Volume : 2 | Issue : 4 | Apr 2013 • ISSN No 2277 - 8179

Research Paper

A Comparative Study of Poor Achievement in Physics At The Higher Secondary Level with Respect to Secondary Level in Birbhum District

Education

KEYWORDS : Achievement Difference, Science Group and Physics, Secondary and H.S. level

Dr. Biswajit Sen — Assistant Professor, Vidyasagar Teachers Training College, Paschim Medinipur, W.B

Dr. Nityagopal Mondal — Assistant Professor, Siliguri B.Ed. College, Darjeeling, West Bengal

Dr. Birbal Saha — Associate Professor, Sidho-Kanho-Birsha University, Purulia, West Bengal

ABSTRACT

The study was conducted to bestow some information and causes about the poor achievement in physics at Higher Secondary level with respect to science group at Secondary level in Birbhum District, West Bengal. Data was collected of 60 students from two Higher Secondary schools and opinion of the same 60 students' and 10 science teachers.

INTRODUCTION:

How do we define science? According to Webster's New Collegiate Dictionary, the definition of science is "knowledge attained through study or practice," or "knowledge covering general truths of the operation of general laws, esp. as obtained and tested through scientific method and concerned with the physical world."

What does that really mean? Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena. The term science also refers to the organized body of knowledge people have gained using that system. Less formally, the word science often describes any systematic field of study or the knowledge gained from it. What is the purpose of science? Perhaps the most general description is that the purpose of science is to produce useful models of reality. Most scientific investigations use some form of the scientific method. You can find out more about the scientific method here.

OBJECTIVES:

I. To find out the rate of academic achievement of the students in physical science at the Secondary examination.
II. To find out the rate of academic achievement of the students in Physics at the Higher Secondary examination.
III. To compare the achievement of students at the Secondary and Higher Secondary stages in science (Physical Science & Physics).
IV. To identify the probable causes of poor achievement in Physics at the Higher Secondary stage.

ASSUMPTIONS:

The assumptions of the study may be stated in the following:

i. Any standard test measures the concept of students of a subject.
ii. Scores on achievement test reveal the merit of the students in the subject.
iii. Different causes have direct impact on the achievement of the student.
iv. Proper measures can minimize the problems of poor achievement in physics.

SAMPLING:

The multi-stage sampling procedure was adopted for selection of sample. From the list of High Secondary Schools in the district of Birbhum, two Higher Secondary schools having science stream were selected randomly. The selected schools are Suri Benimadhab Institution (School No – 1) and Labpur Jadavlal High School (School No – 2).

DATA BASE:

The data was collected through the following manners:

i. Name of the Student
ii. Total marks in Secondary Level
iii. Marks in Science Group in Secondary level
iv. Marks in Higher Secondary level
v. Marks in Physics in Higher Secondary level
vi. Percentage of marks in science at Secondary level
vii. Percentage of marks in Physics at Higher secondary level

ANALYSIS OF DATA INTERPRETATION:

Table: 1

Rate of Academic Achievement in Physical Science at the Secondary Examination

School		Above 80%	75-79%	60-74%	50-59%	Below 50%
School-1	Number	9	4	17	0	0
	Percentage	30	13.33	56.67	0	0
School-2	Number	11	7	9	3	0
	Percentage	36.67	23.33	30	10	0

Table: 2

Rate of Academic Achievement in Physics at the Higher Secondary Examination

School		Above 80%	75-79%	60-74%	50-59%	Below 50%
School-1	Number	3	2	9	12	4
	Percentage	10	6.67	30	40	13.33
School-2	Number	2	2	10	6	10
	Percentage	6.67	6.67	33.33	20	33.33

From the Table-1 & Table-2 it is clear that at higher level of achievements there was a huge gap in percentage of students. From Table-1, 30% students achieved 80% of marks at secondary level (School 1) & 36.67% students achieved 80% marks at secondary level whereas Table 2 shows that 10% or fewer students achieved 80% or more marks at the Higher Secondary level(School 1) & 6.67% students achieved 80% and above marks at the Higher Secondary level (School 2). Table 1 & 2 shows that 43.33% students got 75% and above marks (School 1) & 60% students achieved 75% marks at secondary level whereas 16.67% students (School 1) & 13.34% student (School 2) achieved 75% marks.

Table: 3

Comparison between Secondary and Higher Secondary level on the basis of Achievement (School 1)

Category	No. of student	Mean	SD	df	t	Remarks
Secondary	30	74.77	6.55	58	4.58	Significant
Higher Secondary	30	63.64	10.24			

Table 3 shows that the Mean 74.77 & 63.64, SD 6.55 & 10.24 and calculated 't' value is 4.58 between Secondary and Higher Secondary level in science and physics on the basis of achievement at Board level examinations. Our calculated 't' value is greater than table value at 0.01 level. Thus, it is evident that there is

Volume : 2 | Issue : 4 | Apr 2013 • ISSN No 2277 - 8179

significant difference between Secondary and Higher Secondary students in science on the basis of achievement at board examination.

Table: 4
Comparison between Secondary and Higher Secondary level on the basis of Achievement (School-2)

Category	No. of student	Mean	SD	df	t	Remarks
Secondary	30	75.24	11.06	58	7.65	Significant
Higher Secondary	30	56.65	7.82			

Table 4 shows that the Mean 75.24 & 56.65, SD 11.06 & 7.82 and calculated't' value is 7.65 between Secondary and Higher Secondary level in science and physics on the basis of achievement at Board level examinations. Our calculated 't' value is greater than table value at 0.01 level. Thus, it is evident that there is significant difference between Secondary and Higher Secondary students in science on the basis of achievement at board examination.

Table: 5
Showing the distribution of student on the basis of their achievement at Secondary and Higher Secondary in science group and physics

Category	Above 75	61-75	51-60	Below 50	Total
Secondary	10	17	2	1	30
Higher Secondary	5	7	14	4	30
Total	15	24	16	5	60

Table: 6
Distribution of student on the basis of their achievement at Secondary and Higher Secondary in science group and physics

Category	Above 75	61-75	51-60	Below 50	Total
Secondary	17	10	3	0	30
Higher Secondary	4	9	6	11	30
Total	21	19	9	11	60

The Table-5 & Table-6 indicates that at the Secondary level maximum number of students achieved high marks than the Higher Secondary level. Thus the gain is in favour of Secondary examination. The results of X2 level is not significant. Thus the achievement of the same group of students in the science subjects in two different levels differs significantly.

Total 60 causes are identified by the investigators to estimate the relative importance the cause for the poor achievements in physics at the Higher Secondary level. 3 point ration scale was used to transform the qualitative opinion into quantitative scores. Therefore the following trend was accepted:

i. Maximum score 60X3=180
ii. Minimum score 60X1= 60
iii. Average score 60X2= 120

It was decided that if the summated rating score exceeds 120 then it will be expected that the opinion of the categories into two groups on the basis of cutting point scores (120) such as above 120 and below 120. To estimate the difference of the opinion of the teachers and the students' basis of their responses considering cutting point score, X2 test was adopted.

Table: 7

Category	Number	Mean
Teacher	10	136.3
Student	60	139.2

The average scores exceed the cutting point score. Therefore both the teachers and the students viewed that the problems identified and presented in the questionnaire are responsible for the poor achievements in physics.

FINDINGS OF THE PRESENT STUDY:

- Secondary and Higher Secondary students differ significantly with regard to achievement in science subject.
- At the Secondary level maximum number of students achieved high marks than the Higher Secondary level.
- Both the teachers and the students viewed that the problems identified and presented in the questionnaire are responsible for the poor achievements in physics.

REFERENCE

1. Buch, M.B.; (Ed.). A Survey of Research in Education, CASE: M.S. Univ. of Baroda, 1974. 2. Buch, M.B.; (Ed.), Second Survey of Research in Education, (1972-78). SERD: Baroda, 1979. 3. Buch, M.B.; (Ed.), Third Survey of Research in Education, (1978-83). NCERT, New Delhi, 1987. 4. Buch, M.B.; (Ed.), Fourth Survey of Research in Education, New Delhi, NCERT. 1991. 5. Dutta, A. (1990), "Fourth Survey of Research in Education". (1983-88) N.C.E.R.T., New Delhi, 1991, P-1546 6. Ganguli N G, "Transaction of Science Curriculum Using Text Book Based on Open-ended Approach" Journal of Indian Education, P-87-89, Feb 200, RIE Mysore. 7. Garrett, H. E.; Statistics in Psychology & Education, Paragon International Publishers, 2005. 8. H.M. Treasury (2004) Science and Innovation Investment Framework 2004-2014.http://www.hmtreasury.gov.uk/documents/enterprise_and_productivity/enterprise_and_innovation/science_innov/ent_sciinnov_index.cfm 9. Hattie, J (2003) Teachers Make a Difference: What is the research evidence? Australian Council for Educational Research Annual Conference on Building Teacher Quality. 10. Koul K (1994), Methodology of Educational Research, Vikash Publishing Pvt. Ltd., New Delhi 11. Keeves, John P. (Ed). (1997). Educational research methodology, and measurement: an international handbook. New York: Pergamon Press. 12. Mukherjee K K, (1953), " New Education and its Concept" P-I, Indian Book Distributing com., Kol-9 13. MHRD, (1986), National Policy on Education, New Delhi, Govt. of India, Department of Education. 14. NCERT–Fifth Survey of Educational Research (1988-1992), New Delhi. 1997 15. NCERT–Sixth Survey of Educational Research (1993-2000), New Delhi. 2007