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PHYSICAL SCIENCE WILL BE CONCRETE THROUGH EFFECTIVE USE OF VISUAL AIDS

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Today the world is facing three major problems of population increase, pollution and poverty. The development efforts of the developing countries, such as India, are being nullified by increasing population and increasing poverty. Although science and Technology have improved the lot of large number of human beings. Some of the worst problem of humanity. Education is one of the potent instruments in the development process if it is properly geared for that purpose. Science Education begin an important component of the education system should contribute in the solution of the problems of the country by developing desirable understandings, skills, abilities and attitudes. The greatest challenge is to humanize. Science that is to make it relevant to human needs and aspirations.

Meaning of Physical Science:

"The Science concerned with the study of inanimate natural objects including Physics, Chemistry".

Physics:

"Physics has been defined as the study of the properties of matter and energy".

Chemistry:

"Chemistry has been defined as the study of the composition of substances and of their effects upon one another".

Importance of teaching Science in the Exiting School Curriculum:

"What all the great teachers appear to have in common is love of their subject, an obvious satisfaction in arousing this love in their students, and an ability to convince them that what they are being taught is deadly serious".

- Epstein [1981.P XII]

"Science is taught – because of he recognized need for general scientific literacy, our dependence up on Scientists and engineers and the value that we place up on Critical thought"

- John S. Richardson

Teaching Aids

Many authors have written on the use and effectiveness of instructional materials or teaching aids to enhance teaching for desired social and behavioral change. More specifically, it was emphasized that the use of instructional materials is a *sine qua non* in affecting behavior of learners of every field. i.e. a prerequisite, requirement or an essential condition. It is necessary to note that teaching aids are important catalysts of social re-engineering and change in learners. It is obvious that effective instructions cannot be well accomplished without the use of instructional materials. The reason is not far-fetched: advances in technology have brought instructional materials especially the projected and electronic materials to the forefront as the most radical tools of globalization and social development which have affected the classroom teaching-learning situation positively. Such technological breakthroughs as networked and non-networked; projected and non-projected; visual, auditory, audio-visual electronic materials are important landmarks in knowledge transfer. With them both teaching and learning become very pleasant experiences.

Kinds and categories of teaching aids:

Different types and variety of teaching aids or Instructional materials are available to be used in teaching any subject effectively. However, it is not all topics that require the same type and quantity of materials. As far as educational instructions is concerned. These materials could be purchased, locally made or improvised, imported from other countries when necessary for the effective instructional delivery.

1. Projected and electronic materials.
2. Non-projected materials.
3. Phenomenal and manipulative materials

The following however, are the basic guidelines and requirement for utilization and use of instructional materials in effective instructional delivery:

Specification-of objectives: Clear objectives which are behaviorally stated are user ring guides in teaching aids using process, they direct the sequence, methods, content and techniques of instructional processes. They provide scientific basis of valid evaluation instruments construction and administration.

Maximal fit with instructional tasks: Teaching aids must be appropriate to situationally determined and individually responsive.

Preparation and preview: For effective and successful use of teaching for proper teaching- learning situation, the teacher must in advance prepare himself, the learners and the environment, the materials as a matter of must should be previewed by the teacher in order to follow its process of presentation sequentially.

Multi-dimensional presentation: Proper and creative use of a variety of instructional materials or teaching aids at different level of lesson planning can be adequate in achieving various instructional objectives, reason because it will enrich variety of learners mind as they attain better goals more easily than with the use of a single medium

Environmental situation: The environmental variables such as physical cultural and social in which the teaching aids are utilized for learning have significant effect on their effectiveness. Sound-motion films for instance with their attention-complexly properties can be successfully presented in less quiet environment.

Measure for outcomes: teaching aids should be evaluated in terms of their suitability, practicability to the instructional objectives, appeal to the cost effectiveness, learner achievement level, consistency with content call for improvement in utilization techniques etc.

Objectives

1. To find out the difference between male teachers and female teachers in respect of effective use of visual aids in the teaching of Physical Science.
2. To find out the difference between Government Teachers and Private Teachers in respect of effective use of visual aids in the teaching of Physical Science.
3. To find out the difference between Post Graduate Teachers and Graduate Teachers in respect of effective use of visual aids in the teaching of Physical Science.
4. To find out the difference between teachers who had above 10 years of teaching experience and below 10 years of teaching experience in respect of effective use of visual aids in the teaching of physical science.
5. To find out the difference between teachers who had above 35 years of age and below 35 years of age in respect of effective use of visual aids in the teaching of physical science.

Hypothesis

1. There is no significant difference between male teachers and female teachers in respect of effective use of Visual aids in the teaching of Physical Science.

2. There is no significant difference between Government teachers and Private teachers in respect of effective use of visual aids in the teaching of physical Science.

3. There is no significant difference between postgraduate teachers and Graduate Teachers in respect of effective use of Visual aids in the teaching of Physical Science.

4. There is no significant difference between teachers who had above 10 years of experience and below 10 years of experience in respect of effective use of visual aids in the teaching of Physical Science.

5. There is no significant difference between teachers who had above 35 years of age and below 35 years of age in respect of effective use of visual aids in the teaching of Physical Science.

Limitations of the Study:

This study was conducted in a total of 250 different schools in East Godavari District and data was collected from one physical science teacher per school. This means that the sampling size was small and that the findings cannot be generalized to a larger population.

Another observed limitation was the small number of data-gathering instruments used. The researcher relied mostly on the questionnaire. When he was working with the focus groups he missed out on the interactions between the teachers and other learners.

In spite of these limitations, the study was a worthwhile exercise for researcher and teachers alike. It has provided unique insight into what visual aids are present and how they are being used in under-resourced secondary schools in East Godavari District.

This study is limited only to teachers who are teaching Physical Science in Secondary

Schools located in the East Godavari District of Andhra Pradesh.

Methods of investigation:

The present investigation falls under survey method and it deals with a survey to the opinions of the Physical Science teachers of the secondary schools regarding to the effective usage of Visual aids in Physical Science teaching. According to Webster's new colligate dictionary, "A survey is a critical inspection often official provide exact

information", survey research is a method of collecting and analyzing data obtained from large number of respondents representing a specific population collected through highly instructed and detailed questionnaire (or) Interviews.

Selection of Sample:

Sampling is the process of selecting a sample from the population. For the present investigation the sample selected is the physical science teachers of 250 secondary schools. In selecting the sample, the investigator adopted the random sampling method, which is the most popular basic method of sampling. It considered the most trust worthy's method of securing representative ness of the whole population. The method of selection provides an unbiased cross-section of the population. For the present study the investigator selected 250 secondary schools in East Godavari
District. Out these 105 are Government Schools and 145 are Private schools.

Tools Used:

There are a number of tools to be adopted in any research for the purpose of collecting data-some of them are questionnaire, Opinionative, rating scales, checklists, observation, interviews, schedules etc., each tool is particularly appropriate for collecting data of a certain type the investigator used the questionnaire as it is found to be more suitable and helpful to present the study.

The questionnaire is probably the most widely used devise employed in colleting date "The questionnaire has unique advantage, it may survey as a most appropriate and useful data gathering devices in a particular research project".

Variables:

The contribution of variable is praise worthy in an investigation. Analysis of the data on the basis of variables will certainly provide an opportunity to arise at an accurate and authentic conclusion. Hence Variables are essential in any research. For studying the present problem in detail the following variables were studied.

01.	Sex	:	Male / Female
02.	Type of Management	:	Government / Private
03.	Teaching Qualification	:	Post Graduate / Graduate
04.	Teaching Experience	:	Above 10 Years / Below 10 years
05.	Age	:	Above 35 Years / Below 35 years

Testing of Hypotheses:

The table showing the significant difference in the Opinion expressed by Male teachers and Female Teachers on all the items of the questionnaire.

Variables	No. of Sample	A.M.	S.D.	C.R.
Male	150	180.86	18.04	1.227
Female	100	179	17.19	

Interpretation:

The obtained C.R. Value of 1.227 is not significant at 0.05 level. Hence the Null Hypothesis is accepted. So there is no significant difference between Male Teachers and Female Teachers in respect of effective use of Visual Aids in the teaching of Physical Science.

This means the Male and Female Teachers does not differ in their opinion towards the effective use of Visual Aids in the teaching of Physical Science.

The table showing Means, S.D. and C. R. value difference in the opinion expressed by Government Teachers and Private Teachers on all the items of the questionnaire under the variable Type of Management.

Variables	No. of Sample	A.M.	S.D.	C.R.
Government	100	183.57	9.72	0.2357
Private	150	177.62	21.38	

The obtained C.R. Value of 0.2357 is not significant at 0.05 level. Hence the Null Hypothesis is accepted. So there is no significant difference between Government Teachers and Private Teachers in respect of effective use of Visual Aids in the teaching of Physical Science.

This means the Government Teachers and Private Teachers does not differ in their opinion towards the effective use of Visual Aids in the teaching of Physical Science.

The table showing Means, S.D. and C. R. value difference in the opinion expressed by the teachers with Above 10 years of Experience of Govt. Male Teachers and Govt. Female Teachers all the items of the questionnaire.

Variables	**No. of Sample**	**A.M.**	**S.D.**	**C.R.**
Govt. Male – Above 10 of years experience	45	184.4	9.47	0.890
Govt. Female – Above 10 years of Experience	35	182.2	10.08	

Interpretation:

The obtained C.R. Value of 0.890 is not significant at 0.05 levels. Hence the Null Hypothesis is accepted. So there is no significant difference between the Govt. Male teachers who had above 10 years of experience and Govt. Female teachers who had above 10 years of experience in respect to effective use of Visual Aids in the teaching of Physical Science.

This means the Govt. Male Teachers who are have above 10 years of experience and Govt. Female Teachers who had above 10 years of experience does not differ in their opinion towards the effective use of Visual Aids in the teaching of Physical Science.

The table showing Means, S.D. and C. R. value difference in the opinion expressed by Post Graduate and Graduate Teachers on all the items of the questionnaire under the variable Qualification.

Variables	**No. of Sample**	**A.M.**	**S.D.**	**C.R.**
Post Graduate	85	182.17	13.60	1.89
Graduate	165	179.06	19.28	

Interpretation:

The obtained C.R. Value of 1.89 is not significant at 0.05 level. Hence the Null Hypothesis is accepted. So there is no significant difference between Post Graduate Teachers and Graduate Teachers in respect of respect of effective use of Visual Aids in the teaching of Physical Science.

This means the Post Graduate Teachers and Graduate Teachers does not differ in their opinion towards the effective use of Visual Aids in the teaching of Physical Science.

The table showing Means, S.D. and C. R. value difference in the opinion expressed by the Teachers with above 35 years of age and below 35 years of age on all the items of the questionnaire under the variable Age.

Variables	**No. of Sample**	**A.M.**	**S.D.**	**C.R.**
Above 35 years ages	55	181.45	12.39	
Below 35 years age	19	179.74	18.61	0.83

Interpretation:

The obtained C.R. Value of 0.83 is not significant at 0.05 level. Hence the Null Hypothesis is accepted. So there is no significant difference between the teachers with above 35 years of age and below 35years of age in respect to effective use of Visual Aids in the teaching of Physical Science.

This means the teachers with above 35 years of age and below 35 years of age does not differ in their opinion towards the effective use of Visual Aids in the teaching of Physical Science.

From the Study the investigator comes to certain conclusions as follows.

➢ There is no significant difference between the male and female teachers in respect of effective use of visual aids in the teaching of physical science.

Hence the Investigator concludes that the male and female teachers do not differ in their opinion towards the effective use of visual aids in the teaching of physical science.

➢ There is no significant difference between the teachers with above 5 years of teaching experience and below 5 years of teaching experience in respect of effective use of visual aids in the teaching of physical sciences.

Hence the Investigator Concludes that the teachers with above 5 years of teaching experience and below 5 years of teaching experience does not differ in their opinion towards the effective use of visual aids in the teaching of physical science.

➢ There is no significant difference between Government teachers and Private teachers in respect of effective use of visual aids in the teaching of physical sciences.

Hence the Investigator concludes that the Government teachers and Private teachers do not differ in their opinion towards the effective use of visual aids in the teaching of physical science.

➢ There is no significant difference between Post Graduate teachers and Graduate teachers in respect of effective use of visual aids in the teaching or physical science.

Hence the Investigator concludes that the post Graduate teachers and Graduate teachers do not differ in their opinion towards the effective use of visual aids in the teaching of physical science.

➢ From the Arithmetic means it is evident that even though all the teachers are favorable, male teachers are a bit more favorable than female teachers towards the effective use of visual aids in the teaching of physical science.

➢ Based on the arithmetic means the investigator concluded that irrespective of the experience all the teachers are highly favorable towards the effective use of visual aids in the teaching of physical science.

➢ Based on the Arithmetic means the investigator concludes that even though the teacher of different managements favorable toward the effective use of visual aids in the teaching of physical science.

➢ Form the Arithmetic mean the investigator concludes that all the teachers irrespective of Graduate are favorable but Post Graduate teachers are more favorable towards the effective use of visual aids in the teaching of physical science.

➢ The analysis of the results showed that the majority (96.2 %) of the teachers were in agreement that the use of visual aids is relevant and enjoyable. This was

probably because the use of visual aids makes it easier for the students to understand the abstract ideas in the text.

- Majority of the teachers (96.2%) also demonstrated positive response towards the statement 'I teach with objects to help students to achieve better understanding of topics presented'. These teachers probably had sufficient knowledge on the use of visual aids and realized its importance in attracting those students who were uninterested in reading literary texts to fully participate in physical science lesson. The teachers also believed that the use of visual aids could improve students' performance. It was proved when most of the teachers (94.2 %) were in favour with the statement 'I use images to illustrate complex phenomenon'.
- Overall, it can be interpreted that the majority of the teachers have positive perceptions of the use of visual aids in teaching physical science. In other words, this is a clear indicator that the use of visual aids in physical science teaching is relevant as it meets the needs of the science learners in understanding written texts. Besides, it is enjoyable to teach using visual aids which leads to the improvement in students' performance in physical science.
- The majority (88.5 %) of the teachers had positive perceptions in response to 'the use of visual aids arouses students' understanding of the importance of physical science'. This was probably because the teachers realized that physical science helped their students in their personal growth, and most importantly development of scientific attitude.
- Moreover, most (86.5%) of the respondents believed that the use of visual aids assists students to cope with the complexity of the .

Suggestions for Further Research

1. Case studies of Secondary Schools about the effective use of visual aids will be a useful piece of research.
2. Exclusive studies on hardware and its effective use in the teaching of physical science will be of immense use to all teachers and administrators.
3. Studies on the resources available in schools in respect of visual aids will help to know the exact position about these aids.
4. Studies on continuing education on visual aids for school teachers and their utility for qualitative improvement of instruction will he highly useful.

5. Problems faced by the teachers in the effective use of visual aids will be useful piece of research.

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