem solving skills	Within groups	9605.28	301	32.12	8.05
	Total	10122.96	302		

INTERPRETATION

It is clear from the table 4.15, that the obtained ‘F’ value 8.057 is greater than that the table value 2.60 at 0.05 level. Therefore the null hypothesis is not accepted .It is inferred that there is significant difference between problem solving skills of high school students with respect to their different hobby. As the obtained F-ratio was significant the ‘t’ test has been applied.

Table 16: Showing the ‘t’ value of problem solving skills among high school students of different hobby

Variable	N	Mean	SD	‘t’ value	Level of significance
Gardening	41	50.32	5.49	1.53	NS
Playing	151	51.76	5.55		
Gardening	41	50.32	4.49	3.47	S
Reading	110	53.99	6.18		
Playing	151	51.76	5.55	3.05	S
Reading	110	53.99	6.18		

INTERPRETATION

From the table 4.16, it is evident that ‘t’ value for the difference between problem solving skills mean score of high school students there is no significant difference in gardening & playing. But reading & gardening and playing & reading are greater than the table value of 1.96 at 0.05 level. It is inferred that the hobbies of the high school students are found to be a determinant of problem solving skills.

RECOMMENDATIONS

The present study gives the clear cut view about the problem solving skills based on the important findings stated earlier the following recommendations were made

1. To enhance the problem solving of the student’s digital library and E-learning facilities must be provided.
2. Co-curricular and extra-curricular activities should be given importance in the school campus. So that we can develop balanced intelligent students.
3. Defining the problem clearly may require looking at it from several angles and perspectives, not just one or two. This will avoid identifying a prospective solution as a problem
4. To enhance the problem solving skills of the students digital library and E-Learning facilities may be included.
5. The solution for the problem must be analyzed for their suitability in order to determine which is best to handle the problem.
6. Appreciative inquiry develops solution by analyzing what is currently going right and determining whether it can be applied to solve the problem at hand

SUGGESTIONS FOR FURTHER STUDY

The study can be further carried and to

1. Determining of Problem solving skills of high school students.
2. Find relationship between Problem solving skills and higher secondary school students.
3. Impact of Problem solving skill based lesson on the achievement of the B.Ed. student Teachers.
4. A study on the role of student education in developing the problem solving of high school students.

CONCLUSION

In this study, the investigator has attempted to study the Problem solving skills among high school students. Since the role of the teachers is very important in shaping the Problem solving skills of the high school students, it is always necessary to see that the teachers should be well trained only in academic aspects. Problem solving skills should be given due importance in the school experiences of the high school students for this behaviour modification in problem solving skills is always helpful.

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