CHAPTER III

THE PRESENT STUDY

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The present study is an attempt to develop an instructional strategy for the course on Educational Evaluation at B.Ed. level for the students studying through Gujarati medium.

3.1 The Problem

The problem reads as follows : 'Developing a Teaching Strategy for the Course on Educational Evaluation at the B.Ed. level and Studying Its Effectiveness'.

3.2 Objectives of the Study

1. To develop software materials for four components of the strategy viz., PLM, library reading, discussion and practical work on various units of the course.

2. To tryout those components combining and sequencing them to develop a strategy.

3. To study the effectiveness of developed strategy experimentally in terms of students' performance on criterion tests and comprehensive test.

4. To study the effectiveness of the strategy in terms of the achievement of objectives at three levels viz., knowledge, comprehension and application.

5. To study the effectiveness of each component in terms of performance of students on each of it, and in terms of reactions of the students towards each component and on the whole.

6. To study the feasibility of the developed teaching strategy for regular teaching the course 'Educational Evaluation' in the colleges of S.N.D.T. Women's University with respect to resources needed for the implementation of the strategy and its operational aspects like time needed and scheduling with other programmes of teacher training.

7. To study the relationship between achievement through the instructional strategy and following students' characteristics. : (i) Intelligence, (ii) Gujarati language reading comprehension ability, (iii) Academic motivation.

3.3 Hypotheses

As may be seen from the objectives stated, some of them are such that they may not be amenable to quantitative analysis. For them qualitative analysis has been attempted. For the objectives where testing of hypothesis can be easily resorted to, the following hypotheses have been formulated.

1. Since the strategy is based on particular logical sequence, it will have a favourable impact on the students' performance measured in terms of criterion tests and comprehensive test.

2. The impact of the strategy will be quite favourable on the achievement of students at three levels of objectives viz., knowledge, comprehension and application.

3. Since the strategy is based on all the relevant aspects of the teaching-learning process it will evoke positive and favourable reactions on the part of the students.

4. There is no significant relationship between achievement of students through the instructional strategy and their intelligence.

5. There is no significant relationship between achievement of students through the instructional strategy and their Gujarati language reading comprehension ability.

6. There is no significant relationship between achievement of students through the instructional strategy and their academic motivation.

3.4 Terms Defined

The different terms included in the present problem have been operationally defined here.

(a) Teaching Strategy : Teaching strategy refers to the selection and integration of suitable components to achieve its specific functions in relation to the specific objectives and combined goal in the process of teaching the course 'Educational Evaluation'.

(b) Development : Development refers to tryout of the different selected components to collect the empirical evidences and to modify them to reach the maximum possible level of effectiveness.

(c) Effectiveness : For the present study, the term 'effectiveness' is defined in terms of the following : (i) Score on the criterion tests ; (ii) Score on the comprehensive test ; (iii) percentage of the favourable responses on the reaction scale.

It should be noted here that, in the present study, effectiveness is interpreted in terms of mastery learning.

3.5 Selection of Components

As the first task, for the development of strategy, the components suitable to the instructional objectives should be selected. The important criterion to justify the selection

of the components is the objectives of the course. Therefore,
it is necessary to know the objectives of the course. The
broad objectives of the course are :

1. To develop an understanding of the concepts and
   procedures about educational evaluation.

2. To develop certain skills - stating objectives in
   behavioural terms, preparing blue prints, construction
   of unit test, etc.

Over and above these objectives, the investigator
intended to develop certain qualities in students to learn
the course effectively like, confidence for what they have
learnt, to make use of various references, application ability,
to express freely their difficulties etc.

Considering the objectives of the course and need to
develop certain qualities to study the subject, it was found
suitable to include components PLM, library reading,
discussion and practical work provided they prove effective at
the try out.

Reviewing the related studies also, these components
have been found effective in the development of strategy. But
the level of attainment of students in these studies were
different and not reaching the mastery level. The results
reported in these studies, present the total effect of all the
components included, but no effort has been made to study and

report the effectiveness of each individual component.
Therefore, it is difficult to say from the results of these
studies, which component proved effective to achieve its
specific objectives and which one restricted the strategy
to be effective at mastery level. As mentioned earlier, if
any one component in the strategy fails, the whole process
can be disturbed. For the effective contribution of each
component, the important requirement is the selection of
the component according to the objective or objectives and
its evaluation in terms of the achievement of objectives
for which it is selected. Therefore, the specific purposes
these four components were expected to serve in the develop-
ment of present strategy have been made explicit here to justify
their appropriateness in the present set up.

(i) PLM (Programmed Learning Materials) :

The achievement of the first objective of the course
mentioned above requires a method which can allow the students
to learn according to their own speed and ability, and which
also can stand a guarantee for the understanding of the concepts
and procedures of Educational Evaluation. It is an accepted fact
that the lecture method has very restricted scope to attend
to individual differences in the learners. As against this
PLM is a self-paced technique of learning. The distinct
feature of PLM is, presentation of the instructional material

in a programmed logical sequence of small steps, enabling the student to learn according to his/her own speed and capacity. Another thing is that the structure of PLM is such that students could not proceed on next item without understanding the previous one. These characteristics of PLM assure that all students will be able to learn the different concepts included in the course effectively and according to their own speed. Therefore, the decision to develop PLM and to use it as a major component of the strategy was made to achieve the main objective of the course, i.e. to develop understanding of the concepts and procedures of Educational Evaluation.

One of the objectives of imparting education at higher level is that students should develop self-confidence in learning. Hence, the use of PLM for the course under the study.

Thus, the selection and utilization of PLM to contribute as the major component of the strategy was done with regard to the fulfilment of specific purposes.

(ii) Library Reading :

The developed PLM could provide basic knowledge and understanding about the concepts to the B.Ed. students who are also expected to read various reference books to develop

critical thinking about what they have learnt. They are

expected to enhance learning. For this purpose they should

have the habit of extensive reading which will be helpful

to select, identify, and organize the relevant material.

If learning through PLM is supplemented by various reference

books, that would be helpful, particularly at this level,

to broaden the outlook and develop self-confidence in them.

To provide experiences of these type the library reading

component was considered appropriate for its inclusion in

the instructional strategy.

(iii) Discussion :

It is generally believed that the learners learning

through PLM, lose the opportunity to interact with the

teacher. Library - reading by its very nature being a

purely students' activity has very little scope for human

interaction. So, while learning through PLM and library

reading the possible interaction is with material only. After

going through such materials, there is a need of human

interactions mainly with teacher and with fellow students to

ensure the clarity about the concepts acquired through

PLM and library reading.

For such interactions, the discussion component was

considered useful. It was expected that it would help the

students to develop, abilities to react to others' views,

objective attitude towards contradictory views,and to

express their own difficulties and views. Such higher

abilities would develop certain human values in them like

tolerance, open-mindedness, co-operation etc. The purpose

of the discussion session was to enable them to review

what they have learnt, to focus on weak points and

simultaneously developing certain personal qualities mentioned

here. To make the discussioneffective, it was necessary

for students to be ready with the basic knowledge provided

through PLM and library reading. Therefore, it was decided

to conduct the discussion after the students complete the

PLM and library reading.

(iv) Practical Work :

One of the objectives of the course is to develop

certain skills like construction of objective test - items,

preparing blue-print, specifying the objectives in behavioural

outcomes etc. It was observed that,to achieve this objective,

students should be provided the practical experiences to

construct test-items, blue-print etc., and to use them in

their school work. So decision was made to include practical

work as one of the components in the strategy with the purpose

of developing various skills needed to carry out educational

evaluation in school. It was expected that introduction of this component will enable the learners to apply their theoretical knowledge to the practical situation. Students do the practical work effectively, and apply it; if they have understood the theoretical concepts. The practical work component can contribute to a great extent if the previous three components, PLM, library reading and discussion have contributed adequately. This means that for the effective contribution of each component some kind of sequence order and proper combination is needed. As discussed in chapter I, in the strategy development, different components should function in a sequence order and integrated like a chain. Therefore, at the time of selection of the components, this characteristic of each component should be taken care of. For the present study the investigator took pains to have a proper selection of each of them.

The strategy thus developed is the combination of four components, PLM, library reading, discussion and practical work, with their distinct role needed for the realization of specific objectives. At the same time they can contribute to the achievement of the common goal of attaining mastery level learning.

3.5.1 Introduction of the Unit

Introduction of the unit was given with a short explanation by the investigator after which they started reading PLM. This introductory explanation was considered a part of their learning experiences and not as a component in the sequential order of the strategy. In this context, though the components identified for the strategy were PLM, library reading, discussion and practical work, the actual learning through the strategy in the present study starts with the introduction of the unit by the investigator.

3.5.2 Other Considerations

Over and above the specification of the purposes for each component certain other aspects were taken into consideration.

The feasibility aspect was taken into consideration. The study was conducted in the regular period of instructional work without disturbing the B.Ed. schedule.

While identifying the components, care was taken that they do not require any hardware equipment for the presentation of instructional material. The present strategy utilizes the human media for presentation of material. It may be noted here that the approach does not merely avoid hardware, but it has the additional advantage of making the instructional process flexible within the system and retain the human touch in it.

The flexibility refers here to utilizing the ability of human-beings to adopt to changing situation in a teaching-learning process.

These considerations and specifications lead to hope that utilization of programmed learning material in combination with other components, and presentation through human media would ensure the realization of pre-specified objectives, which would serve as an independent system of instruction. However, specifications of techniques and materials would make the system reproducible for utilisation in other situations for reaching the same objectives.

The present study intends to adopt the development in programming technique by integrating it with other components according to the various objectives of the course.

3.6 Sample

The sample for the study constituted of all students of B.Ed. class, i.e. 30 students of the college of Mahila Mahavidyalaya, Baroda, affiliated to S.N.D.T. Women's University, Bombay. The special characteristics of the sample is that, it consists of ladies only, belonging to age-group ranging from 24 to 35 years of age.

3.7 Variables

(i) Treatment and Criterion :

The teaching strategy including PLM, library reading, discussion and practical work as components has been considered as the treatment or independent variable of the present study. The details about the selection of these components have already been given in caption 3.5. The criterion or dependent variable in this study is the measure of students' achievement in terms of criterion tests and comprehensive test.

(ii) Intervening Variables :

The study, however, involves the intervening variables related to students' characteristics such as intelligence, Gujarati-reading comprehension ability, and academic motivation.

3.8 Scope and Limitations

The present investigation is an experimental type of study for the development of strategy by combining and sequencing the various components along with PLM, the main component of the strategy.

Scope :

1. 'Educational Evaluation' is a compulsory course in the Colleges of Education in Gujarat. The developed strategy can be utilized for teaching educational evaluation in the various colleges having Gujarati medium, especially in the Education Colleges of Gujarat.

2. Alongwith the programmed learning material developed for the study, other components which were not included here can be tried out to study the comparative effectiveness of various components. The variety in combination can provide wide scope for the effective instructional process at different colleges of education.

Limitations :

The sample of the study consisted of 30 students only which can be considered small sample to be divided into two or more groups for any comparison purposes.

The instructional material developed for the present study is in Gujarati, so it restricts the scope to be useful to those who do not follow Gujarati.

The experimental design applicable for the present study is only one-group design, which itself has certain limitations and hence becomes the limitations of the study.

3.9 Tools

1. Programmed learning material

2. Library-references suggested along with PLM at the end of each unit.

3. Observation schedule for discussion session.

4. Criterion tests and comprehensive test

5. Reaction Scale

6. Desai-Bhatt group test of intelligence

7. JIM Scale (Junior Index Motivation Scale).

8. Gujarati language reading comprehension test.

3.10 Design of the Experiment

'Experimental research is the description and analysis

of what will be or what will occur under carefully controlled

condition'. The present study is an experimental type in a

limited sense of the term. There are many experimental designs.

Some of them are quite sophisticated and require a thorough

shake up of the subjects and the existing divisions of the

subject. It is expedient that the decision-making regarding

the design to be used should be governed by the research

situation rather than the level of sophistication. In the

present study the design selected is one-group design which

is not up to the mark as far as the level of precision is

concerned. All the same, the investigator decided to go for

it in view of the constraints of the research situation.

This is a development study, aiming at reaching the mastery

level attainment. If it does not reach the mastery level due

to any known or unknown factors, it at least speaks of the

level of attainment. The investigator can decide whether the

level is satisfactory or it needs further experimentation

under the condition which it has developed. Thus, the important

objective of the present study is to seek the effectiveness of

the strategy and not to consider whether the strategy is more

or less effective in comparison to controversial or to any
other similar approach to it. Considering the objective and
sample of the present study, only one-group experimental
design seems to be suitable and feasible.

This design usually measures the difference between
the pre-test and post test scores as an effect of the treatment.
However, in this study, the purpose of the treatment was
to improve the achievement of students for the course
'Educational Evaluation'. This course is completely new for
B.Ed. students having no previous knowledge about the content.
Therefore, it was not possible to construct and administer
pre-test and compare it with post-test achievement to measure
the effect of the treatment. Therefore, the design of the
experiment in the present study is deviating from certain
set patterns.

It fulfils the other requirements of an experimental
study, in the sense that,

(i) It was conducted in the controlled classroom situation
having a sample of 30 B.Ed. students.

(ii) The instructional material for the experiment was
developed scientifically.

(iii) It was conducted for the two succeeding years, to try out
the material and to validate it.

(iv) It contains independent and dependent variables.

(v) It provides scope for further experimentation.

(vi) Alongwithh studying the effectiveness in terms of
achievement, efforts were made to study the
feasibility of the approach.

Thus, the study has been conducted following the three
major steps of experimental research. They are (a) planning
the experiment (b) conducting the experiment /(c) reporting the
results.

Katz (1973) has divided such field experiments into two
types. (1) exploratory (2) hypothesis testing. The purpose
of the exploratory type is to seek what is, and the purpose
of hypothesis testing type is to predict relations. The
present study can be called exploratory in the sense, its
aim is to seek the effectiveness of the strategy. It is also
hypothesis testing type as it predicts achievement of the
students through the strategy and the relationship between
achievement and students' characteristics.

So, the study is an experimental type in all other
aspects except the one that it does not follow the more
effective pattern of the research design of experiment. The
effectiveness of the design of the present experiment should
be viewed with respect to the process of the development of
experiment under the four phases. These four phases have been
described under the procedure to be followed.

3.11 Procedure

The procedure followed to develop the strategy and to study its effectiveness is mentioned hereunder :

Instructional strategy is taken here to mean the organization of suitable instructional components with their functions specified in relation to the specific goals to be achieved. These components as in any 'system' have to appear in the final form of the instructional strategy in an integrated fashion. Development of such an instructional strategy, has, therefore, to be carried out in different phases.

The whole study has been conducted in four phases. The experiment for this purpose has been carried out over the period of two years, viz., 1978-79 and 1979-80, one full term in each year.

Phase I :

The first phase consisted of the analysis and identification of specific objectives to be realized through different components.

Phase II :

During the second phase, software material was prepared for four components PLM, library reading, discussion and practical work according to the pre-specified objectives. The

details about the development of the software material have been given in the succeeding chapter. Here, only the mention has been made with a view to giving clarity about the different phases and procedure of the study.

Programmed learning material was developed for the course content. The programme has been developed in the Linear form with certain deviations. To develop the PLM the following steps were followed :

(a) Analysis of the course content

(b) Specification of objectives into behavioural outcomes.

(c) Task analysis

(d) Construction of frames to develop the programme.

For the preparation of instructional material for library reading the list of reference books was given at the end of each unit with necessary details.

Points for discussion were decided on the basis of content of the units, and errors found from the frame-analysis.

In the same way, topics for the practical work were selected from each unit and were given to the students in the form of practical work assignment.

The developed PLM initially was tried out on five individual students, those who have got their graduate degree. The programmed frames were revised on the basis of error analysis and suggestions

made by students. regarding the programme.

Phase III :

The third phase was devoted to a pilot study for one full term i.e. in 1978-79. The developed instructional material was tried out on 30 B.Ed. students of Mahila Mahavidyalaya, Baroda. The individual components were combined and integrated to contribute towards common goal. The sequential order of each component was also studied at this stage. The necessary modifications in the materials were made on the basis of the performance of students on each component separately and a total effect of each component on criterion test which was given at the end of each unit.

The tryout was done during the regular period of teaching, and the time needed to complete each unit was taken into account to study the feasibility.

Phase IV :

In the fourth and the last phase, the final experiment was conducted for one full term in the year 1979-80. The instructional material tried out was used during the final experimentation with necessary modifications, to validate the developed strategy.

Before starting the final experiment the measures on students' characteristics were obtained to study the relationship between achievement through the approach and students'

characteristics. The tools employed for this purpose were :

(i) Desai-Bhatt Group Test of Intelligence

(ii) JIM Scale

(iii) Gujarati Language Reading Comprehension Test.

3.12 Statistical Techniques used for Analysis of Data

To study the effectiveness of instructional strategy as a whole the following statistical techniques were employed :

1. Mean, SD, Skewness,and Percentiles were computed for the scores of students on each criterion test and comprehensive test.

2. Objective-wise analysis was done, in terms of average percentage of achievement on criterion tests and comprehensive test at three categories - knowledge, comprehension and application.

3. Product - Moment correlation between :

(i) Achievement and intelligence

(ii) Achievement and academic motivation

(iii) Achievement and language reading comprehension

(iv) Intelligence and language reading comprehension

(v) Intelligence and academic motivation

(vi) Academic motivation and language reading comprehension.

4. Partial correlations for all the variables by partialling out the effect of other variables were computed to study the relationship between the two variables.

5. t - test was employed to study the difference between mean achievement at three levels, high, average and low.

To study the effectiveness of each individual component, affective and cognitive aspects were evaluated by employing the following techniques :

1. Affective aspect was evaluated by computing the percentage of students' favourable reactions on each component.

2. For cognitive aspect, following different techniques suitable to different components were applied.

The PLM was evaluated on the basis of frame-analysis and error-analysis.

The effectiveness of discussion was evaluated through observation schedule, adopting the rating scale on four-points scale.

The practical work was evaluated by assigning them grades. These grades were transferred into marks, to study the comparative performance of students as a group. Moreover, the rank-correlation between performance on practical work and comprehensive test was computed to study the relationship between the two performances.

The evaluation of library reading did not require any statistical calculations.

3.13 Scheme of The Evaluation of the Strategy

Evaluation was done on the basis of unit tests, comprehensive test, feedback sessions, practical work assignments, observation schedule, and reaction scale. During the experiment unit test was administered at the end of each unit. Students' performance on the test was discussed in the feedback session after each unit test. At the end of the course a comprehensive test was given. The relationship between students' characteristics and achievement through instructional strategy was studied to confirm any effect such variables have on achievement.

To study the feasibility of the developed strategy with respect to time, students were asked individually to note down the time taken by them to complete each unit and thereby entire course through PLM. Moreover, the time of discussion session was taken into account. The components, library reading and practical work were conducted in the form of assignment and not during the regular teaching periods, time for them was not taken into account.

Evaluation of the instructional strategy has been made by treating the different components as constituting an integrated system.

The next chapter deals with the procedure of the development of instructional material for the different components identified for the present study.

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CHAPTER III

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