

The viability of technical accession to physical science instruction to mitigate learning disabled students in semi-urban area

1Koushik Halder, 2Dr. Debashis Dhar, 3Dr. Udayaditya Bhattacharya, 4Chaitali Bhattacharjee

1Research Scholar, 2Principal, 3Ex-principle, 4HOD

1Department of Education, Jharkhand Rai University, Ranchi, Jharkhand, India,

2Sanjay College of Education, Brindabanchak, Purba Medinipur, West Bengal, India,

3G.C.M.College of Educaion, New Barrackpur, West Bengal, India,

4A.P.C.COLLEGE, NEW BARRACKPUR, W.B.

Abstract - Samuel A. Kirk, 1963, from Chicago, used the term first to describe these children as “Learning disabled” children who have average or elevated ability but have difficulty at least in one or more academic fields and still no other disability, such as intellectual failure. Learning disability is a category that is manifest in infancy as constant learning disabilities to read, write, or literally measure numerical problems, given its natural intellect, formal education, inspiration, socio-cultural incentive, and intact hearing and vision. A learning disability is a neurological condition which influences the brain's ability to send, get, and process information. A child with a learning disability may have difficulties in reading, writing, speaking, listening and with general comprehension. Learning disabilities include a group of disorders such as dyslexia, dyspraxia, dyscalculia and dysgraphia. Technology has created a revolution in opportunities for impaired learners are one of the most impressive advances I've seen in education over the past ten years. Differently-able students have struggled with their assignments for years or been left out of multiple classrooms or subjects because schools had accessibility or instructional problems. The consequence has been that students with learning disabilities have long been exposed to insufficient and unequal resources for schooling. However, the exponential growth and introduction of computer-based technologies has created a sea shift in the possible resources for students with learning disabilities, ending the stigma and restricted opportunities faced by students with learning disabilities for a long time. Computer programs have been developed to make it easier for students with learning disabilities to access information, express their thoughts and progress, and engage in educational experiences. In this paper the investigator attempts to viability of technical accession to physical science instruction to mitigate learning disabilities in semi-urban areas in north 24 parganas district in West Bengal, India.

keywords - Learning disability, Technology.

1. Introduction:

Education is regarded as a fundamental right of every child. But a large number of children have problems in reading, handwriting, spelling, mathematics, listening, expressive language, and social skills. Among them children with learning disabilities find difficulties in acquiring basic academic skills from school educational system. Children with learning disabilities may have problems in reading, writing, spelling and doing mathematics. These children are endowed but ignored by the personnel involved in the educational system. Unfortunately, enough awareness has not been generated among the teachers and parents and the absence of adequate educational programme has long deprived the nation of latent potential in their children. Management of curriculum for children with Learning Disability in the regular school is a challenge for teachers. Learning Disability is the major cause of dropping out of school, poor academic performance status etc.

A relatively new concept is "learning disabilities." Coined by Samuel A. Kirk in 1963, from Chicago, the term has come to serve as a mark for people of normal intelligence, physical intactness, emotional health, adequate instruction and ample motivation who are somehow incapable of mastering basic skills related to school success. Discovery of the learning-disabled population began in the late nineteenth and early twentieth century's with studies of adults with documented brain injuries having difficulty of speech and language. Related literature appeared in the first half of the 20th century in the areas of abnormalities of vision, hyperactivity, post-encephalitic behavior and perceptual abnormalities of children with cerebral palsy.

In a country like India, with a population of over a billion, problems like poverty, illiteracy and unemployment are very common. With such a huge population and with so much poverty, it is difficult to educate a normal child, and therefore, training special children is difficult beyond imagination. There are many children who behave normally but are not academically good as their peers. They are suffering from a lesser-known condition name Learning Disability.

A learning disability is a neurological condition which influences the brain's ability to send, get, and process information. A child with a learning disability may have difficulties in reading, writing, speaking, listening and with general comprehension. Learning disabilities include a group of disorders such as dyslexia, dyspraxia, dyscalculia and dysgraphia.

The present education system is exceptionally different from what it was in the past, especially with regard to application of technology. Technology has recently experienced a widespread integration into everyday life, which now offers easy access to huge numbers of information. Today, the students' generation has grown up continuously with electronics all around them. A new instructor must take into account the inspiration for learning and the impact of technology on the holistic curriculum to create an effective classroom of the 21st century that meets students' needs. The National Teacher Education Council (NCTE) also decided to make compulsory IT literacy for secondary pre-service courses. There is a shift from pen to the pen drive, from blackboard presentation to smart board presentation, from different chart or map presentation to power point presentation, from paper-pen test to computer-based test, from teacher-centric education to child-centric education. In prompting education in the process of teaching, the exploitation of the educational technology and e-learning including the interactive smart board with its various application is considered a smart option that facilitate the achievement.

In terms of intellect, students with learning disabilities may be all over the world, but can suffer from memory issues, self-expression, information processing, and other learning difficulties that hinder them from carrying out their academic activities in the same way as other students.

Technology has created a revolution in opportunities for impaired learners are one of the most impressive advances I've seen in education over the past ten years. Differently-able students have struggled with their assignments for years or been left out of multiple classrooms or subjects because schools had accessibility or instructional problems.

The consequence has been that students with learning disabilities have long been exposed to insufficient and unequal resources for schooling. However, the exponential growth and introduction of computer-based technologies has created a sea shift in the possible resources for students with learning disabilities, ending the stigma and restricted opportunities faced by students with learning disabilities for a long time. Computer programs have been developed to make it easier for students with learning disabilities to access information, express their thoughts and progress, and engage in educational experiences.

In this paper the investigator attempts to viability of technical accession to physical science instruction to mitigate learning disabilities in semi-urban areas in north 24 parganas district in West Bengal, India.

II. Objectives:

- i) To study the pre-test score of the Physical Science achievement test for all students in the experimental group and control group.
- ii) To study the post-test effects of the Physical Science achievement test for all students in the experimental group and control group.
- (iii) To research, among all students in the experimental group and control group, the Achievement Test scores for retention (after one months of post-test) in physical science.
- (iv) To study the relationship among pre-test, post-test and retention test in Physical Science among all students in experimental Group and control group.

III. Hypothesis:

H₀1: There exists no significant difference between the pre-test scores of achievement test in Physical Science between experimental Group and control group.

H₀2: There exists no significant difference between the post-test scores of achievement test in Physical Science between experimental Group and control group.

H₀3: There exists no significant relationship among pre-test and post-test in Physical Science between experimental Group and control group.

H₀4: There exists no significant relationship among pre-test, post-test and retention test in Physical Science among all students in experimental Group and control group.

IV. Methodology of the study:

4.1 Population: For this study, learning disabled students (i.e. Deviation I.Q. Limit < 90), of West Bengal Board of Secondary Education studying in Class X is considered as a population.

4.2 Sample: Total number of students in the study was sixty.

4.3 Method: Experimental method was adopted of this study.

4.4 Variables:

4.4.1. *Dependent Variables:* Achievement test.

4.4.2. *Independent Variables:* Traditional approach, Technological approach.

4.4.3 *Controlled Variable:* I.Q.

4.5 Tools and Techniques:

i) Mixed Type Group Test of Intelligence (Verbal & Non-verbal); Standardized by Dr.P..N.Mehrotra Retired Professor, Moradabad (2008). Achievement Test in Physical Science of class X students (made by the investigator).

ii) Statistical Analysis (Mean, S.D. 't' value, and graphical re-presentations) are used.

iii) Teacher made Achievement Test in Physical Science of secondary level students (Made by the investigators),

4.6 Procedure:

1. On the basis of intelligence Mixed Type Group Test of Intelligence (MGTI-M) by Dr. P. N. Mehrotra (2008) to match their level of intelligence, the students were distributed in two groups named as control group and experimental group.

2. After that, pre-test was administered to both (control group and experimental group) groups.
3. Experimental group were taught by technological approach method and control group were taught by traditional approach method.
4. After completion of the teaching, post-test was conducted for both experimental group and control groups.
5. After one months of post-test, the retention test was arranged to both groups.

4.7 Result and Interpretation of data:

The statistical scores of Achievement tests to both (control group and experimental group) groups are:

Table – 1

Pre-test Score of Achievement Test of experimental group and control groups

SN = Stands for Serial Number of students AT= Stands for Achievement Test Score

| | | Pre-test score | | | | | | | | | | | | | | |
|--------------------|----|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Control group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 40 | 34 | 38 | 32 | 35 | 39 | 37 | 28 | 33 | 27 | 24 | 33 | 38 | 31 | 30 |
| Experimental group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 38 | 35 | 37 | 28 | 34 | 36 | 32 | 26 | 23 | 34 | 34 | 31 | 39 | 32 | 29 |

Table – 2

Post-test Score of Achievement Test of experimental group and control groups

SN = Stands for Serial Number of students AT= Stands for Achievement Test Score

| | | Post-test score | | | | | | | | | | | | | | |
|--------------------|----|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Control group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 49 | 45 | 47 | 46 | 48 | 52 | 50 | 41 | 45 | 35 | 38 | 48 | 51 | 47 | 46 |
| Experimental group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 59 | 61 | 60 | 46 | 58 | 48 | 49 | 48 | 39 | 55 | 54 | 62 | 65 | 64 | 61 |

Table – 3

Retention Score of Achievement Test of experimental group and control groups

SN = Stands for Serial Number of students AT= Stands for Achievement Test Score

| | | Retention score | | | | | | | | | | | | | | |
|--------------------|----|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Control group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 41 | 37 | 39 | 35 | 38 | 46 | 41 | 30 | 39 | 29 | 32 | 37 | 42 | 41 | 35 |
| Experimental group | SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | AT | 54 | 55 | 53 | 40 | 51 | 45 | 42 | 42 | 33 | 52 | 47 | 59 | 64 | 63 | 60 |

Table – 4

Showing the result of mean score, standard deviation, t-value and level of significance of Pre-test of Achievement Test of Control Group and Experimental Group

| Groups | N | Mean | SD | Std. Error | 't' value | Level of Significance |
|--------------------|----|-------|------|------------|-----------|-----------------------|
| Control group | 15 | 33.26 | 4.71 | 1.68 | 0.43 | .05 (accepted) |
| Experimental group | 15 | 32.53 | 4.52 | | | .01(accepted) |

df = 28

Table value = 2.048 at .05 level

2.763 at .01 level

Interpretation –

Table - 4 shows that the mean scores in achievement test in Physical Science of control groups and experimental groups in pre-test are 33.26 and 32.53 with standard deviation of 4.71 and 4.52 respectively. The ‘t’ value is 0.43 which is less than the table value at 0.05 and 0.01 level of significance. Thus, the difference between the two means is statistically insignificant; it also concludes that the achievement in Physical Science of the both groups are of same level prior to experiment. It indicates that both the groups can be treated as equal on the variable of students’ pre achievement in Physical Science.

Therefore, the hypothesis that there exists no significant difference between the pre-test scores of achievement test in Physical Science among all students in both (control group and experimental) groups is accepted.

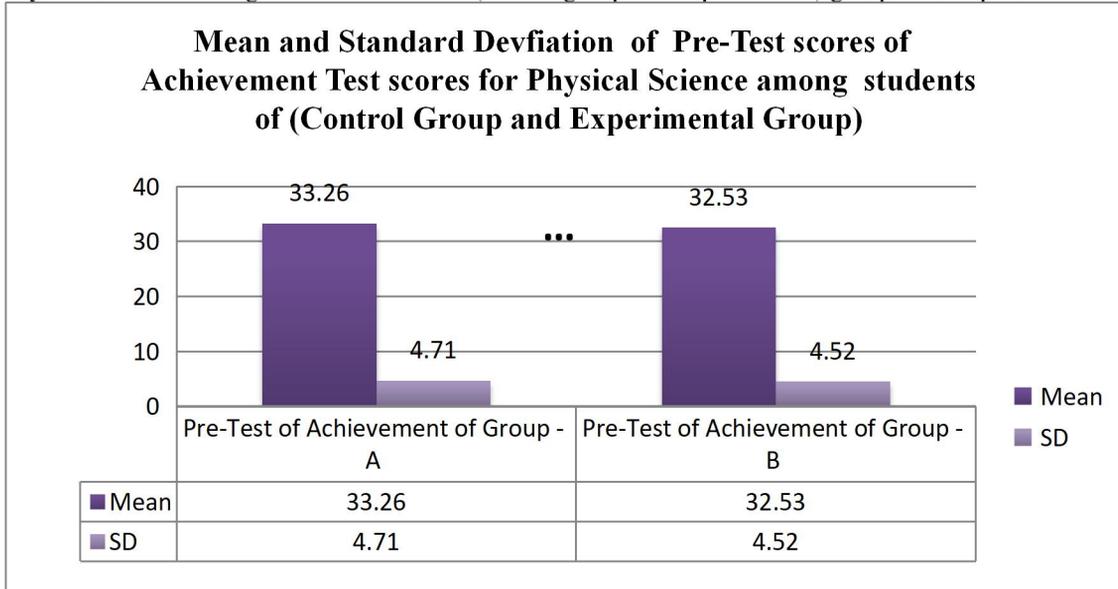


Figure – 1
Table – 5

Showing the result of mean score, standard deviation, t-value and level of significance of Post-test of Achievement Test of Group-A and Group-B

| Groups | N | Mean | SD | Std. Error | ‘t’ value | Level of Significance |
|--------------------|----|-------|------|------------|-----------|-----------------------|
| Control group | 15 | 45.86 | 4.69 | 2.32 | 4.05 | .05 (rejected) |
| Experimental group | 15 | 55.26 | 7.66 | | | .01(rejected) |

df = 28

Table value = 2.048 at .05 level

2.763 at .01 level

Interpretation –

Table - 5 shows that the mean scores in achievement test in Physical Science of control groups and experimental groups in post-test are 45.86 and 55.26 with standard deviation of 4.69 and 7.66 respectively. The ‘t’ value is 4.05 which is greater than the table value at 0.05 and 0.01 level of significance. Thus, the difference between the two means is statistically significant; it also concludes that the achievement in Physical Science of the both groups are not of same level prior to experiment. It indicates that both the groups cannot be treated as equal on the variable of students’ pre achievement in Physical Science.

Therefore, the hypothesis that there exists no significant difference between the post-test scores of achievement test in Physical Science among all students in both groups (control group and experimental) is rejected.

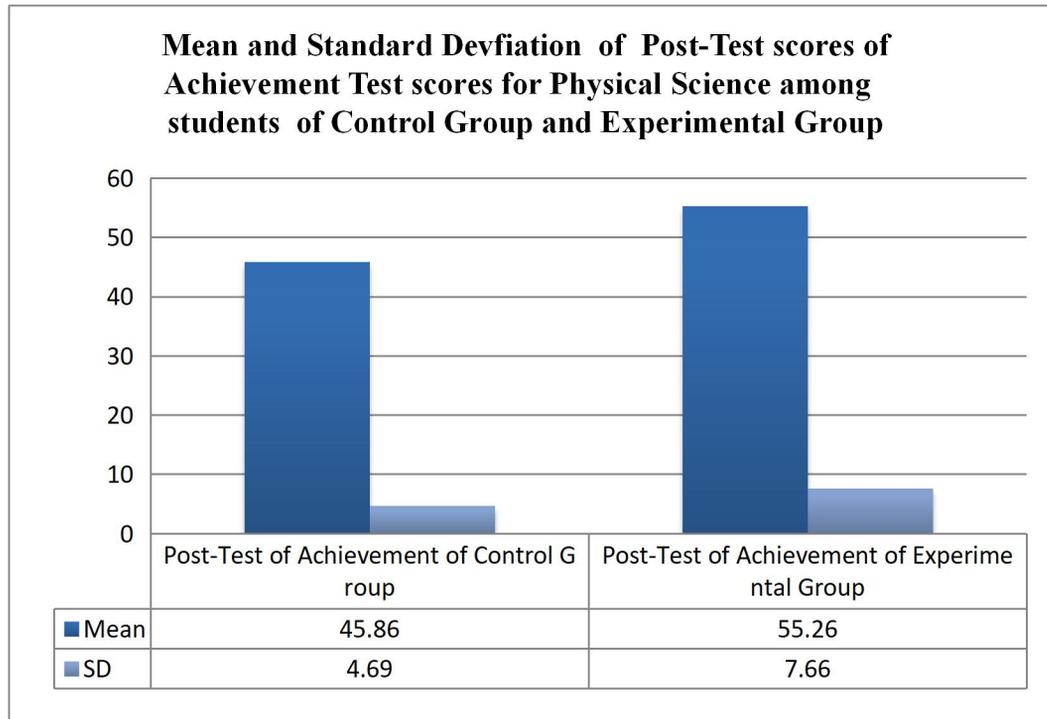


Figure – 2

Table – 6
Showing the result of mean score, standard deviation and level of significance of Retention of Experimental group and Control group

| Groups | N | Mean | SD | Std. Error | 't' value | Level of Significance |
|--------------------|----|-------|------|------------|-----------|-----------------------|
| Control group | 15 | 37.47 | 4.67 | 2.63 | 5.02 | .05 (rejected) |
| Experimental Group | 15 | 50.67 | 9.04 | | | .01(rejected) |

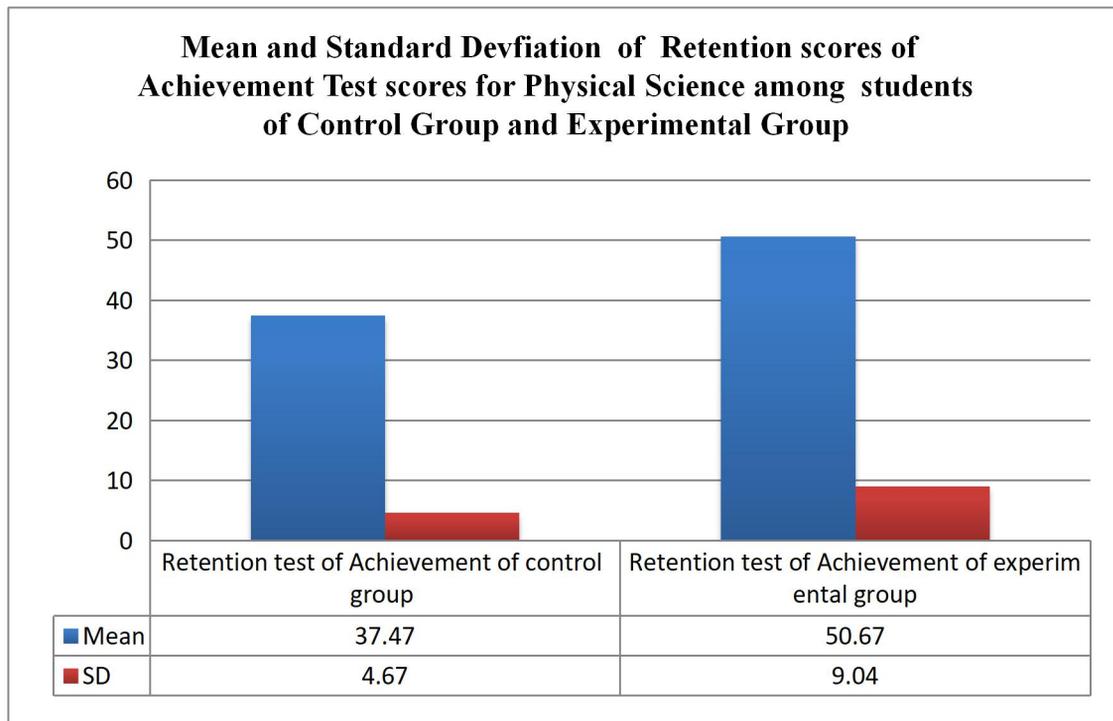
df = 28

Table value = 2.048 at .05 level
2.763 at .01 level

Interpretation –

Table - 6 shows that the mean scores in achievement test in Physical Science of control groups and experimental groups in retention are 37.47 and 50.67 with standard deviation of 4.67 and 9.04 respectively. The 't' value is 5.02 which is greater than the table value at 0.05 and 0.01 level of significance. Thus, the difference between the two means is statistically significant; it also concludes that the achievement in Physical Science of the both experimental and control group is not of same level prior to experiment. It indicates that both the groups cannot be treated as equal on the variable of students' retention in Physical Science.

Therefore, the hypothesis that there exists no significant difference between the retention scores of achievement test in Physical Science among all students in control group and experimental group is rejected.

**Figure - 3****V. Discussion:**

From the Interpretation of the data which are represented by different Tables and Figures, it is concluded that –

- i) There exists no significant difference between the pre-test scores of achievement test in Physical Science among all the students (Thirty students including control group and experimental group having dull average deviation I.Q. – 80-90). Thus, it concludes that both the groups were at same level of achievement in Physical Science before the commencement of experiment.
- ii) There exists significant difference between the post-test scores of achievement test in Physical Science among all the students in control group and experimental group. The result show that experimental group students are better than control group.
- iii) There exists significant difference between Retention scores of achievement test in Physical Science among all students in control group and experimental group. The result reveals that the treatment had an effect on the students of experimental group and their achievement during treatment was significant.

VI. Conclusion:

From the outcomes it is found that the viability of technical accession to physical science for alleviation of learning disabilities is considerably more effective than the traditional approach. In this way, the teachers of class X level should utilize technical accession to teach Physical Science for the better understanding of the students.

VII. References :

1. Mehrotra, P. N.(2008), Mixed Type Group Test of Intelligence (Verbal & Non-verbal), Moradabad, India.
2. <https://www.healthychildren.org/English/health-issues/conditions/learning-disabilities/Pages/Diagnosing-a-Learning-Disability.aspx>
3. Koushik Halder, (2020) “Effectiveness of Technological Approach to teach Physical Science for alleviation of Learning Disabilities”, IRJMSH, Volume 11, Issue 4, pp. 11-21.
4. Learning Difficulties: What Can Technology Do for Disabled Learners? Andrianes Pinantoan, (2012), <https://www.opencolleges.edu.au>