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The Effects of Variation in Correctives on Mastery Learning

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ABASTRACT:

Relative effectiveness of two types of correctives in mastery learning was investigated. Ninety six pupils of Class viii were divided into two groups of correctives – audio visual media session and small group study session. The Linguist type I analysis of variance was used to analyse the date. Result shows no significant difference between the groups on the criterion of immediate achievement and retention of learnt subject matter.

KEY WORDS: Mastery,Learning, Achievement, Groups.

INTRODUCTION:

Mastery learning an optimistic and formidable theory of school learning based on the notion of managing learning rather than managing learners. The research findings in mastery learning indicate the approximately 85% of the learners can learn everything the school teach them and that they can learn it at a mastery level with little additional instructional effort. Mastery learning depends on proper instruction. If learners have difficulty in learning certain concepts in an instructional programme as indicated by their diagnostic test result, it does not make sense to send them back to restudy those materials using the same old methods. Rather, it would be better to find supplementary from of instruction. Mastery learning is proposing that virtually all learners are able and can learn well. They can also learn effectively if different learners are provided with different strategies of instruction.

In most school time is a fixed variable, while the amount of content mastered is a flexible variable. If both the quality of instruction and ability to understand it were high, then a learner would require on additional time. Bloom's approach to mastery learning represented a great advance over previous strategies in respect of two considerations. First the feedback information enabled the each instructor to bring continual modification of the application process so that each learner could attain mastery. Second the application of a greater variety of instructional correctives was found to yield better result. Thus Bloom's strategy enabled the classroom teacher to bring mastery of the subject matter in their learners without making use of additional instructional time. Time is usually controlled by devising correct diagnosis of learning deficiencies and providing appropriate correctives to those who were a bit slow, weaker and thus needed further instruction through a different media of instruction.

A survey of much of the literature dealing with science education showed very few studies based on the learning theories of Gagne' and Amusable. The general picture obtained through this survey suggests that multi- media approaches, employing a variety of media should be more effective than traditional lecture- discussion approaches to science teaching . Moreover, the important and powerful feedback arrangement that is associated with the multimedia approach ensures a better achievement than could ever be obtained under other approaches. The multi-media correctives should be the integral part of the instructional system. An instructional system should include the planned and validated selection of media, methods, equipments and instructors leading the pupil to achieve the desired objectives on instruction. Such a system incorporates within itself the capability of providing correction and improvement.

The concept of instructional system described above is clearly dependent upon the media used with it. In the opinion of many experts (Briggs, 1916 Gag'ne 1916), the multimedia package' represents the most significant instructional media for the attainment of criterion behaviour by the learner.

Technology as applied to the process of instruction implies several operations, such as the systematic analysis of a learning task, defining the objectives to be achieved by the learner, diagnosing per- instructional behaviour, the selection of techniques and media for the realisation of instructional objectives to the per-determined standard of performance.

PROBLEM:

Researches in mastery learning of late sixties have been based on either the Carroll's model or on Bloom's strategy. Studies of Airasian (1967), Bichler (1970), Block (1970),Collins (1969, 1970), Gentile (1970), kersh (1970), Kim (1969,1970), Mayo et al. (1968), Moore et al. Posthwait et al. (1964), Sherman (1967), Silberman et al. (1964) have shown that adequate and effective feedback, personal attention to learner's problems,

individualized tutoring and the use of corrective devices are some of the factors which have been found responsible for the effectiveness of the mastery strategy.

A review of research in the field of mastery learning could not locate any study investigating the maintenance of mastery with the passing of time. Mastery may be reached by a group of learners in a specified period of time by providing instruction through specially designed strategies of instruction. But the most important question is- Are the learners able maintain the same level of mastery in the subject matter on all occasion? Are they able to maintain the same standard of performance, when judged on the criteria of mastery learning after a sufficient interval of time? Moreover, there is no evidence, that any one strategy of mastery learning involving multi-media as corrective is superior to other similar strategies with 'small group study session' as corrective on the criteria of immediate attainment and retention of mastery.

The above of lack of research evidence regarding time dependence or independence of mastery standard and the effectiveness of strategies of instruction having variation in correctives have left sufficient scope for further experimentation by controlling the time and exposing the subjects to two different types of correctives.

Most important aspects is of mastery learning is formative evaluation through which the learner's progress is gradually monitored a given standard of performance (80% or 90%).

Experiment may be performed to verify the soundness of the above statement by having strategy of instruction which includes objective based usual class- teaching, formative evaluation, and feedback through specific review prescription and applying correctives through small group study session? There may be second strategy where the learners' progress can

be continually monitored through formative evaluation; their deficiencies are identified through diagnostic progress tests, they get adequate review prescriptions, receive audio visual media or multi-media as correctives.

***The problem thus viewed raises the following questions*:**

(1) Does strategy I involving objective based usual class teaching, formative evaluation, feedback through review prescription and correctives through small group study session, ensures mastery learning-

(a) On the criterion of immediate attainment of mastery?

(b) On the criterion of retention of mastery?

(2) Does strategy II which includes objective based usual class teaching, formative evaluation, feedback through review prescription and corrective through small audio visual- media, ensures mastery learning?

(a) On the criterion of immediate attainment of mastery?

(b) On the criterion of retention of mastery?

(3) Do all the above strategies ensure mastery learning on the two occasions mentioned above?

The following hypotheses were proposed and tested:

(a)There is no significant difference between the strategies of instruction on criterion of immediate attainment of mastery.

(b)There is no significant difference between the strategies of instruction on the criterion of retention of mastery.

Method Subject:

Ninety six pupils (boys) of class VIII from two secondary school from the urban areas in the district of Nadia in West Bengal.Who are studying in Bengali medium school Board of secondary Education, formed the sample of this study.

INSTRUCTIONAL TREATMENTS

TREATMENT-1	TREATMENT-2
a) Small group study session.	a) tape –slide-workbook
b) Individual tutoring	b) Filmstrip
c) Alternate learning material	c) Verbal teaching with transparency
d) Linear programmed text	d) Re-teaching with the above audiovisual

MEASURING INSTRUMENTS

A) Formative Evaluation:

(1) Diagnostic test. (2) Specific review prescription. (3) Review progress test.

B) Summative evaluation: criterion Referenced test 1 and 2.

DESIGN

The experiment has been conducted to determine the relative effectiveness of two experimental strategies involving two schools, each of which provided forty eight learners at the beginning of the experiment. Learners in each school were divided into two classes of twenty four pupils each. The Experiment would then really consist of duplicate experiments one in each school. In order to study the significance of the difference in means between the strategies."THE ANALYSIS OF VARIANCE IN DUPLICATED EXPERIMENTS IN RANDOMLY SELECTED SCHOOL" described by Lindquist (1970) was applied. The essential feature of this design is that classes were of equal size in each school that the classes were randomly assigned to the strategies and that comparable criterion measures could be secured for all learners on the completion experiment.

PROCEDURE

The experiment was started with an orientation session. One aspect of the orientation period was focussed on 'what the learners will be expected to learn for mastery,' instructional objectives. The unit table of specification were also explained to them. The learners were explained that they would be prevented from reading the next sub-unit till the errors and misunderstanding of previous sub- unit are corrected.

Having completed the orientation period the actual teaching for mastery was started. The group- based instruction was performed according to the planning previously drawn up. In course of teaching learners were reminded at a suitable interval of time about where they had been and where they would go i.e. their attention was directed to the objectives of the unit, the diagnostic progress test was administered. The learners were also told that they would not be graded on the test but the test result would be used to convey them of their learning progress or weakness in that sub- unit where improving should be attempted. Sometimes the learners were also asked to evaluate their own answer sheets by means of an answer key.

The results of the diagnostic progress test were used to indentify learners whose performance was satisfactory and those whose performance was not satisfactory. Immediately after the evaluation of the answer sheets, a score card showing the percentage of correct responses made by each of the twenty four learners in a treatment group was shown to each pupil. Those who obtained 90% performance correctly were appreciated by stating that they would likely to earn an 'A' in the final test if they could work at the same rate, while those who fail to obtain a certain proportion of test item correctly were directed to meet the experimenter in a special class taken on the same day for the purpose of clarifying specific review prescription and for receiving the session of correctives. The learners who performed satisfactorily on the diagnostic progress test were sometimes involved in helping those whose performance was falling behind.

This activity has been found to be very useful in the sense that the superiors were enjoying the task of guiding others and utilising there spare times for learning how to tutor, which in fact strengthened their own learning. This arrangement, however, was not followed always. On most occasion, superior students were given enrichment materials, e.g. they were asked to make brief explanatory note on how far the concept they have just learned was dealt with satisfactorily in 'Encyclopaedia Britannica' or 'Encyclopaedia of science@ Technology.

One important activity performed was correction of unsatisfactory learning of learners whose test performance indicated non-mastery. This activity was done in two ways. – (i) group correction and (ii) individual correction.

GROUP CORRECTION

Whenever a majority of learners indicated that they have failed to answer a particular item correctly, that item was considered an item for group correction. So far such item about which the whole group had learning difficulty, re- teaching was done using appropriate corrective(s).

The diagnostic test result enabled the experimenter to identify master and non-master on an objective or a set of objective. The non- master were given review prescription, where the number of each item on the diagnostic progress test and objective test item were written. Belo each objective were two sets of list showing the particular correctives from each of which learners might select the material or medium for restudy of the subject matter corresponding to this objective. The review progress tests were then administered to see the effect of applying correctives in remedial teaching. Even at this stage, learners ' inability to achieve mastery (however small the percentage of learners may be) was taken in consideration and re- teaching was done by using appropriate corrective.

On the completion of experiment in the school the summative test (C.R.T.I) was administered. In order to measure retention of mastery summative II (C.R.T.II) was administered on the learners after an interval of eight weeks.

DISCUSSION

As far as the immediate attainment of mastery is concerned there is no real difference, between the two treatments. Each treatment has one specific type of corrective, which is different from the other. Thus the two types of corrective seem to be equally effective in enabling learners to reach the standard of mastery (80% correct performance on the instructional objectives). So attainment of performance standard of 80% or more was found possible due to formative evaluation and the correctives.

F- Ratio due to variation in instructional strategies on criterion of retention of mastery was found to be not significant (p>. 05). Hence the null hypothesis oH_2retained. The implication of this fact is that so far as the retention of mastery is concerned there is no real difference between the two types of correctives.

The finding of this study receive support from the study of Anthony (1967), Bichler (1970), Block (1970) Collins (1970), Gentile (1970) kersh (1970) kim et al.(1969, 1970 and Sherman (1967).

An important question was raised in the formulation of the problem. The question is-"Do all the above strategies ensure mastery learning on two occasions (immediate and retention) mentioned above" The obvious answer is in the positive. The two treatment groups received the same type of formative evaluation but there was variation in the nature of correctives applied. The nature of correctives, the of review prescriptions etc. may be attributed to increase in performance standard shown by the learners.

In each school the experiment conducted for pretty long time varying on an average from five to six month. This duration of experiment may be considered sufficient to pick up the treatments. Care was always taken to integrate teaching for mastery with diagnostic testing. The requirement was the use of class teaching in conjunction with diagnostic evaluation, so as to yield (a) information which could be prescriptive and (b) development which would be formative.

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