

The Place of Instructional Media Technology in the Teaching-Learning Process: A Challenge to Science Teachers in the New Education Reforms

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Abstract: Of the numerous problems that teachers of science subject have to content with in the present educational desperation particularly in the process of curriculum delivery is the issue of student population in our classes. The worse of it is the dearth of instructional materials in our institution. This, how to blend the little instructional materials being provided by the government (with the population) calls for the examination of the place of instructional media technology in the teaching learning process considering the ongoing educational reforms in our institutions. The paper therefore re-examines the role of instructional media technology in the teaching learning process of our institutions and explain the design of a liquid pump with automatic volume control for the teaching of measurement in our schools.

Introduction.

The goals of science, technology and mathematics in academic preparation and career awareness is to prepared the students who are likely to pursue science academically as well as professionally to acquire knowledge for such endeavors. There are necessary scientific ideas and processes which form a part of the structure of science and are necessary for any further study of science, technology and mathematics students, which should be instilled with such ideas and processes. Also the students should be prepared to make sensible decisions about jobs related to science and relevant technology. Careers in science, technology and mathematics increases as development progresses and as such there is need to place emphasis on topics and training on awareness of the many job opportunities such as equipment designers (where media technology falls), computers programmers and operators e.t.c. jobs which apply scientific skills should be made available to the students, so as to enable them take useful decision about their futures. A clear and close look into instructional media technology in the teaching learning process will re-orientate students and make them self reliant, economically empowered and very useful to the society they live in.

Technology is popularly viewed as problem solving and if foundation of science and technology education is properly laid in our primary and secondary schools, the knowledge will pave way for the proper rehabilitation of the economy thereby making every Nigerians a productive element and once every hand is productive, Nigerians will be self reliant in every sphere of life and this can only be achieve if the place of instructional media technology is enforced in the teaching learning situations. The values of instructional media technology in an effective teaching/learning process cannot be over emphasized at all levels of education this is because of the fact that their effective use allows much learning to take place in less time with minimum difficulties. Infact, resources for instructional media technology are considered in the teaching – learning process as facilitators and agents of selling ideas to the public. They are strong forces in facilitating effective communication, which will result in higher level of performance in any learning situation. Unfortunately Ibrahim (2004) stated that in spite of these glaring facts, most teachers from primary to tertiary levels of education make little use of these resources while teaching, instead most teachers still stick to what is called “Verbal symbolism” that is the use of traditional method which is allowed to continue. The

place of instructional media cannot be forgotten in the present education reform. Philosophers have always propounded one truth or the other which leads to the many schools of philosophy, the researcher saw this as man's way of leverage especially the most suitable ones that proffers solution to the challenges experienced daily through man's interaction with the physical and immediate environment. Measurement is one among many problems encountered by man. This paper also seeks to find an easy and accurate solution to the measurement of liquid volume automatically.

Concept of Instructional Media Technology:

Technology as viewed by Dike (1988) simply means the science of industrial arts or knowledge about scientific or industrial method, Technology therefore, can be seen as the systematic study of techniques for making and doing things. In fact, it can be described as the totality of putting together a system or process scientifically and skillfully. However instructional media is viewed as a wide array of materials capable of improving the perception of the learner's stimulus. These arrays of materials are specifically either developed for the teaching and learning or perhaps converted for the teaching and learning. Instructional media technology therefore could be explained to mean those tools or gadgets that can aid the stimulus perception of the learner thereby making instructional media technology a tool that enhance the quality of instruction which will lead to a better teaching and learning situation.

Consequently, Nma (2004) states that instructional media technology can be referred to as ways, means or materials which an instructor can use in the teaching and learning situation in order to achieve a specific goal of a subject or in teaching and

learning situation. Therefore instructional media technology materials could be described as those teaching aids which teachers produce in order to communicate effectively to students or learners in a teaching and learning situation.

Classification of Instructional Media Technology

Instructional media technology materials can be of different shapes and sizes. They can be audio, visual, audio visual, projected and non projected materials by an instructor.

However, materials that appeal to sense of sight, for example, pictures, transparencies, micro projectors overheads opaque projectors, flannel board, charts, graphs, maps, globes, textbook, the liquid pump etc are classified as Visual materials, while those that appeal to hearing sense, example, radio, tape recorders public address system etc are grouped as Audio materials. And those that appeal to both seeing and hearing sense for instance, television programmed, video programmed, sound motion films etc are called Audio Visual Materials similarly, Projected materials are those tools which contain information that can be projected on the screen via electricity, for example, films, slides, films, strip, transparencies etc using their projectors, while Non projected materials are those materials that need no projection through electricity, such materials include, maps, globes, charts, poster, specimens, regalia etc. main instructional media technology material are applicable or can be used in almost all the subjects depending on the topic to be treated.

The Place of Instructional Media Technology in the Teaching Learning Situations:

Instructional media technologies are devices which enhance effective teaching

learning situations. They are, therefore necessary devices in our institutions for among other things.

- They facilitate to inculcate the spirit of maturation, understanding, and attention and interest among learners;
- They make learning activities to be very meaningful thereby enhancing student's academic performance.
- They are used for clarity and better understanding of topics being prepared by the instructor.
- They supplement the written or spoken words in the transmission of knowledge, attitude and ideas.
- They help the teacher to make the lesson understandable to the students as well as disseminate information in such a way that they will modify their(students) attitudes, habits and practice. Infact, for effective teaching learning situation to take place in our institutions, instructional media technology must be used.
- The researcher have constructed different kinds of instructional aid ranging from a ticker-timer, chalk board mathematical set, rabbit skeleton, liquid pump with automatic volume control. The later will be described fully to give idea (so that it can be constructed for use) of an instructional material.

The lists of materials used are listed below:

- ✓ Electric liquid pump (12 volts)
- ✓ Water flask
- ✓ Plastic container
- ✓ Ply wood
- ✓ Electrical wires
- ✓ Pulleys
- ✓ Pipes
- ✓ SwitchAdaptor

Design of an Electric Liquid Pump.

The researcher got the electric liquid pump materials as listed above and made the necessary wirings using 12 Volt direct

current (d.c.). The researcher then connected the pump to the liquid flask through a narrow opening. The researcher fixed the pipe that will channel the liquid to a detachable transparent plastic container. The container was constructed with a wooden base having a round conducting plate attached to it. This conducting plate acts as a bridge for the liquid pump. The researcher connected a liquid switch that will detect the liquid volume at different levels. The researcher then finally connected all the electric wires and the main switch to an adaptor which has 220V a.c. input and 12V d.c output capacity.

How to use the Electric Liquid Pump in Teaching Measurement in Science.

This device can be use to teach measurement of liquid at all levels. The teacher first of all demonstrate how to operate the device by simply putting on the electric liquid pump switch to measure the volume of liquid and the teacher goes ahead to explains that each switch is design in such a way that it determine the volume of liquid to be measured, therefore what ever volume one is asked to measure, the student look on the calibration on the switches and select the appropriate switch and on to measure, this can be done several times so as to add up to the desired volume needed. The advantage of this device is that each student can be evaluated during the lesson and the teacher can assess his/her lesson at the end of the class. The problem of parallax is eliminated by this device.

Challenges

The challenges are enormous ranging from the low per capital income of teachers and the subvention to schools, down to lack of skilful teachers in the area of instructional media technology (improvisation). For the teachers, due to low income in salaries, they look out there for survival and

therefore have no or little time to improvise where necessary the school authority on their part always abstain from financial commitment therefore teachers of technology that have the skills in improvisation are rendered ineffective. This constrains affect the teaching learning process because the teachers resolve back to the old methods of chalk and board, lecture methods which only few students can benefit and therefore resulting in the mass failure of students in science, mathematics and technology. With the proposed education reforms in Nigerian education sector science teachers are challenged to:

- Change their attitude positively and begin to see instructional media technology as a valuable means for successful teaching and learning in our institutions;
- Be knowledgeable about the concepts and use of instructional media technology.

The Way Forward

- Principals and subject teacher should device a way of generating extra income so as to meet the challenge in improvisation.
- The government should review the teachers salaries at all level so as to allow teachers to concentrate and put their best in the teaching profession .Qualified teachers should be employed to manned our schools. Workshops should be organized to train teachers that are lacking skills in improvisation.
- The inspectors and schools administrators should ensure that teachers use instructional media technology in every lesson they teach also when conferences and workshops are organized, they should make sure the right people attend so that they come back and impact what they learn on the students. Often because of the financial

benefit wrong people attend such conference and workshops and what they learnt end up in the offices instead of classrooms.

Contribution to Learning

The liquid pump with automatic volume control is aimed at providing easy means of fetching liquid substances of specified volume. This can be applied in the laboratory for measurement of different volume of liquid chemicals for experiments the advantage this pump has over the traditional way of measuring liquid is that, it eliminate the problem, of parallax at the meniscus there by contributing to the learning process. In physics understanding the rate of flow of a fluid can be thought using the liquid pump with automatic volume control. This device can also be used at home and various industries in their production process.

Conclusion

Audu, P. (2005). ever recommended that regular workshops should be organized for practicing teachers to acquire the basic skills needed to utilize immediate environmental resources therefore it is the view of this paper presenter that regular workshop should be organized for practicing teachers especially those of the sciences in order for them to acquire the basic skills needed for the utilization of instructional media technology materials.

Making this idea more relevant in the real world requires both financial and technical support from government and private organizations. This paper should not just be a mark fetching exercise; ideas used in the development of this device should be pass across to the younger generations for improvements and upgrading.

Recommendation

- Practicing teachers should attend workshops and conferences regularly on instructional media technology
- principals and the government should provide fund to skilful teachers so as to utilize the knowledge and ideas they have in instructional media technology
- Teachers of technology should inculcate this idea and skills of improvisation in their students by requesting than to improvise some of the instructional material.

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