



Effectiveness of Teaching Science Using Science Kit in V STD of Some Primary Schools of Madurai District

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Abstract

In majority of Primary schools teaching of science is being done with the help of chalk, talk and blackboard only. Teachers should allow the children to learn Science through hands-on experience. Children should be made to learn Science in an environment in which they are encourage to manipulate physical objects. Teacher should adopt such strategies that would make Science interesting and at the sometime meaningful. The primary school teachers should know the skills to adopt and practise child centred and activity-based approaches in teaching of Science. For these two approaches, the teacher should be imparted training programmes in effective handling of materials in the Science kit. A package should be given to them. The package need not be in the synoptic form as the purpose is to help the teachers to understand the steps to conduct various activities in the context of attainment of specific learning outcomes. It is assumed that desired learning outcomes can be achieved only if necessary, inputs in the form of packages are provided to the teachers. we have to conclude that Vstd pupils of Experimental Group of all the five schools selected are better than the pupils of Experimental Group of all the same five schools selected in five Science abilities.

Keywords: *Effectiveness, Science Kit, Primary School, Madurai.*



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1. Introduction

Science is a subject which mainly deals with abstract concepts. This makes science a little more to teach as well as to learn. Many take Science is nothing but collection of rules having little meaning and application. “The thrill of solving a Science problems, the satisfaction of understanding computational methods and the excitement of discovering Science in and

environment, decidedly make the learning of Science as interesting experiences”. In majority of Primary schools teaching of Science is being done with the help of chalk, talk and blackboard only. Teachers should allow the children to learn Science through hands-on experience. Children should be made to learn Science in an environment in which they are encourage to manipulate physical objects. Teacher should

adopt such strategies that would make Science interesting and at the same time meaningful. The primary school teachers should know the skills to adopt and practise child centred and activity based approaches in teaching of Science. For these two approaches, the teacher should be imparted training programmes in effective handling of materials in the Science kit. A package should be given to them. The package need not be in the synoptic form as the purpose is to help the teachers to understand the steps to conduct various activities in the context of attainment of specific learning outcomes. It is assumed that desired learning outcomes can be achieved only if necessary, inputs in the form of packages are provided to the teachers.

2. Background of Study

Kinder, James S. has suggested the sources of learning might be listed in the following descending order of their effectiveness.

- Things one experiences directly.
- Seeing something through media of pictures, films or models.
- Hearing about it from someone who has experienced it at first hand.
- Reading about it least effective.

“National curriculum for primary and secondary Education – A framework brought out by NCERT. It recommended that certain minimum facilities must be provided to the schools of the nation. Making provision of minimum scheme “operation Blackboard”. In that scheme, every primary school is provided with a science kit consists of seven items useful for teaching concepts in science. The investigator involved in giving training to primary school teachers of Madurai city primary schools. The investigator is being an Associate Professor of Science in the Education College want to study the effectiveness of teaching Science using Science kit in Vth std of some primary schools of Madurai Taluk. For these five primary schools from Madurai taluk. For this five primary school from Madurai District are limited to his studies. From the five primary schools, 100 children of Vth std are selected from each school. These 100 children are taken as 50 children of from one section of Vth std and 50 children of another section of Vth std from the same school. In this way 100 children, from each school totally 500 children are involved in his studies from five primary schools. So the

investigation is limited to these five primary schools of Madurai District.

3. Objectives of Using the Science Kit

- Teacher should become familiar with all the items of Science Kit.
- Develop skills to handle these items and design various activities by selective use of these items.
- Be motivated to prepare more and more teaching aids with the view to use them in class room teaching.

4. Administration of the Test

All the five primary schools were visited and permission was got from the heads of the institutions. The concerned teachers were consulted. The purpose of investigation was explained to them. In the two teachers of each primary school handling Vth std class one has undergone in-service programme in the operation of science kit, the other is not. The investigator has conducted the in-service programme in operation of science kit in the month of August. The tests were conducted in the month of February. In the Experimental Group of Vth std teacher had undergone training in the operation of science kit. So, he taught the Vth std Science Subject by using the items in science kit. In the Control Group of Vth std teacher had not been given training in the operation of science kit. So, the teacher taught the Vth std Science subject only with chalk and talk. Experimental Group students, and Control Group students of the selected five primary schools were given the series of five tests in the time gap of four days in the month of February, just to the convenience of the teacher. Number of pupils in each section of Vth std in 50. Two tests were answered in the question paper itself. The other three tests answered in the question paper itself. The other three tests were answered in separate answer sheets. Teachers were given special instruction to conduct the test.

5. Problem Stated

“Effectiveness of Teaching Science Using Science Kit in V std of Some Primary Schools of Madurai District”. The main objectives of teaching of science fall under the heads knowledge and understanding, Application, Skill, Interest, appreciation and attitude. The five Science

abilities are developed by teaching of Science through Science kit in Vstd of Primary schools.

- An ability to recall the Science facts, Principles, Process, formulae etc. (Knowledge and understanding).
- The ability to solve elementary Science Problems independently (Application).
- Ability in four fundamental operations, dealing with integral numbers and fractions (skill).
- Ability to analysis, Collects all the known evidence and then show proper inference(Attitude).
- Ability to appreciate and takes interest in solving daily life problems(Application and interest).

6. Analysis

The mean and standard deviation of each test for each section in each class was computed. Then using the Mean and Standard deviation, interpretation as done by applying tests of significance and by drawing O give. Hence analysis was done under Two heads

- a) Significance of Difference between Means
- b) Graphical Analysis (O Give)

Test 1

Test Number 1 was given to both Experimental group and Controlled Group pupils of standard V. It was given to test the ability to recall the Science facts, Principles processes, formulae etc (Knowledge and understanding) of the Experimental group and Control group to study the effectiveness of science kit.

The Null Hypothesis is formed as follows:

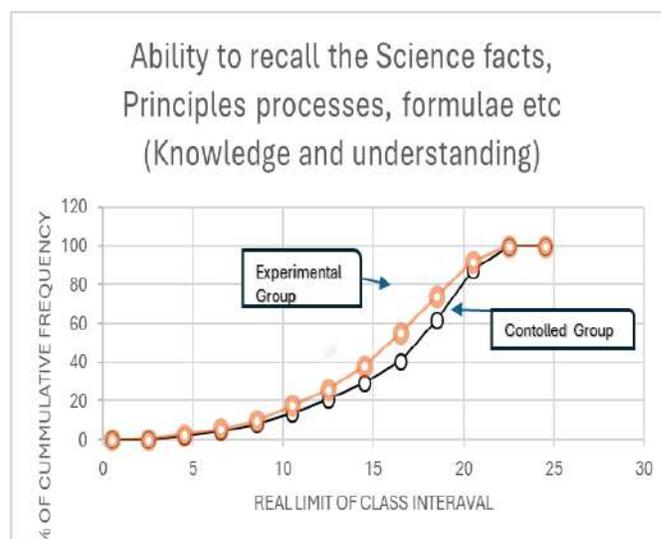
There is no significant difference between the mean of pupils of Experimental Group and Controlled Group in the ability to recall the Science facts, Principles processes, formulae among V standard pupils.

Group	N	Mean	S.D	t-Value	Significant / Not significant
Experimental Group	25	18.20	4.49	2.75	Significant
Controlled Group	25	17.10	4.54		

The Calculated Value is found to be 2.75. Since 2.75 is greater than 1.96 level of significance of 0.05. Hence the Null hypothesis is rejected. There is difference between their performances and its significant. We Conclude that the Experimental group pupils are better than the Controlled group pupils in their ability to recall Science facts, Principles, formulae.

Graphical Analysis

Class Interval	Experimental Group CF %	Controlled group CF%
24.5 – 26.5	100	100
22.5- 24.5	99.6	100
20.5 – 22.5	87.6	92
18.5 – 20.5	61.6	74
16.5 – 18.5	40.4	55.2
14.5 – 16.5	29.2	38
12.5 – 14.5	20.8	26
10.5 – 12.5	13.6	17.6
8.5 – 10.5	8	9.6
6.5 – 8.5	4.4	5.6
4.5 – 6.5	2	2.8
2.5 – 4.5	0	0.4
0.5 – 2.5	0	0



The graph of the Experimental group Pupils is to the right of that of the Control group Pupils. So, we conclude that the pupils of Experimental

Group have done better than that of Control Group.

Test 2

Given to both Experimental group and Control group of pupils of std V, it was given to test the ability to solve elementary science problems independently (application) of the Experimental Group and Control Group to study the effectiveness of Science Kit.

The Null hypothesis is Formed as follows:

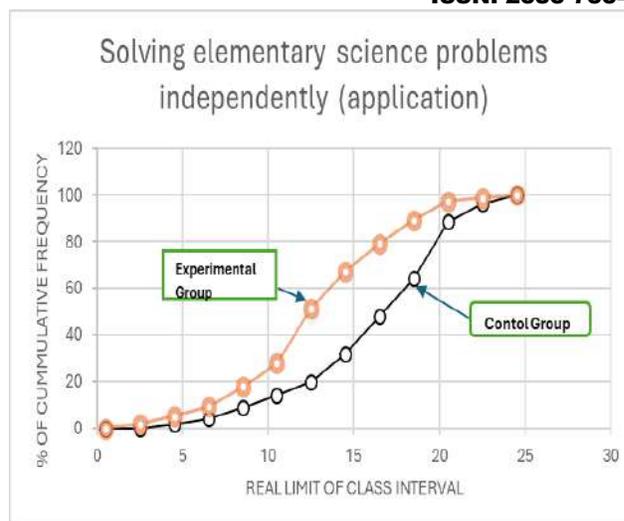
There is no significant difference between the mean of pupils of Experimental Group and Control Group in the ability to solve elementary science problems independently (application).

Name of the test	N	Mean	S.D	t-Value	Significant / Not significant
Experimental Group		12.90	4.50	3.33	Significant
Controlled Group		11.60	4.30		

The t value is found to be 3.33. Since 3.33 is greater than 1.96 at 0.05 level of significance. Hence the Null hypothesis is rejected. There is difference between their performance and it is significant. We conclude that Experimental Group are better than the Control Group pupils in their ability to solve elementary Science problems (application).

Graphical Analysis

Class Interval	Experimental Group CF %	Controlled group CF%
24.5 – 26.5	100	100
22.5- 24.5	99.6	100
20.5 – 22.5	97.6	98.8
18.5 – 20.5	94.4	96.4
16.5 – 18.5	90.4	91.6
14.5 – 16.5	84	86
12.5 – 14.5	61.6	78
10.5 – 12.5	41.6	66
8.5 – 10.5	29.2	43.2
6.5 – 8.5	18	23.6
4.5 – 6.5	9.6	9.6
2.5 – 4.5	2.4	3.2
0.5 – 2.5	0.8	0.4



The graph of Experimental Group pupils is to the right of that of Control Group Pupils. So we conclude that the pupils of Experimental Group have done better than that of Control Group. 50 % of Experimental Pupils get below 11.0 and 50 % of Control Group Pupils get below 9.0.

Test 3

Given to both Experimental Group and Control Group pupils of Std V. It was given to test the ability in fundamental solving and conversation (Skill) of the Experimental Group and Control Group to study effectiveness of Science Kit.

The null Hypothesis is formed as follows:

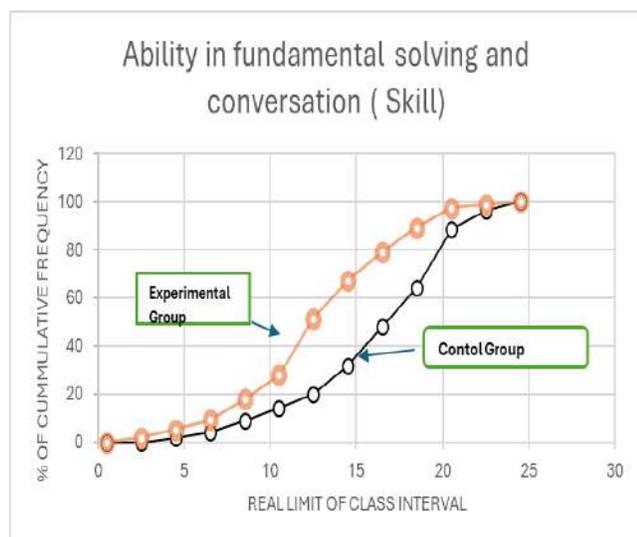
There is no significant difference between the mean of the pupils of Experimental Group and Control Group in the ability in fundamental solving and conversation (Skill).

Group	N	Mean	S.D	t-Value	Significant / Not significant
Experimental Group	25	16.10	4.11	11.15	Significant
Controlled Group	25	14.20	4.59		

The Calculated value is found to be 11.15. Since 11.15 is greater than 1.96 at 0.05 level of significance. There is difference between their performance and it is significant. We conclude that Experimental group pupils are better than Control Group in their ability in solving and conversion.

Graphical Analysis

Class Interval	Experimental Group CF %	Controlled group CF%
24.5 – 26.5	100	100
22.5- 24.5	99.2	99.6
20.5 – 22.5	92.2	95.6
18.5 – 20.5	84.0	89.2
16.5 – 18.5	68.4	81.2
14.5 – 16.5	52.4	72.4
12.5 – 14.5	28.8	58
10.5 – 12.5	20	32
8.5 – 10.5	12.8	20
6.5 – 8.5	6.8	11.6
4.5 – 6.5	3.6	4.8
2.5 – 4.5	1.6	2.0
0.5 – 2.5	0	0



The graph of Experimental group pupils is to the right of that of Control group pupils. So we conclude that the pupils of Experimental Group pupils have done better than that of Control Group pupils. 50 % of Experimental Group pupils get below 16 – 3 and 50 % of Control Group pupils get bet below 14.

Test 4

Given to both Experimental Group and Control Group pupils of std V. It was given to the test the ability to analyse, Collects all the known evidences and then draw proper inferences (Attitude) of the Experimental Group and Control Group to study the effectiveness of Science Kit.

The Null Hypothesis formed as follows:

There is no significant difference between the pupils of Experimental Group and Control Group in the ability to analyse, Collects all the known Evidences and then Draw proper inferences (Attitude)

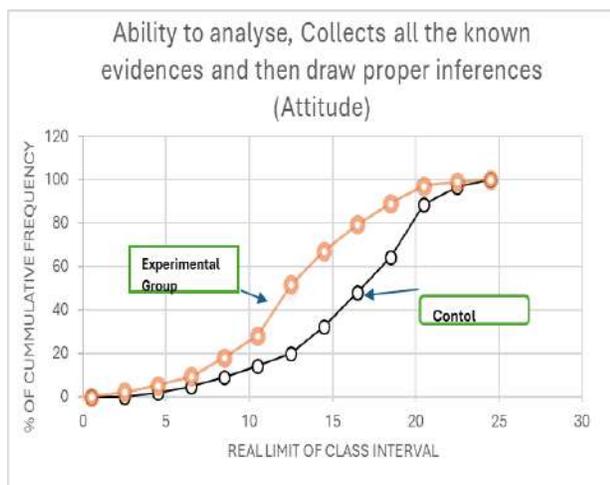
Group	N	Mean	S.D	t-Value	Significant / Not significant
Experimental Group	250	17.80	4.54	6.57	Significant
Controlled Group	250	15.30	4.40		

The calculated value is found to be 6.57. Since 6.57 is greater than 1.96 at 0.05 level of significance. Hence the Null Hypothesis is rejected. There is difference between their performance and it is significant. We conclude that Experimental Group pupils are better than Control Group pupils in their ability to analyse, Collects all the known evidences and then draw proper inferences (Attitude).

Graphical Analysis

Class Interval	Experimental Group CF %	Controlled group CF%
24.5 – 26.5	100	100
22.5- 24.5	98	98.4
20.5 – 22.5	88.4	96.4
18.5 – 20.5	65.6	88
16.5 – 18.5	48.4	76.8
14.5 – 16.5	32	59.2
12.5 – 14.5	20.8	39.6
10.5 – 12.5	14.8	28
8.5 – 10.5	8.8	17.6
6.5 – 8.5	4.8	8
4.5 – 6.5	1.6	2.8
2.5 – 4.5	0	0
0.5 – 2.5	0	0

solving daily life problems(Appreciation and Interest)



The graph of Experimental Group pupil is to the right of that of Control Group pupils so we conclude that the pupils of Experimental Group have done better than that of Control Group. 50% of Experimental Group pupils get below 16.8 and 50 % of Control Group pupils get below 13.7.

TEST 5

Given to both Experimental Group and Control Group pupils of std V. It was given to test the ability to appreciate and takes interest in solving daily life problems. (Appreciation and Interest) of the Experimental Group and Control Group to study the effectiveness of Science Kit.

The Null hypothesis is formed as follows:

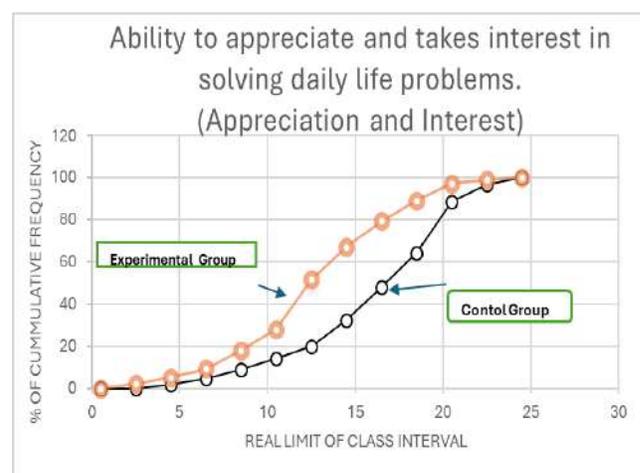
There is no significant difference between the Mean and pupils of Experimental group and Control Group in the ability to appreciate and takes interest in solving daily life problems. (Appreciation and Interest).

Name of the test	N	Mean	S.D	t-Value	Significant / Not significant
Experimental Group	25	17.90	4.60	8.05	Significant
Controlled Group	25	14.60	4.56		

The calculated value is found to be 8.05 is greater than 1.96 at 0.05 level of significance. Hence the null Hypothesis is rejected. There is difference between their performance and it is significance. We conclude that Experimental Group pupils are better than Control Group Pupils in their ability to appreciate and takes interest in

Graphical Analysis

Class Interval	Experimental Group CF %	Controlled group CF%
24.5 - 26.5	100	100
22.5 - 24.5	96.4	98.8
20.5 - 22.5	88.4	97.2
18.5 - 20.5	64.4	89.2
16.5 - 18.5	48	79.2
14.5 - 16.5	32	67.2
12.5 - 14.5	20	51.6
10.5 - 12.5	14	28
8.5 - 10.5	8.8	18
6.5 - 8.5	4.4	9.2
4.5 - 6.5	1.6	5.2
2.5 - 4.5	0	2
0.5 - 2.5	0	0



The graph of Experimental Group pupils is to the right of Control Group pupils. So we conclude that the pupils of Experimental Group have done better than that of Control Group. 50% of Experimental Group get below 16.8 and 50 % of Control Group pupils get below 12.4.

7. Findings of the Study

The pupils of the Experimental Group were taught by using Science Kit where the pupils of Control Group were not taught by using the Science kit for six months. At the end of the sixth month, five tests were conducted and the marks were analysed. The following findings were got by applying the test of significance of differences between mean, calculating the "t" values and from graphical representation.

The pupils of experimental group performance is better than the performance of the control group. So we conclude that there is significant difference between the two group of pupils and the Experimental Group pupils are better than Control group pupils in their all five Science abilities mentioned above.

8. Conclusion

Hence, we have to conclude that Vstd pupils of Experimental Group of all the five schools selected are better than the pupils of Experimental Group of all the same five schools selected in five Science abilities.

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