EFFECTIVENESS OF PROGRAMME LEARNING MATERIAL FOR TEACHING PHYSICS IN CLASS X

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Abstract

The study investigated the effectiveness of programme learnning material over traditional teaching method of X class students in teaching physics. The main objectives of the researcher is to develop programme learning material for teaching physics to the students of X std and also compare the effectiveness of programmed learning material and traditional method on the achievement of students. In the study total 60 students participated. The researcher selected the two groups randomly where each one was composed of 30 students & were labelled as experimental group & Control group .Students in the experimental group was subjected to treatment using programme learning material respectively while students in the control group were taught using the traditional method of teaching. The researcheradministered pre test and post test in both the groups before teaching commenced and after the teaching. The mean of post test of control group is 25.03 and standard deviation is 3.48. The mean of post test of experimental group is 32.27 and standard deviation is 4.11 and the t value is 7.59. The study reveals that students learned with programme learning material performed better than the students taught with traditional method. Result revealed a statistical significant effect of programme learning material over traditional teaching method on academic achievement of students.

Keywords: *Programme learning material, traditional method,physics*

B. F. Skinner introduced programmed instruction at Harvard in 1954,and much of this system is based on his theory of the nature of learning.Programmed instruction allows students to: answer questions about a unit of study at their own rate; check their answers without their teacher's assistance;and advance only after answering correctly. Programmed learning material is concerned with the selection and arrangement of educational content based upon what is known about human learning. It is a process of constructing sequences of instructional material in a way that maximize the rate and depth of learning. Every child can learn, but some do so more or less easily, and retain theinformation or skills longer or less well. When knowledge is introduced in a carefully programmed sequence that begins with a global story, it tends toattract initial interest. Todays classes are overcrowded and individual attention is not possible. There is also difficulty in covering the syllabus. Problem of maintaining discipline in the class also becomes difficult in overcrowded classes. Large quantum of knowledge to be imparted to a large population. What is need is education explosion and it is here that the programmed instruction comes into being as an innovation step in this new direction towards individualisation of instruction.

Features Of Programme Learning

In programme learning material the subject matter is broken into easy steps and each step is presented in several sentences each called frame. The frames are arranged sequentially. The frames require that the learner makes some kind of response an answer to a question, an activity to demonstrate the understanding of the material i.e frequent response is required of the student. There is immediate confirmation of the right answer or correction of a wrong answer given by the pupil. Units are arranged in a careful sequence which shapes the behaviour. The content and sequence of the frames are subject to the actual try out with the pupil and are revised on the basis of data gathered by the programmer. Goals to be achieved are evaluated and stated specifically. Revision of programmed material is based on the respoonce of the learner. In Programmed learning the suitability and appropriateness of the material presented depends upon the learner.If the learner makes many mistakes the programmed material should be rejected. Each pupil responds at his her own pace without any threat of being exposed to any humiliation in a heterogenous class the learner is free to vary his/her own rate of learning independent of other learner.

Principles

There are five basic principles of programming

Principle of small steps - According to this principle we need to Set small steps in order to prevent a learner from stumbling as much as possible. When he makes a mistake, there is the risk of being labeled a failure.

Principle of Immediate feedback - Let a learner know whether his/her answer is correct or incorrect immediately. Give the learner the subsequent question after he/she knows whether his/her response is right or wrong

Principle of Active responding - To what extent a learner can understand is judged by making him/her answer questions. The extent of a learner's understanding is ascertained from what is demonstrated in the responses.

Self Pacing - Let the learner decide the speed of learning so that he/she can learn at his/her own pace. Consider that an appropriate speed varies from learner to learner.

Student testing - Whether the program is good or bad is judged not based on a specialists' opinions, but whether learning is actually established or not. To that end, get learners who have yet to learn the subject matter to try the program under development. Based on the trials, improve the material as necessary.

Need of Programme learning material

In india teaching physics has been oral in character with the some demonstrations thrown, in schools there are either have been talked much about but most of these are not implemented. The curriculum is not organised psychologically and text books are written traditionally without keeping in view the process of learning.Methods of teaching physics are dull and generally ineffective.Teaching is aimed at perfomance by the students in examinations and not at real learning of the subject matter learning in scientific method of working, problem solving, creative thinking and development of scientific skills, interests, attitudes and application of the knowledge remains in the stage of neglect. There is lack of research in teaching physics the contents are old and the condition is still deterioted by the different media of instructions throughout the country.

The teachers initiative is often crushed by the traditional curriculum and his teaching become dull and lifeless due to the pressure of dead weight of examinations which often demands littile more than good memory.Proggrammed learning of physics will develop curiosity of the student to acquire the aim of democratic education.

Sample - For the present study sample of 60 students was taken from X grade students from two schools at Nagpur
Tools - Self developed test, Programme learning material
In self developed test, researcher asked objective questions to the students of class X. Pre-test & Post-test was employed for the study .Researcher made test of 40 marks from the topics. In the test each question had four options & child had to tick the correct answer
In programme learning material researcher has divided the topic into small frames and in the last of each frame asked question.It has been prepared according to the principle of programme learning.

Data Collection & Analysis

The study is experimental nature and two group design The comparison between distribution of scores by Experimental Group & control group was obtained which shows that the performance of Experimental group was better than the performance of Control group Researcher compared mean & standard deviation. The calculated value of mean of experimental group of pre test is 24.93 and post test is 32.37 and standard deviation is of pretest is 3.54 and post test is 4.11. The experimental group's mean-post test score was statistically lower than the experimental group's mean-posttest scores In addition, the standard deviation of pre test was statistically lower than the post test of experimental group's.The t test was also administered and score is 5.96.

Table 4.1

Group	Test	Number of students	Mean	Standard deviation	T value
Experimental Group	Pre test	30	24.93	3.54	5.96
	Post test	30	32.37	4.11	

The calculated value of' t' score is 5.96 which is significant at both the levels. Table no 4.1 indicates that the calculate value is bigger than the T table value and thus't' value is significant at .01 & .05
The calculated value of mean of post test of experimental group is 32.27 & control group is 25.03. The calculated value of experimental group of standard deviation is 4.11 & control group is 3.48.The control group's mean-posttest score was statistically lower than the experimental group's mean-posttest scores In addition, the control group's standard deviation was statistically lower than the experimental group's

Table 4.2

Group	Test	Number of students	Mean	Standard deviation	T value
Control Group	Post test	30	25.03	3.48	7.59
Experimental Group	Post test	30	32.27	4.11	

The calculated value of' t' score is 7.59 which is significant at both the levels. Table no 4.2 indicates that the calculate value is bigger than the T table value and thus't' value is significant at .01 & .05
There is a significant difference between the post test score of experimetnal group and post test score of control group. T test is applied to check the significance between mean achievement scores of post test of experimental and control group.The students of the experimental group achieved more score at post test than control group hence it proves the effectiveness of programme learning material in terms of achievement.

Conclusion

The developed programme learning material for teaching physics to the students of class X has proved effective on the achievement of the students than the traditional method.It has been concluded that the content of the programme learning material was appropriate for the grade level of the students, according to syllabus, fulfills the objectives of physics subject arranged in logical sequence, subject matter is presented in interesting manner, subject matter is developed on the previous knowledge of the student, broken into small stps, subject matter was properly compiled,and students become more prompt .It develops the awareness about importance of application based skill in students.It also helps to develop scientific attitude and logical reasoning in students.It also enable the teacher to derive and use of imnnovative method .

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