Chapter VII

Summary

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SUMMARY

VII.1 BACKGROUND OF THE STUDY:

It is said that we live in the information age. We are surrounded and constantly bombarded by information related technology. It is also said that technology will change the world. The people who adopt and use technology make the changes. For effective change timely, integrated and good quality communication of information is needed. By definition effective communication is a two way process also is an interactive process. In age of information, computer based multimedia technology is a tool for communicators of all trades and an effective catalyst for change.

So far the term multimedia is concerned, on one level; it refers to integration of multiple media such as visual imagery, text, video, sound and animation which together can multiply the impact of message. On another level, interactive multimedia refers to the ability of the user to control these components and interact with them as needed. The integration of multimedia technology in the communication environment has the potential to transform an audience from passive recipients of information to active participants in a media-rich learning process.

Multimedia technology was firstly used in advertising. Its power to enhance communication and affordability open the way into the marketing agencies. The same power brought the technology into the classroom of America. Multimedia capacity to appeal to a variety of learner makes it a powerful and exciting teaching and learning tool.

Multimedia computer assisted instruction is common in developed countries like America, but uncommon in undeveloped countries like

India. We rarely use multimedia instructional materials in our teaching-learning process in the classrooms. Our State and Central Government are now promoting information technology in the schools and colleges. Though multimedia computer assisted instructional materials are available from foreign countries, they are rarely related to our educational objectives and the contents in the syllabi. So far the subject Educational Technology is concerned, there is a dearth need of multimedia computer assisted instructional materials.

Investigator is of the opinion that multimedia computer assisted instructional material on instructional units from Educational Technology course of B. Ed. Class can be developed and tested. Today the teachers and educationalist have recognized instructional media as indispensable and integral components of instructional materials in both formal and informal education. To increase interest of students and teachers also, new instructional media can help. So the present research work can be provided useful to the field of education.

VII.2 STATEMENT OF THE PROBLEM:

The statement of the problem for research on hand is, therefore, stated in the following words.

"Development of Multimedia Instructional System on Educational Technology for B.Ed. Pupil Teachers."

VII.2.1 DEFINITIONS OF THE TERMS:

The operational definitions of the terms used in the statements of the problem are defined for the sake of clarity and also for delimiting the scope of study as follows.

1) **Development:**

The term development includes the planning, designing, constructing and testing of an instructional system.

2) **Multimedia Instructional System:**

A system designed for and dedicated to instruction i.e. human instruction is an instructional system. An instructional system is defined as an integrated set of methods, media, equipment and personal performing efficiently, the system functions required for accomplishing one or more instructional objectives. The term multimedia refers to the integration of multiple media such as visual imagery, text, video, sound and animation which together can multiply the impact of message. Multimedia instructional system is an instructional system developed through multimedia technology.

3) **Educational Technology:**

It is one of the elective courses of B. Ed. Level. Educational Technology is the systematic application of scientific knowledge about learning and conditions of learning to improve the effectiveness and efficiency of teaching and learning.

VII.3 OBJECTIVES OF THE STUDY:

The study was undertaken with the following objectives:

1) To analyze the conventional approach of teaching Educational Technology.
2) To plan multimedia instructional system for Educational Technology.
3) The design and construct multimedia instructional system for Educational Technology.
4) To test the effectiveness of constructed multimedia instructional system.
5) To compare the effectiveness of constructed multimedia instructional system with the conventional system of instruction.
6) To validate multimedia instructional system in terms of their effectiveness over conventional system of instruction.
7) To equip the pupil-teachers and teacher-educators with reliable system to overcome the difficulties in theory course of Educational Technology instruction.

VII.4 HYPOTHESES OF THE STUDY:

The study was based on the following research hypotheses:

R. H. 1:

The present setting of teaching of Educational Technology in B. Ed. Colleges is unsatisfactory for better learning of the pupil-teachers.

R. H. 2:

An instructional system for Educational Technology instruction through multimedia technology can be planned, designed and constructed.

R. H. 3:

A) The male pupil-teachers and female pupil-teachers perform differently on achievement in their groups irrespective of the system used in instructing them.

B) The male pupil-teachers perform differently on achievement irrespective of the system used in instructing them.

C) The female pupil-teachers perform differently on achievement irrespective of the system used in instructing them.

R. H. 4:

The conventional instructional system and the developed multimedia instructional system for Educational Technology Instruction differ in their effectiveness on the performance in achievement of the total pupil teachers.

R. H. 5:

A) The male pupil-teachers and female pupil-teachers perform differently in retention of achievement in their groups irrespective of the system used in instructing them.

B) The male pupil-teachers perform differently in retention of achievement irrespective of the system used in instructing them.

C) The female pupil-teachers perform differently in retention of achievement irrespective of the system used in instructing them.

R. H. 6:

The conventional instructional system and the developed multimedia instructional system for Educational Technology instruction differ in their effectiveness on the performance in the retention of achievement of the total pupil-teachers.

The research hypotheses R. H. 3 to R. H. 6 are stated below into null form for sake of expt. and for testing purpose.

Ho. 1:

There is no significant difference between the performances of the pupil-teachers from control and exp. group in pre test.

Ho. 2:

There is no significant difference between the performances of the pupil-teachers from control and exp. group in post test.

Ho. 3:

There is no significant difference between the performances of the pupil-teachers from control and exp. group in pre over post testing.

Ho. 4:

There is no significant difference between the performances of the pupil-teachers from control and exp. group in pre test.

Ho. 5:

There is no significant difference between the gains in achievement in terms of scores in pre over post test of the pupil-teachers from control and exp. group.

Ho. 6:

There is no significant difference between the performances of the pupil-teachers from control and exp. group in retention test.

VII.5 DELIMITATION OF THE STUDY:

1) This study is limited to Educational Technology course only.
2) This study is restricted to the some units from Educational Technology course in B. Ed. revised syllabus of Shivaji University, Kolhapur.

3) The development of multimedia instructional system is restricted to Marathi medium colleges of education only.
4) The experiment is restricted only to the pupil teachers admitted in college of Education, Barshi affiliated to Shivaji University, Kolhapur.
5) The development of a system included designing, developing and evaluating stages. The evaluating stage includes large-scale try-out of the system, but the study is confined to experimental try-out in one College of Education. The results of the evaluation of developed system are limited to this institute only.

VII.6 DEVELOPMENT AND RESEARCH PROCEDURE:

1) The investigator used a questionnaire for teacher – educators which were constructed to obtain information about present setting of Educational Technology course instruction. This helped the investigator in designing the instructional system.
2) The investigator interviewed the teacher-educators and some experts to obtain further related data.
3) The investigator planned, designed and constructed a multimedia instructional system. The instructional system contained Text blocks, 3-D and 2-D graphics, computer animations, video and audio files.
4) Authoring software was selected accordingly and a first working model of the proposed multimedia instructional system with user manual was developed. The system was stored on CD-ROM.
5) The internal evaluation of a multimedia application was done within the multimedia development team.
6) Alpha testing of the system was done on selected group of teacher – educators to receive feedback and recommendations about the system.
7) This was an experimental study. The experimentation was used in testing of the prototype as a small scale tryout of the instructional

system and also in full-scale try-out after the improvements in the prototype.

8) The Four-Group, Pre test – Post test Experimental design was used. The experiment group was of twenty-four pupil-teachers having twelve boys and twelve girls from Collage of education, Barshi. The control group was of twenty-four pupil-teachers having twelve boys and twelve girls from Azad College of Education, Satara.

9) A pre-test was administrated to twelve pupil-teachers from both the groups before the implementation of the prototype and the same test was used to all twenty-four pupil-teachers after the implementation of the prototype. The data on pre-over post test was analyzed and interpreted to collect the information about the effectiveness of the prototype.

10) The investigator selected two Collages of Education affiliated to Shivaji University, Kolhapur. Out of 160 pupil-teachers, the pupil-teachers with Educational Technology as an elective were called for expt. Forty-eight pupil teachers from two Colleges of Education was the sample of the study. The investigator called the twenty-four pupil-teachers from College of Education, Barshi as an experimental group having twelve boys and twelve girls and twenty-four pupil-teachers from Azad College of Education, Satara as a control group having twelve boys and twelve girls. The investigator administrated a pre-test on both the groups and applied a treatment of developed multimedia instructional system to an experimental group; the control group was treated with traditional system. He then administered a post-test and compared the result. The data was analyzed and interpreted and the effectiveness of the system was tested.

VII.6 A) MULTIMEDIA DEVELOPMENT PROCEDURE

A simplified flowchart of multimedia development process is shown in following figure. This process is more complex than presented. It involves considerable number of additional steps.

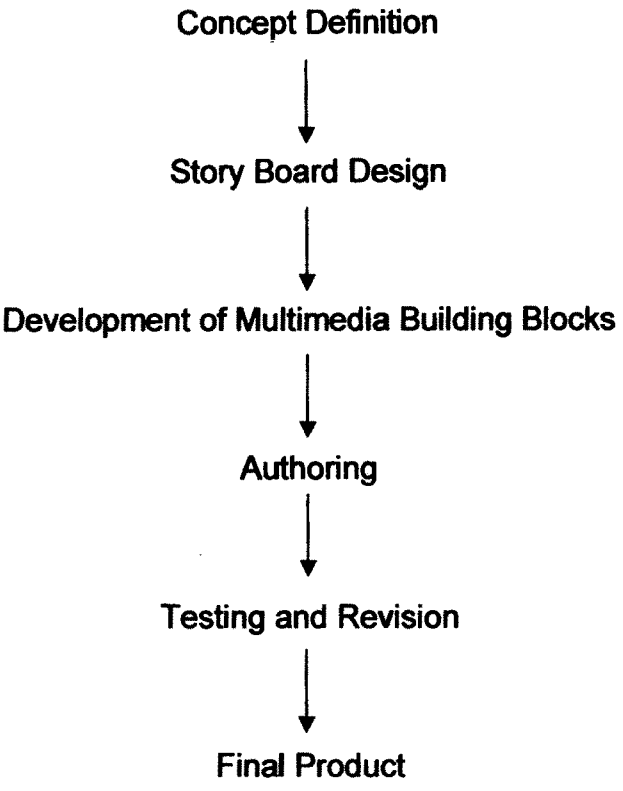

Fig.1: A simplified Multimedia Development Process Flow Chart

B) SAMPLING DESIGN:

The investigator used following samples in his study.

- All teacher-educators (50) teaching Educational Technology in colleges of Education affiliated to Shivaji University, Kolhapur asked to respond the questionnaire.
- 20% of the teacher-educators (10) were selected for unstructured interviews. The sample was randomized sample and it was obtained through hat sampling method.
- Sample of teacher-educators used in Alpha testing. The sample contains teacher-educators those who were interviewed.

- Sample of pupil-teachers used in focus group testing were 24 pupil-teachers from Azad College of Education, Satara offering Educational Technology as an elective.
- A Sample of pupil-teachers used in Beta testing were 24 pupil-teachers offering Educational Technology as an elective in College of Education, Barshi.

C) VARIABLES IN THE EXPERIMENT:

The dependent and independent variables in the study were located and listed. They were

Dependent Variables:

The dependent variables were achievement of the pupil-teachers in terms of scores, ability of learning, behavioral changes of the pupil-teaches. These dependent variables were combined into one that is; scores achieved in the pre over post test pupil teachers.

Independent Variables:

Sex, socio-economic status, intelligence and ability of the pupil-teachers, college atmosphere, facilities of instruction, equipments used in instruction, instructional materials, time and period of exposure to a particular condition, reward and punishment during instruction, evaluation procedure, were the independent variables.

Though there were so many independent variables, the investigator had decided to consider only two independent variables in his experiment viz. sex and system of instruction. The effects of remaining independent variables on dependent variables were controlled.

D) CONTROL OF THE EXPERIMENT:

Randomization technique was used in controlling the extraneous variables. Two groups of the pupil-teachers selected from grantable colleges of education affiliated to Shivaji University, Kolhapur which

helped the investigator in controlling socio-economic status, age, classroom situation, intelligence, reward and punishment effects, abilities of learning.

It was decided to complete both the units in same month helped in controlling time of instruction variable.

The equivalency of the two groups was checked by statistical measures.

E) TOOLS AND TECHNIQUES IN THE STUDY:

The investigator had used the following tools in data collection for the present study:

1) A Questionnaire:

Questionnaire was one of the tools that were used in analyzing the present system of instruction (Appendix A).

The questionnaire was framed with the help of experts, teacher-educators and consultants, suggestions were colleted and improvement was done.

The questionnaire covered all questions related to the survey of present system of instruction of Educational Technology. There were three sections in the questionnaire.

Section A was personal information of respondent. Section B was related with unit 2 i.e. System Approach to Instruction and section C was related to unit 3 i.e. Resources of Instructional System.

2) Interview Schedule:

Interview of the teacher-educators and experts was one of the techniques used in the present study (Appendix B). The interview schedule covered all questions related to the present and future system that was to be developed. The same questionnaire was used as interview schedule.

3) **Internal Evaluation Form:**

Internal Evaluation Form was developed and used in internal evaluation of the system within the team.

4) **A Program Evaluation Form:**

It was developed which was used in alpha testing, focus group testing and beta testing.

5) **A Reaction Scale:**

A reaction scale on overall performance of the system was developed and used to receive reactions of the teacher-educators and pupil-teachers.

6) **Achievement Tests (Pre and Post) for Pupil-teachers:**

The achievement tests was constructed and administered on two equivalent groups of the pupil-teachers. The same achievement test is used as per and post test in experimental (Appendix G).

The main objective of the pre test was to examine the achievement level of the pupil-teachers before the treatment. The same test was administered on two groups as a post test. The main objective of the post test was to examine the achievement level of the pupil-teachers after the treatment.

Pre test was consisted with 25 questions of choose proper alternative type.

7) **Retention Test:**

The retention test was a same per test (Appendix G)

VII.7 CONCLUSIONS:

Conclusion 1:

The research hypothesis no.1 is accepted. The present setting of teaching of Educational Technology in B.Ed. Colleges is unsatisfactory for better learning of the pupil-teachers.

Conclusion 2:

The research hypothesis no.2 is accepted. An instructional system for Educational Technology instruction through multimedia technology can be planned, designed and constructed.

Conclusion 3:

There is no significant difference between the performance of the pupil-teachers form control and experimental group in pre test.

Conclusion 4:

There is significant difference between the performance of the pupil-teachers from control and experimental group in post test. Developed Multimedia Instructional System helped the male, female and all 24 pupil-teachers in performing better than the male, female and all 24 pupil-teachers from the control group.

Conclusion 5:

There is significant difference between the performance of the pupil-teachers from control group in pre over post testing. **Conventional Instructional System** helped the male, female and all 24 pupil-teachers from control group in performing better pre over post test.

Conclusion 6:

There is significant difference between the performances of the pupil-teachers from experimental group in post testing. **Developed Multimedia Instructional System** helped the female pupil-teachers, male pupil-teachers and all 24 pupil-teachers from experimental group in performing better in pre over post test.

Conclusion 7:

There is significant difference between the gains in achievement in terms of scores in pre over post test of the pupil-teachers from control and experimental group.

Conclusion 8:

There is significant difference between the performance of the pupil-teachers from control and experimental group in retention test.

VII.8 SIGNIFICANCE OF THE STUDY:

The significance of the present study is as follows:

- As far as the knowledge of investigator is concerned, no study of such kind has been done earlier.
- The study will deeper the understanding of the Educational Technology course to be taught in B. Ed. colleges.
- The developed instructional system will help the teacher, educators and the pupil-teachers in teaching and learning of Educational Technology. They will not depend only on text book. The study will enable the pupil teachers to understand the nature and purpose of Educational Technology develop communication skills and enable to use modern information technology for school purposes.
- The deficiency of unavailability of multimedia CD-ROM on Educational Technology will be removed the some extent.
- It is observed that the multimedia instructional system is more significant than traditional teaching learning approach. This multimedia instructional system will help in revising the Educational Technology course.
- The system will be helpful for the distance learning mode and in-service training.
- The present study is different one. So it will add to present stock of knowledge.

VII.9 SUGGESTIONS FOR FURTHER RESEARCH:

While conducting the present research work, the researcher came across some problems that he feels needed further elaborate exploration through research. These problems were not directly related to the problem under investigation, and hence the investigator has not explored them any further. However, for the benefit of the researchers in this field as well as for the better understanding of the present research, the investigator has enumerated them here below.

1) The present research work was related to B.Ed. pupil-teachers. The investigator feels that studies related to B.P.Ed. Pupil-teachers and also higher education be conducted w.r.t. multimedia technology.
2) The investigator feels that such type of studies can be conducted in papers of B.Ed. other than Educational Technology.
3) The experimentation phase was done in College of Education, Barshi in the present study, the investigator feels that the developed multimedia instructional system may be implemented in various colleges of education on a large scale and the effectiveness of the system can be tested.
4) The investigator selected two units from educational technology course, he feels that the remaining three units can be covered and the system can be modified.
5) The investigator used compact disk multimedia instructional system in his study, he feels that other materials and media can be used and it will be a good problem for further study.
6) Different types of programs can be developed for teaching Educational Technology course to B.Ed. pupil-teachers.
7) The Educational Technology course of B.Ed. syllabus may be improved by involving multimedia technology and can be tested accordingly.

VII.10 SCHEME OF CHAPTERIZATION:

Chapter I : Introduction

This chapter includes background of the research, statement of the problem, objectives of the study, hypotheses of the study, methodology and significance of the study, scope and limitations.

Chapter II : Educational Technology

This chapter is devoted to the theoretical aspects of Educational Technology and review of related studies.

Chapter III : System Approach to Multimedia Instruction

This chapter includes theoretical background of a system approach and meaning of multimedia instructional system with its developing procedure.

Chapter IV : Development of Multimedia Instructional System and Research Procedure.

In this chapter investigator explained the procedure used in the development of a multimedia instructional system analysis and interpretation of the small scale try-out data, improvements in the prototype, experimentation procedure in full scale try-out, variables in the experiment, control of experiment, research and null hypotheses of the study, experimental design, sampling design and description of the tools used in the study.

Chapter V: Analysis and Interpretation of Data

The data obtained through experimentation was analyzed and interpreted accordingly. The analysis and interpretation of the data in the form of table's graphs and figures and statistical measures was given in this chapter.

Chapter VI : Conclusions and Recommendations

In this chapter investigator discussed the result of the experiment and the conclusions based thereupon. This chapter also includes recommendations based on conclusion and topics for further research.

Chapter VII : Summary

This chapter includes the summary of the study.