CHAPTER - VI

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6.1 Introduction

The process of education is in a period of great change. The formal classroom methods and materials will not fulfill the needs of many students. An optimum combination of instructional methods and materials is essential to improve the quality of education offered in classrooms. New strategies must be adopted or adapted and applied in classrooms. Film, video and Multimedia presentation can be considered substantially identical media for any purpose. When a combination of media and methods are incorporated into the learning process, learning becomes easier, faster and fruitful. The new communication technologies and electronic media offer a vast arena of gadgets that could be used in regular classrooms. But the dearth of suitable user friendly and effective materials is a problem. This is more so in the case of science education, especially Biology. Hence the video materials have been developed and analyzed for its effectiveness with reference to select variables.

More handy and user-friendly nature of video makes it more popular and the teacher who aims at quality and equity could use it in classrooms to make teaching and learning more effective. A biology teacher can use it to improve the teaching learning process by bringing certain learning situations into the classroom in a manner close to reality that is otherwise almost impossible within the four walls of the class. Hence Video Assisted Instruction with special reference to
teacher-controlled mode could result in some useful guidelines for future use in class. This will serve as a guideline to produce effective and low cost teacher made programmes suitable for many teaching-learning situations. It was with this objective that the investigator tried to develop the teacher controlled Video Assisted Instruction and analyzes its effectiveness with special reference to student achievement. Hence the present study on "Effectiveness of Teacher controlled Video Assisted Instruction on the Achievement in Biology among VIII standard students" was taken up.

6.2 Need and significance of the study

Studies on the theories of learning have demonstrated that more than one sensory channel dramatically influences comprehension and learning.

Studies are needed in teaching and learning Biology because the coverage of the subject deals with experiences from outside the classroom, or the processes that are happening in living body or a cell and the teacher could not otherwise bring in these experiences into a classroom situation to assist conceptual development. The teacher’s role as a facilitator of learning cannot be replaced by technology in the near future. It is also felt that Video Assisted Instruction is a handy tool to any teacher and a study of the effectiveness of its use by the teacher in teaching has to be assessed. The teacher must be convinced of its use in the classroom as the National Policy on Education (1986) stresses the use of VCR, TV, and Films for group viewing.
The programme of Action (POA) 1992 visualizes that to enable more and more students to have access to educational programmes, encouragement of educational institutions to raise resources to provide electronic hard wares - radio, Cassette player, TV, and VCR for group viewing/ listening and there being a rat race in schools for buying these materials. But dearth of relevant culturally, socially and geographically compatible video programmes with sufficient pedagogic backup is a truth and the teachers feel that the content and treatment of the programmes available are not suitable to the level of the students and prescribed syllabus. A low cost video technology suitable to the over crowded Indian classroom situations is lacking. Hence it is found that the production of suitable video programmes and a study on the effectiveness of teacher controlled Video Assisted Instruction is one of the felt needs of the hour.

Most of the studies that have analysed the effectiveness of Video Assisted Instruction techniques concentrated on the effectiveness aspect of video and its applications in relation to certain student variables. But when we use a technology in the classroom we should try to answer certain questions like; is the strategy handy to the teacher as well as the student? Does the strategy help the students to attain his/her maximum in a class situation in relation to set objectives? Is the strategy economic and feasible to the over crowded class?

Further Analyses of the educational researches from India reveal the following gaps in the present body of knowledge.

1. There are no substantial findings on the role of teachers in VAI under Indian conditions
2. There is a dearth of clear-cut guidelines or criteria for consideration in developing Video Assisted Instructional materials for classroom learning of Biology.

3. A few of the studies that have analyzed the effect of certain variables have not effectively considered the key variables like class size, attendance requirement, control of the teacher in using the media, skill of the teacher in using the tool effectively in the class etc.

4. To get optimum benefit out of a classroom interaction every student should be helped to reach his/her maximum level of attainment. But the researches so far undertaken in the area are meager.

5. Those studies undertaken so far have not analysed the effectiveness of Teacher Controlled Video Assisted Instruction with reference to the optimum development of individual students in a classroom situation.

6. Hence, to throw more light on the afore mentioned gaps in knowledge regarding Teacher Controlled Video Assisted Instruction, the investigator has undertaken the present study.

6.3 Operational Definition of Key Terms

Effectiveness: Capacity to bring about the intended result. Generally, effectiveness of an instruction is assessed on comparison by its outcomes with other norms and more commonly by the achievement test that the instructor employs to
gauge the individual performance on one hand and instruction on the other.

**Teacher Controlled Video Assisted Instruction:** It is an instructional technique where a prepared and recorded video programme (lesson) enables the teacher to mediate and manage the flow of information from the pre-recorded CD-ROM to the students through a multimedia PC in the learning process.

**Achievement:** The gain reached by effort; the students gain in cognitive skills after undergoing an instruction.

**VIII Standard Students:** The students of standard VIII of Government/aided/unaided recognized schools following the school syllabus of General Education Department, Government of Kerala.

### 6.4 Design of the study

The pre test-post test equivalent group design (Best and Khan 1995) was adopted in the study. Topics that required video support were selected from the topics in the Biology syllabus prescribed by the General Education Department, Government of Kerala, for Std. VIII students and video materials and achievement test were developed and validated to investigate the effectiveness of TCVAI on the achievement in biology by comparing with TM.

The independent variable of the study is the effectiveness of Teacher Controlled Video Assisted Instruction in Biology among VIII Standard Students. The dependent variable is their achievement.
Intelligence, Socio-economic status and sex were taken as co
variables. The achievement of the student was the dependent variable
whereas the Teacher Controlled Video Assisted Instruction was the
independent variable.

6.5 Objectives of the study

1. To develop and validate the Teacher Controlled Video
   Assisted Instruction package (software) in Biology for VIII
   standard students.

2. To construct and validate achievement tests in Biology for
   VIII Standard students.

3. To find out the effect of the Teacher Controlled Video
   Assisted Instruction on the achievement in Biology among
   VIII standard students.

4. To find out the effect of Traditional Method on the
   achievement in biology among 8th Standard students.

5. To find out the effect of Teacher Controlled Video Assisted
   Instruction on the achievement among VIII standard students
   in the area of Knowledge, Comprehension and Application
   objectives.

6. To compare the effectiveness on achievement between the
   students of TCVAI and TM.

7. To find out the effect of Teacher Controlled Video Assisted
   Instruction on achievement among VIII standard students in
   Biology keeping their intelligence as a co-variance.
8. To find out the effect of Teacher Controlled Video Assisted Instruction on achievement among VIII standard students in Biology keeping their socioeconomic status as a co-variance.

9. To find out the effect of Teacher Controlled Video Assisted Instruction on the achievement among VIII standard students in Biology keeping sex as a co-variance.

10. To find out the correlation among the pre test and post test scores in total as well as learning objectives 'Knowledge', 'Comprehension' and 'Application' of TM and TCVAI.

6.6 Hypotheses

Based on the objectives, the following null hypotheses were formulated:

i. There is no significant difference between the achievement of the experimental group and control group of Standard VIII students subjected to Teacher Controlled Video Assisted Instruction in Biology.

ii. There is no significant difference between the total achievement of VIII Standard students in Biology in the area of Knowledge, Comprehension and Application objectives when they are subjected to Teacher Controlled Video Assisted Instruction and Traditional Method.

iii. There is no significant difference between the total achievements of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping intelligence as co-variance.
iv. There is no significant difference between the total achievement of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping their Socio economic status is kept as co-variance.

v. There is no significant difference between the total achievements of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping sex as co-variance.

vi. There is no correlation among the pre-test and post test scores in total as well as learning objectives of Traditional Methods and TCVAI

6.7 The sample

The sample consisted of 140 students of STD VIII (English Medium) selected from a semi urban school, HSS Thirumala, under the General Education Department, Government of Kerala syllabus is followed. The experimental and control groups were given identical pre tests to assess the entry-level behaviors. Video Assisted Instruction with teacher control was given to the experimental group. The control group was given the same syllabus through traditional method of teaching. The lessons were transacted for a total period of three months as per the time allocation in the regular timetable. After the treatment of each topic, same posttests were administrated to both the experimental and control groups.
6.8 Tools used

Suitable tools were applied to the data collected and the hypotheses set for the study were tested.

Following tools were used in the study

i. Video materials on the topics 'pollution', the cell' and the excretory system prepared and validated by the investigator.

ii. Achievement tests in Biology prepared and validated by the investigator.

iii. Kerala University Group test of intelligence (Verbal) by Nair, A.S.

iv. Socio Economic Status Scale by Nair, A.S.

6.9 Statistical Techniques used.

Suitable statistical techniques were applied to the data collected and the hypotheses set for the study were tested. Measures of central tendency, correlation and tests of significance ('t' test) were used to analyse the study.

6.10 Discussion

Teachers can help the students to learn by using various instructional strategies from their stock. But teachers generally seem to be reluctant to switch over to new instructional strategies because of their lethargy, lack of competency or ignorance about the comparative effectiveness of those strategies. Combining the practical and useful
ideas to their daily practice is a challenge to many teachers and they resort to the traditional shortcuts in transaction and 'cover' the topics.

The findings of the present study are related to the effectiveness of Teacher Controlled Video Assisted Instruction in the attainment of total and different objectives of teaching Biology. The student achievement was compared to the effectiveness of the method. It also gives view on the achievement of students of different level of intelligence, socio-economic status and sex.

Technological advancement in the field of communication has poured in different media and materials that could be used in classroom transactions. Educational technology as a discipline has bloomed and policy makers, administrators in educational set up and some teachers are after educational technology considering it as a panacea for all drawbacks in the field of education.

What we are witnessing today is a rat race in schools for procuring gadgets like TV, VCD Player, and Computer etc. But the dearth of suitable syllabus based and students' level based software affect the efficiency of classroom transactions. A shortcoming is that little attention is being paid to the development of suitable video programmes at grass root level though the technology is within the reach and without any extra investment. Researches to justify the effectiveness of using video programmes in our over crowded classes by the teacher could also save extra investment and could provide an enriched learning environment in Indian conditions.
The present investigation is a valuable contribution to develop educational video programmes, as it will motivate teachers to have their own video materials for classroom use considering the need of the target group. An innovative teacher could make use of the multimedia and digital camera or even a cell phone camera to produce video material for his/her class.

The unique condition of the study is that it provides an excellent evidence of the effectiveness of teacher made video programme for teaching the biological concepts through computer media now available in schools so that no extra gadgets are required. The programmes can be used for remediation or as tutorial programmes and save time. It can make up for the shortage of effective teachers and could assure quality and standard in transaction of the syllabus.

It is suggested that in service training programmes should be organized so that teachers could have a hands on experience on the know how of the production of video programmes using multimedia and digital camera and to improve their classroom teaching.

In the area of pre service training, production of video programmes for classroom use and training on Teacher Controlled Video assisted instruction should be imparted so that they may be able to develop video programmes according to the level and need of the students.

The present study shows that the teacher controlled video assisted instruction is more effective in terms of students' achievement
than the traditional method. The technology is not very costly now as computers are already available in schools as a part of computer education or information technology. These computers could be used for providing conceptual knowledge. This will help to save time and effect. Quick revision of the lesson or revision from any point of the lesson is possible any number of times.

Another unique finding of the study is that the achievement gained through Teacher Controlled Video Assisted Instruction is influenced by intelligence and socio economic status of the student. Average and low intelligent groups as well as average and low SES groups are more benefited by Teacher Controlled Video Assisted Instruction. It is also found equally beneficial to both the sexes. This shows that the method is generally suitable to all students.

6.11 Tenability of the Hypotheses

Based on the findings and conclusions the following null hypotheses formulated by the investigator before the study i.e." There is no significant difference between the achievement of the experimental group and control group of Standard VIII students subjected to Teacher Controlled Video Assisted Instruction in Biology" is rejected.

The second hypothesis i.e., "There is no significant difference between the total achievement of VIII Standard students in Biology in the area of Knowledge, Comprehension and Application objectives when they are subjected to Teacher Controlled Video Assisted Instruction and Traditional Method" is rejected. The
hypothesis stands unsubstantiated with respect to the objective, 'Application' in certain topics.

The third objective i.e., "There is no significant difference between the total achievements of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping intelligence as co-variance" is also rejected, as it stands unsubstantiated with respect to low and average intelligence groups and moderately with respect to high intelligence group.

The fourth hypothesis, i.e., "There is no significant difference between the total achievement of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping their Socio economic status is kept as co-variance" also is rejected

The fifth hypothesis, i.e., "There is no significant difference between the total achievements of VIII standard students in Biology when they are subjected to Teacher Controlled Video Assisted Instruction keeping sex as co-variance" is rejected, as sex does not influence the total achievement of either sex subjected to the treatment.

The sixth hypothesis, i.e., there is no significant correlation among the pre test and post test scores in total as well as learning objective of TM and TCVAI in rejected as the pre test scores influence the post test scores.

6.12 Educational implications

i. Since the Teacher Controlled Video Assisted Instruction groups have been found benefited more out of Video Assisted Instruction than the group subjected to traditional method of
teaching biology, the schools should try to implement instruction using video to enable the students to reach their optimum.

ii. Teacher support system may be added to the televised educational programmes since the study has shown significant gain with Teacher Controlled Video Assisted Instruction.

iii. Teacher Controlled Video Assisted Instruction may be used to help the students with average or low intelligence as the study has proved its effectiveness for these group of students.

iv. Control of teachers in making a learning strategy more effective has been supported by the study. Hence the teacher could be sufficiently trained to play the role of an effective facilitator in maximizing learning.

v. Serious attempts may be taken by the SIETs, CIETs and SCERTs, to produce and make available video films on school subject areas that are difficult to be transacted effectively through any other form of technology support.

vi. As a strategy, serious attempts may be made to have Teacher Controlled Video Assisted Instruction widely in our classrooms to assist all categories of students.

vii. Telecast educational programmes may be recorded and used suitably in the classroom as support to the classroom transaction wherever possible.

viii. Teacher Controlled Video Assisted Instruction may be used for slow learners so that it will help them to overcome their poor study habits or ability to form concepts
ix. Teacher Controlled Video Assisted Instruction gives more direction to the student. Hence videos when used for instruction must be planned as a part of lesson.

x. Planning lessons using videos in a teacher-controlled format in the classroom teaching may be amply practiced in the pre-service teacher-training programme.

xi. In-service teacher training on the effective use of Teacher Controlled Video Assisted Instruction may be given to practicing teachers by the department.

xii. Suitable training programmes may be organized by the SIETs or SCERTs for innovative teachers in the production of teacher made video programmes for classroom use.

6.13 Suggestions for further research

i. Effectiveness of Teacher Controlled Video Assisted Instruction on cognitive abilities can be analysed in depth.

ii. Effectiveness of telecast educational programmes and the teacher controlled classroom versions can be compared.

iii. Various factors that affect the success of Teacher Controlled Video Assisted Instruction can be compared and the findings can be used in various ways in improving educational telecasts and the production of video films for telecasting and classroom uses.

iv. Teacher Controlled Video Assisted Instruction programmes can be developed in other branches of science as well as other
school subjects and their effectiveness can be tested in Indian classroom situations.

v. Effectiveness of co-operative small group learning with the help of video can be attempted.

vi. Interactive video lessons and teacher controlled video lessons could be compared for the effectiveness.

vii. Interactive video versions of the lessons fixing mastery level criteria for all types of students can be attempted.

viii. It is suggested to evaluate the effectiveness of Teacher Controlled Video Assisted Instruction in terms of retention of acquired knowledge.

ix. Effectiveness of Teacher Controlled Video Assisted Instruction in remedial teaching can be attempted.

x. Videotexts could be prepared based on the syllabus.

6.14 Conclusion

Based on the analysis and interpretation of the data and the discussion of the results, the following conclusions were drawn.

i) The results of the study showed significant differences in the achievement of the students in Biology in the teacher controlled video treatment than the students taught through traditional method.

ii) The students of average intelligence and low intelligence who were subjected to teacher controlled video assisted instruction scored significantly higher on the posttest than
those who were not subjected to Teacher Controlled Video Assisted Instruction.

iii) The students, of average and low socio economic status, benefited more by Teacher Controlled Video Assisted Instruction than those who were subjected to traditional method of teaching.

iv) Significance of the difference on achievement scores of boys and girls students of Teacher Controlled Video Assisted Instruction and Traditional Method has not been established. A perusal of the results for boys and girls showed that both boys and girls gained more from the Teacher Controlled Video Assisted Instruction than from the Traditional Method of teaching. Achievement of the boys and girls are independent of the sex factor.

The study provides an excellent evidence of the effectiveness of Teacher Controlled Video Assisted Instruction in teaching certain Biological concepts. By using such programmes the teachers could support and improve the student achievement by providing learning experience to the students that words, printed materials or still objects cannot give. The Teacher Controlled Video Assisted Instruction method of teaching Biology has proved more effective in comparison to the Traditional Method of teaching. Reasons of the interesting result might be that the use of the video and audio, ease of use capabilities as electronic live black board is particularly suited for Biology teaching. It could bring in out of class situations, display of data, focusing attention to special areas, a quick review of
any point of what has been learned already and the students can manipulate any sequence or review quickly without any distortion, the learning sequence experienced already. Even after the teacher’s exposition and interaction, the student can reexperience that planned learning sequence any number of times according to his/her pace of learning or requirement and make up for the loss that might have happened due to fluctuation of attention or absence in the class. This is not possible in the TM of teaching. Moreover the student is engaged in learning from a variety of sources such as the teacher, video and the peers.

In the present study Teacher Controlled Video Assisted Instruction produced significant gain in the performance level over the traditional method. In Indian classroom situations we have to wait for the costly and personalized systems for its widespread use. The cost of instruction will be much more reduced when Teacher Controlled Video Assisted Instruction could be incorporated in the classrooms on a large scale. This will help to assure quality with equity in the classroom transaction.

Teachers cannot be replaced by technology but we have to develop a positive attitude for the maximum utilization of technology in the classroom and to help all students to understand the concepts clearly and effectively irrespective of their IQ, Socio economic status or Sex. Teacher Controlled Video Assisted Instruction is a unique teacher as well as student friendly format and it could remain as an unimpeachable technology for classroom use especially in a country like India where the classes are over crowded. Hence the policy
makers, administrators, teacher educators and teachers in our educational set up can conclusively opt for Teacher Controlled Video-Assisted Instruction for maximizing the general classroom transaction and student achievement. Because of the ubiquitous use of multimedia computers in education the costs will come down.