

“Problems And Prospect Of Teaching Electricity And Electrical Devices In Primary Classes”

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Abstract:

Young children have curiosity about the phenomena taking place around them and teachers have the responsibility to create an environment so that a positive attitude grows up among the pupils in their early stage of learning. Since electrical energy is the basic need of modern age, students must have to enhance storehouse of knowledge about electricity. Therefore in order to make teaching electricity effective & yet interesting, several techniques may have to be adopted.

Introduction

The importance of science education in the early childhood / elementary years is very important if we are to expect the young people of this nation to become active & interested in science and technology. The school years are very important because it is this precious years children develop a foundation of science. Here the prime responsibility of the teachers is to make science interesting to the students from the early years of schooling. These skills are required for processing information in to a developing system of knowledge.

It is here that an assessment needs to be done regarding the effectiveness of teaching procedure, additional requirements of the school children and the teachers and the reforms that are needed to make science an enjoyable learning subject.

ELECTRICITY-AN INTRODUCTION:

ELECTRICITY is the branch of Physics which deals with movements of electrons that is the flow of electric charges constitutes an electric current. The conventional direction of flow of current is taken as the direction of flow of positive charges. Electron is an elementary particle having mass 9.110×10^{-31} kg and charge 1.602×10^{-19} coulomb .Unit of electric current is ampere and is measured with the help of ammeter. As metals contain free electrons .which are capable of moving freely within the metal, just like molecules of liquid, constituting current. Dry cells, keys, wire are the required materials for making electrical circuits. When current flows through a circuit heat is generated all along the length of the conductor and the effect is called Joule^s heating effect of electrical current. Electrical heater, iron, safety fuse etc. are the examples of this effect. Again current carrying

conductor is also associated with a magnetic field, which is used in electrical bells.

The elementary school years especially are important because this is the time in which children develop a foundation of science for entire life. So it is very important to guide them carefully. Electricity in primary classes is the basic of science. If the status of science education is to changed then the education of teachers who have the responsibility for teaching those children will be a critical factor. Elementary school teachers were far more sanguine about their working conditions, when compared to their middle and high school counterparts and Teachers who report relatively low levels of satisfaction with their professional development often do not have access to the kinds of training they believe they need. _Teacher must have sufficient content knowledge and skill in different teaching techniques, an ability to evaluate and use appropriate tools to supplement the text. In elementary, middle and secondary school education, the study suggests that the activity of story telling has an impact on Participants' interpersonal relationships, empathy, and senseof“Connectedness” in the classroom and built teacher-student friendly relation regarding education and knowledge. Teachers who intend to leave their schools and teaching are more likely to have grave concerns about their lack of empowerment, poor school leadership, and the low levels of trust and respect inside their buildings (Barnett Berry, Mark Smylie & Ed Fuller, November 2008). This paper describes the use of autobiographical storytelling, personal myths, and visual imagery in preparing elementary and special educators for activist roles in creating effective, inclusive schools. (Jackie Baldwin and Kate Dudding)

Aims and objective:

The following are the objectives of the study-

- a) To discuss the concept of current, electrical equipment and devices and find out simplest & interesting way of teaching electricity in primary standard.
- b) How to operate and handled household electric and electronic devices and precautions should be taken before using these devices.

- c) To enhance the skill of science teachers regarding the use of the electrical and electronic devices.
- d) Public awareness through the students to minimized accident due to mis-handling of electrical and electronic devices.
- e) To identify problems with text book.
- f) And to asses the requirements of additional support material for teaching electricity.

Since the study was conducted during the festive season as well as examination season, the desired maximum number of respondents could not be met by us. A total of 170 Students were made respondents.

Analysis of students feed back:

Sl. No.	Name of the school	Total no. of questions	Average correct answer	% of correct answer
1	Bhumoraguri S.S. Madhabdev ME School	25	14	56%
2	Batadrava Anchalic Girls ME School	25	10	40%
3	Athgaon MV School, Dhing	25	12	48%
4	Dhing Public High School	25	9	36%
5	Dhing G.B.H.S. School	25	16	64%
6	Dumdumia Balisatra H.S. School	25	11	44%

MATERIALS AND METHOD

Since the objective of the study was very difficult, a complete and comprehensive analysis was only possible if the views and apprehensions of all the parties i.e. students, science teachers as well as the Head of the institution were surveyed and studied. Different sets of questionnaire were prepared for students, teachers & HOD of the institutions to identify the right need. The key findings are presented in the form of tables, graphs, charts. The questionnaires of the student's had 25 questions regarding concept on electricity and electronic device, problems of text book, problems of science teachers etc.

Limitations of the study:

Because of the poor attendance of the students due to festive season, socio-economic census duties and forthcoming examination, it was not possible to meet all the students, science teacher and head of the institution the schools.

Field study

Sample Size:

A total of 6 Schools were covered in Batadraba Education Block and 170 School children who were present were made respondents.

Sl. No.	Name of the School	Total no. of respondents
1	Bhumoraguri S.S. Madhabdev ME School	10
2	Batadrava Anchalic Girls ME School	15
3	Athgaon MV School, Dhing	45
4	Dhing Public High School	30
5	Dhing G.B.H.S. School	20
6	Dumdumia Balisatra H.S. School	50

Average percentage of the average correct answer is 48%. It reveals that the knowledge gathered from text book is average.

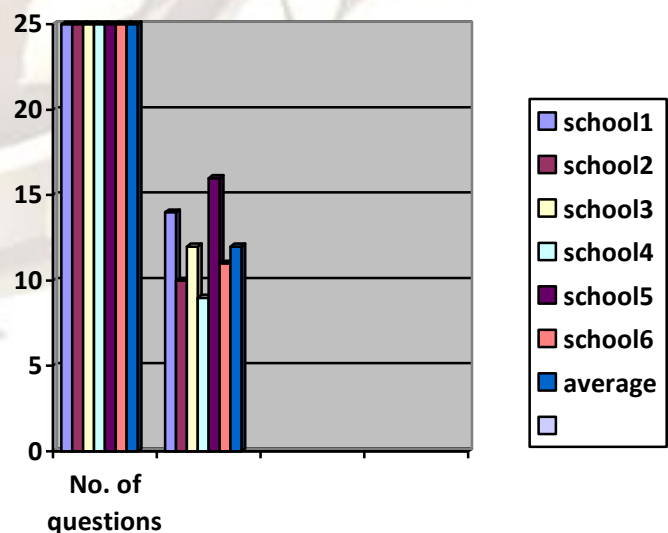


Fig. shows the comparative study of questionnaire of different schools.

The students of in all schools were asked questions about the teaching method by teachers. 25% of the students said that the science teacher only read from the text book (without using black board) & they (students) listen. It is practically a monologue. Only 52% science teacher make use of black board and 23% give examples while explaining the text books. While testing the basic knowledge of the students questions were asked from the questionnaire, It was found that 48% correct answers was given by the students, which were very basic. Al most 70% of the students have not been handled electrical devices although the tools are readily available.

In this regards, teacher should take necessary steps and work on it. The learning abilities of the students to a large extent are dependent upon the way the teacher is able to make his /her views more easily acceptable as well as interesting. Teaching electricity is never very easy since it requires adequate communication skills by the teacher concerned. In terms of 'communication skills' the teachers just manages to meet the average standards. It is observed that most of schools do not have sufficient furniture's in the class room.. Laboratory facilities are not up to the mark in many schools. It may be noted that the necessary furniture's, laboratory facilities are very essential for teaching and learning. Since the schools do not have laboratory facilities with Laboratory equipments, it is not possible to impart "practical base knowledge in electricity" to the students. They just go through the usual process i.e. black board and text book, thus making the learning process monotonous which is also reflected in the survey which shows that 55% of the students are able to understand the subject matter clearly. This is a big loophole. On the other hand, only a few teachers have attended carrier enhancement course / orientation course. As a result teachers are not aware of modern methods of teaching. No additional tools (computer/ study tour/ practical / others) are used by the teachers to make the subject matter interesting & interactive.

Three vital areas of improvements were identified in the text book. There are -

- (i) Most of the teachers are not satisfied with the various definitions and explanation given in the text book. So, the definitions should be very clear in simple language so that children can easily understand the subject matter.
- (ii) Secondly, printing and paper quality. Printing & paper quality must be improved to make it more attractive which 90% of teachers suggested. And Also emphasize should be given in proper labeling (specifically in pictorial depiction or in diagrams) to make things crystal clear to the students. Lastly, surprisingly not

even a single school I visited had library / library facility which is considered as a minimum requirements for a good school. In absence of a library, students are not able to refer to books (other than text books) and thus are being deprived of quality / additional information.

Conclusion and Recommendations:

During our project period, our team wanted to visit 6 schools in Batadrava Block. But, due to time constrain, it was not possible to collect data from all schools. So we collected samples from 6 schools. And after analyzing the data the following conclusions were drawn:

- (i) Although the phenomenon of electricity is very interesting but students are not eager enough to learn because the teaching-learning process is examination oriented. The tests of students revealed that they are not able to answer basic questions. As a result it can be concluded that there is a gap between the knowledge gathered through books and its applicability in real life.
- (ii) Laboratory facility as well as experimental tools is an essential parameter for teaching. If an electrical phenomenon is explained with tools like battery, wires, ammeter, voltmeter etc. the topic seems to be very easy to learn. But there are few schools which provide such equipments.
- iii) This may suggest that not all teachers are confident in their ability to use available laboratory equipment. The survey administered to seventy-nine science teachers asked if they are comfortable using the following: microscopes, Bunsen burners, balances, thermometers, autoclaves. The data reveals that teachers are comfortable with some types of equipment, but not others.
- iv) Although all science teachers are qualified, but in absence of proper training of modern methods of teaching, their competency level has remained static. These aspects need to be looked into. Teachers must be able to evaluate students learning and competence level beyond the school text book.
- (v) The quality of the text book both in terms of material and content is not sufficiently good. Paper & quality, diagram, definitions etc. needs to be improved and made simple. Al most all teachers have acknowledged that the absence of a library hamper the teaching process.

Recommendations:

- A good, well equipped laboratory is one of the very basic needs of science department of a school. There for a science laboratory is a must for each school.
- A good library acts a reservoir of information. Emphasize must be laid to provide library facility to each school.
- There is a need to evaluate students learning and competence level beyond the

school text books. Therefore at least 30% of the annual marks must be based on student activity in laboratory, project work, participation in science exhibition etc.

- The quality of text book needs to be looked into especially paper quality, illustrations, ray diagrams, definitions etc. The text book needs to be scientifically and professionally reviewed.
- The other important basic needs of schools are –
 - Drinking water facility
 - Ideal teacher- student ratio
 - Class room infrastructure and desk-bench
 - Well equipped laboratory facility
 - Power supply in class room
- Other issues, directly related to science teaching process –
 - (a) Mandatory participation of the students in different projects, science exhibition etc.
 - (b) Establishment of periodic and compulsory feedback mechanism by the students about teaching methods.
 - (c) Organizing regular science quiz, preparation and handling electric circuit and devices and science related tours to create interest in science.
 - (d) Publication of annual school science magazine with the involvement of students will help create an interesting learning environment.
 - (e) For nightly holding a “Science awareness day and exhibition”.

Final Word:

Teaching electricity in primary classes with the usual & monotonous way of teaching is of no help. The simplest way of teaching is the demonstration of electrical phenomenon with the help of lab equipment's and electrical devices.

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