

## Science Teaching Amenities in Some Rural Secondary Schools and Role of NCRI

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**KEY WORDS** Science education; science teaching amenities; mobile science laboratory; National Council of Rural Institutes.

**ABSTRACT** This paper is based on the recent school wise data obtained from a survey on availability of science teaching amenities like weighing balance, biology box, lens, magnet, microscope, number of science teachers, their educational qualification and access to common facilities like electricity, telephones, computers etc. in some secondary rural institutes in the district of Birbhum, West Bengal. The result shows wide disparities in level of availability of these essential amenities for science teaching in rural and urban institutes. It has been suggested that National council of Rural Institutes should have a fresh look into the whole aspect. As near term solution, the concept of mobile science laboratory or establishment of some rural science centre may be considered. Change of curriculum with an emphasis on out side classroom science teaching has also been discussed.

### INTRODUCTION

Just after independence, India resolved to itself into a progressive nation with the help of science and technology. Its political leaders' faith on science is well reflected in India's Science Policy Resolution (SPR) published in 13<sup>th</sup> March 1958. (Vasanth, 2000)

The SPR has definitely helped the nation to build up a science and technology base. Globally it has its rank as far as science and technology personal are concerned. But at the same time we have failed to develop a strong indigenous science and technology base and probably, that is the major reason, why we are still among the less developed countries. (Banerjee, 1998)

To promote indigenous science and technology base, science education is to be promoted from the ground level. Generally, when we speak of science and technology education, we talk about science education at university or college level. (Sharma, 2000)

The objective of the present programme, to analyse the entire situation from the ground level

and therefore stress has been given on the scenario of science education at the secondary level at rural institutes. Because secondary education begins to expose students to the differentiated roles of science, the humanities and social science. This is also an appropriate stage to provide children with a sense of science and technology and to give them opportunities to understand their environment and practical use of theoretical science. (Singha, 1991)

Another objective of the present study is to highlight the differential condition present at the rural and urban institutes with respect to science teaching amenities, so that our education policy makers may realise a real picture.

### RESULT AND DISCUSSION

The study has been conducted initially in 34 village secondary schools in the district of Birbhum, West Bengal. The average number of students per school is 542 with a maximum of 1062 students and minimum 259 students from class V to class X. Corresponding to the number of students, the average number of science teachers per school is only 3.5. They take on the average 22 classes per week. Out of the total number of teachers only 18.2 per cent teachers are Master degree holder and 71.8 per cent are Honours graduate and all are trained. The rest of the teachers are only ordinary graduate and do not have requisite teacher's training. It seems that number of science teachers is not sufficient for effective science teaching in their class.

The gravest picture is that very few science teaching amenities are available in these schools, typical data sheet for three of the schools are tabulated (Table 1-3) here. The compiled data on the distribution of simple science teaching amenities like weighing balance, biology box, lens, magnet etc. for all these 34 schools are

depicted in Table 4.

**Table 1: Questionnaire**

1. Name of the School : Bhabanipur S. N. High School.
2. Address of the School : P.O – Bhabanipur, Dist – Birbhum, Block – Rajnagar.
3. Total Number of Students : 732
4. Status of Science Teachers :

Teachers Name	Age	Sex	Teaching experience	Educational qualification	No. of Science class per week
B.C. Garaih	44	Male	17 yrs	B. Sc. (Hons. in Physics) B. Ed	22
A. Adhikari	34	Male	5 yrs	M. Sc. (Math) B. Ed	24
K. K. Mondal	24	Male	3 yrs	B. Sc. (Hons in Bio. Sc.)	12

5. Modern amenities available	Yes	No
a. Computer	-	✓
b. Telephone	-	✓
c. Electricity	-	✓
d. Pipe line water supply	-	✓
e. Practical Room	-	✓

**Table 2: Questionnaire**

1. Name of the School : Brahmankhanda B. P. High School.
2. Address of the School : Vill + P.O – Brahmankhanda (Basapara), Dist – Birbhum.
3. Total Number of Students : 1034
4. Status of Science Teachers :

6. Other equipment's		
a. Weighing Balance	-	✓
b. Test tube	-	✓
c. Beakers	-	✓
d. Laboratory Gas	-	✓
e. Burner	-	✓
f. Spirit Lamp	-	✓
g. Thermometer	-	✓
h. Litmus Paper	-	✓
i. Funnel	-	✓
j. Filter Paper	-	✓
k. Microscope	-	✓
l. Lens	-	✓
m. Magnet	-	✓
n. Sonometer	-	✓
o. Resistance Box	-	✓
p. Biology Box	-	✓

Teachers Name	Age	Sex	Teaching experience	Educational qualification	No. of Science class per week
D. Hazra	51	Male	21 yrs	B. Sc. B. Ed	24
S. Ghosal	44	Male	21 yrs	B. Sc. B. Ed	24
A. K. Das	39	Male	16 yrs	B. Sc (Bio) PGBT	16

5. Modern amenities available	Yes	No
a. Computer	-	✓
b. Telephone	✓	-
c. Electricity	✓	-
d. Pipe line water supply	-	✓
e. Practical Room	✓	-

6. Other equipment's		
a. Weighing Balance	✓	-
b. Test tube	✓	-
c. Beakers	✓	-
d. Laboratory Gas	-	✓

e. Burner	✓	-
f. Spirit Lamp	-	✓
g. Thermometer	✓	-
h. Litmus Paper	✓	-
i. Funnel	✓	-
j. Filter Paper	-	✓
k. Microscope	-	✓
l. Lens	✓	-
m. Magnet	✓	-
n. Sonometer	-	✓
o. Resistance Box	-	✓
p. Biology Box	✓	-

**Table 3: Questionnaire**

1. Name of the School	:	Jadavpur Bandhab High School
2. Address of the School	:	Sattore. (P.S. Panrui)
3. Total Number of Students	:	400
4. Status of Science Teachers	:	

Teachers Name	Age	Sex	Teaching experience	Educational qualification	No. of Science class per week
P. Mondal (H.M)	40	Male	13 yrs	M. Sc. (Physics) B. Ed	14
S. Sarkar	54	Male	26 yrs	B. Sc. BT.	26
C. Ghosal	37	Male	4 yrs	M. Sc. (Zoo), B.Ed.	26
S. Saha	38	Male	5 yrs	B. Sc. (Bio), B. Ed.	26

5. Modern amenities available	Yes	No
a. Computer	-	✓
b. Telephone	-	✓
c. Electricity	-	✓
d. Pipe line water supply	-	✓
e. Practical Room	-	✓
6. Other equipment's		
a. Weighing Balance	✓	-
b. Test tube	-	✓
c. Beakers	✓	-
d. Laboratory Gas	-	✓

e. Burner	-	✓
f. Spirit Lamp	✓	-
g. Thermometer	-	✓
h. Litmus Paper	-	✓
i. Funnel	✓	-
j. Filter Paper	✓	-
k. Microscope	-	✓
l. Lens	-	✓
m. Magnet	-	✓
n. Sonometer	-	✓
o. Resistance Box	-	✓
p. Biology Box	-	✓

**Table 4: Science Teaching Amenities available at these Schools**

Total Number of School = 41

Amenities	Number of Schools having this amenities	% of Schools having this amenities
1. Computer	-	-
2. Telephone	17	50
3. Electricity	18	53
4. Pipe Line water supply	1	3
5. Practical Room	4	12
6. Weighing Balance	19	56
7. Test Tube	24	71
8. Beakers	25	74
9. Laboratory Gas	-	-
10. Burner	10	29
11. Spirit Lamp	20	59
12. Thermometer	20	59
13. Litmus Paper	19	56
14. Funnel	27	79
15. Filter Paper	24	71
16. Microscope	15	44
17. Lens	24	71
18. Magnet	27	79
19. Sonometer	3	9
20. Resistance Box	5	15
21. Biology Box	24	71

A very poor infrastructural conditions in respect of science teaching amenities are reflected in these rural schools.

Out of these 34 schools, three schools are found having no such science teaching amenities. The students of these schools have not seen simple equipment like a thermometer or a lens or a magnet even at this stage.

It would not be wrong to say that the Computer age is already upon us-more so in the developed countries. In the U.S. a survey conducted in 1980 had indicate that over 90 per cent of school districts made same use of computers. (Singha, 1991)

But out of these 34 rural schools, there are no such schools having computer facility, though elementary computer teaching are given to the schools of class V in some urban English medium schools. So the knowledge of practical science (which should be the pre- requisite for building strong indigenous science and technology base) is very poor among these students of these rural institutes.

The general findings of the survey may be tabulated as follows :

- \* There are three schools, out of these 34 schools having no science teaching amenities.
- \* Not a single rural school out of these 34 schools studied so far has a computer.
- \* Only one of these rural schools has water supply facility.
- \* Only four schools have separate practical rooms.
- \* 47% of these schools are without electricity.
- \* There are no such schools having laboratory gas facilities.
- \* Near about 30% of these schools do not have weighing balance, thermometer, microscope or even biology box.

#### **ROLE OF NATIONAL COUNCIL OF RURAL INSTITUTES**

The above mentioned situation may not be confined to these rural schools only. It may be a common picture of our country's rural schools.

Various organisations like Government and Non Government Organisations have taken initiative to overcome the situation. In this context the role of National Council of Rural Institute (NCRI) deserves to be mentioned.

National Council of Rural Institute acts as a 'think tank' for the formulation of a vision of improvement of rural education. (NCRI Report, 1999)

The importance of the use of science and technology, as part of the both the vision of Basic Education, and the institutional structures that support it, was equally emphasised. It was felt that tools and techniques like Remote Sensing, People's Biodiversity Registers and Participatory Learning for Action, help people understand their local environment, and can be used for optimal management of resources. They can also be used effectively as part of the school curriculum, and more technical knowledge and understanding of these tools can be imparted at the university level.

#### **SUGGESTIONS**

An attempt has been made to suggest some of possible solutions to these burning problems.

There are more than one ways of solving these problems.

- \* Arrangement of mobile science laboratory for village schools.
- \* Establishment of rural science education centre.
- \* Changing the science education curriculum with emphasis on out side classroom science teaching and introducing basic aspects of natural energy sources, environmental awareness and agricultural science.

Finally, we feel National Council of Rural Institutes should take a promising role to overcome this grave situation of practical science teaching in rural schools.

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