CHAPTER IV

METHODOLOGY

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METHODOLOGY

Methodology is a highway of vibrant and throbbing processes whereby hazy sets of assumptions get transformed into a clear-cut blueprint wherein the phenomenon under investigation is approached systematically through a series of calculated measures and procedures. This chapter unfolds the overall design employed in the present study and each vital aspect has been addressed at length.

4.1 METHOD ADOPTED

In the present study both qualitative and quantitative approaches to data gathering and analysis were employed simultaneously.

The qualitative approach was mainly adopted to bring to light a) pertinent issues and linguistic dimensions related to language teaching and learning at the Teacher Training Institutes at Primary Level and, b) to identify the extent of reflectivity imbibed by teacher educands through the phased programme of the select reflective teaching strategies while the quantitative approach was employed to ascertain the efficacy of the select reflective teaching strategies in developing the set levels of communicative competence in English among prospective teachers at Primary Level.

4.1.1 Research Design

A research design of an experimental study is the blueprint of the procedure that enables the researcher to test his/her hypotheses by reaching valid conclusions about relationships between independent and dependent
variables. It refers to the conceptual framework within which the experiment is conducted. For the purpose of the present study, the Pretest Posttest Non-Equivalent Groups Design (specified by Best and Kahn, 2007) were adopted.

The schematic design is given in Figure 4.1 below:

**Figure 4.1 Schematic Design used in the Study**

Here,

$C_x_0$ represents pre test score of Control group;

$T_0$ the treatment given to Control group; and

$C_y_0$ the post test of Control group;

$E_{x_1}$, $E_{x_2}$, and $E_{x_3}$ represent the pretest scores of the three experimental groups;

$T_1$, $T_2$, $T_3$, the treatment given to the three experimental groups; and

$E_{y_1}$, $E_{y_2}$, $E_{y_3}$, the post test scores of the three experimental groups.
4.1.2 Phases of the Study

The study was primarily conducted in two phases—Phase I and Phase II. The first phase of the study (PHASE 1) was meant for seeking reflections from a select sample of language experts, teacher educators, and teachers at all levels (n=115) through the mode of a semi-structured interview that focused on three major dimensions (Figure 4.2).

**Figure 4.2 Schematic Mode of the First Phase of the Study**

The language experts were expected to reflect on the efficacy of the prevailing mode of curriculum transaction in English at the Teacher Training Institutes at Primary Level geared towards the enhancement of the language using abilities of teacher educands. They were to make an objective assessment of the extent of awareness among practising teachers and
teacher educands regarding effective modes of language transaction, the constraints they experienced, and also to suggest alternate modes to strengthen the communicative competence of teacher educands, and indirectly, the communicative competence of pupils at Primary Level.

In the second phase of the study (PHASE II), appropriate procedures were adopted to establish the effect of the select reflective teaching strategies on the communicative competence of the teacher educands at primary level. Figure 4.3 provides a comprehensive gestalt of the procedures adopted.
PHASE II

- Staging background structure of competence (Teacher Educands) N = 327
- Experimental study (Teacher Educands) N = 200
- Post Experimental Study (Teacher Educands)

- Pre test
- Treatment
  - C Expl Exp II Exp III
  - Post test

- Strategy Evaluation (N = 150)
  - Exp I Exp II Exp III
- Self Assessment Rubric (N = 200)
  - C Exp I Exp II Exp III
- Case Study (N = 3)

Figure 4.3 Schematic Mode of the Second Phase of the Study
As a prelude to the adoption of the experimental procedures the initial staging of the communication structure of information about the level of communicative competence of teacher educands (N = 327) on the four set components of communicative competence were assessed through a Self Assessment Rubric. Later, the experimental procedures of Pretest Posttest Non-Equivalent Groups design were adopted for a sample of 200 teacher educands selected from the above mentioned sample.

The select sample were given a pretest and then classified into four groups. The treatment was administered in the order shown in Figure 4.3. The first group constituted the control group (C) and was exposed to the prevailing activity-oriented pedagogic modes and the remaining three groups constituted the experimental groups (Exp. I, Exp. II and Exp. III) which were exposed to the select reflective teaching strategies, namely, Concept-Mapping, Problem-Solving and Portfolio-Writing respectively. The groups were then posttested.

As part of the post experimental stage of the study, an Evaluation Proforma was administered on the sample constituting the experimental group. In addition to this, the Self-Assessment Rubric was re-administered so as to gain a comprehensive vision of the efficacy of the select strategies in enhancing the set dimensions of communicative competence.

In order to monitor the performance of teacher educands exposed to the various experimental treatments on select areas, the researcher made relevant observations through the conduct of case studies.
4.2 SAMPLE SELECTED

For the purpose of the Experimental study, a sample of 200 teacher educands were selected from five Teacher Training Institutes at Primary Level coming under three districts in the Central Travancore Region of Kerala. The teacher educands were selected through random sampling from among 327 teacher educands who were subjected to the Self-Assessment Rubric. The distribution of the sample for the experimental study is given in Table 4.1.

**Table 4.1**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Teacher training Institutes (TTI)</th>
<th>Type of Management</th>
<th>Group and Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Experimental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Concept mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Problem solving</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Portfolio writing</td>
</tr>
<tr>
<td>1</td>
<td>DIET Tiruvalla Pathanamthitta</td>
<td>Government</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Govt. TTI, Pulimoodu Jn., Kottayam.</td>
<td>Government</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>St. Thomas TTI, Tiruvalla, Pathanamthitta</td>
<td>Aided</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>CMS Teacher Training Institute, Pallom, Kottayam.</td>
<td>Aided</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Buddha College of Elementary Education, Kayamkulam, Alappuzha.</td>
<td>Unaided</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Activity oriented</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>10</td>
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<tr>
<td>3</td>
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<td>4</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total (N = 200)</td>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

Note: The values represent the number of teacher educands in each group.

In addition to this, a sample of English language teachers comprising, experts in linguistics, curriculum framers, teacher educators and teachers at various levels were selected for qualitative purpose of the study. This was to
build a framework to the study by identifying certain core areas with regard to the development of communicative competence among prospective teachers at Primary Level. The distribution of the sample is as shown:

|Experts in English Language and Linguistics:| 27 |
|Teacher Educators of English:| 28 |
|Language Teachers of certifying bodies:| 10 |
|Teachers of English at different levels:| 50 |
|Total| 115 |

4.3 VARIABLES ESTABLISHED

Variables are the vital aspects of a testing condition that can change or take on different characteristics with different conditions, and are basically of two types. The variable which is manipulated by the experimenter and is capable of including change is termed the 'Independent' variable, and the variable that undergoes change as a result of the above manipulation is called the 'Dependent' variable.

In the present study, the independent variables were:

- the prevailing Activity-Oriented mode;
- the select Reflective Teaching Strategies namely, Concept-Mapping, Problem-Solving, and Portfolio-Writing.

The dependent variable was, ‘Communicative Competence in English’ of teacher educands at Primary Level. In order to analyze the relationship
between the select independent and dependent variables, specific tools and techniques were adopted and they are detailed in the next section.

### 4.4 TOOLS AND TECHNIQUES USED

The quality of any research depends largely on the efficacy of the tools involved and the procedures adopted for collecting data. In order to gather direct evidence for the incremental interpretation of the effect of the select Reflective Teaching Strategies on the level of language activation processes of teacher educands at Primary Level, several tools and techniques were employed. Table 4.2 gives a bird’s eye view on the same.

**Table 4.2**

*Instrumentation Employed for the Study*

<table>
<thead>
<tr>
<th>Stages of the Study</th>
<th>Tools/Techniques Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchoring stage</td>
<td>• Interview with language experts (Appendix A)</td>
</tr>
<tr>
<td></td>
<td>• Self-Assessment Rubric for Teacher Educands (Appendix B)</td>
</tr>
<tr>
<td>Experimental stage</td>
<td>• English Language Test on Communicative Competence (Appendix C)</td>
</tr>
<tr>
<td></td>
<td>• Lesson Design for Concept-Mapping (Appendix D₁)</td>
</tr>
<tr>
<td></td>
<td>• Lesson Design for Problem-Solving (Appendix D₂)</td>
</tr>
<tr>
<td></td>
<td>• Lesson Design for Portfolio-Writing (Appendix D₃)</td>
</tr>
<tr>
<td>Monitoring stage</td>
<td>• Strategy Evaluation Proforma (Appendix E₁, E₂, E₃)</td>
</tr>
<tr>
<td></td>
<td>• Self-Assessment Rubric (Appendix B)</td>
</tr>
<tr>
<td></td>
<td>• Case Study in Praxis</td>
</tr>
</tbody>
</table>
The select tools and techniques developed for collecting pertinent data have been classified under three sections namely, Anchoring Study, Experimental Study and Post-Experimental Study.

The ‘Anchoring study’ was intended to build a background for the conduct of the study by a) analyzing the prevailing pedagogic modes of English language at the Teacher Training Institutes by interviewing the language experts selected for the purpose and b) by assessing the communicative abilities of teacher educands at Primary Level through a Self-Assessment Rubric developed for that purpose. The tools under the ‘Experimental Study’ comprised of an English language test and Lesson Designs based on the select reflective teaching strategies.

The instrumentation modes included under the ‘Post-Experimental Study’ included a Strategy Evaluation Proforma, the Self-Assessment Rubric and Case Studies which paved way for providing comprehensive data on the extent of internalization of reflectivity followed through the specific phases of the select reflective teaching strategies.

A detailed description of each tool and technique is being given below.

4.4.1 **Interview (Semi-Structured)**

A semi-structured interview is regarded as a set questionnaire with specific core questions determined in advance from which the interview branches off to explore in-depth information, probing according to the way the
interview proceeded, and allowing elaboration, within limits (Best & Kahn, 2007).

In the present study, the semi-structured interview technique was employed to gather the reflections of a select sample of English language teachers on the specific areas of concern in connection with augmenting the communicative skill of prospective teachers at Primary Level namely,

- Prevailing status of English language learning at the institutes at Primary Level;

- Constraints experienced, if any, in the actualization of communicative goals and in the schematic implementation of the prescribed language input; and

- Suggestions regarding alternative modes for enhancing student performance in core areas of language arts and in processing language content more meaningfully.

In order to gather information on these focal themes, an interview schedule was designed in such a way that the interviewees could give a free exchange of their perceptions on the thrust areas. The initial draft of the interview schedule had eighteen questions which were prepared through extensive reading and brainstorming sessions with several educators and language experts. As a pilot exercise, a draft schedule with provision for extended comments was distributed to twenty five language experts in the field of language education. The suggestions by the Experts were incorporated into the final draft of the schedule which probed the three core
areas mentioned earlier in this section. The final draft of the interview schedule comprised 13 questions with provision for multi-choice and open-ended responses. The first four questions were earmarked to unfurl the language learning scenarios at Training Institutes. The next two and allied questions focused on identifying the constraints experienced by the stakeholders of education in attaining communicative goals, and the remaining questions sought suggestions regarding alternate modes. The interview schedule is appended as Appendix A.

The select sample of language experts were contacted either in person or over the phone, and the select sample of school teachers were contacted during a three-day workshop for Resource Personnel in English which was convened at DIET, Pambady, on the area of implementing action-research modes in language classrooms. The investigator being a teacher educator in English had the opportunity to be a participant in the workshop and observe the curriculum transaction modes and subsequently interact personally with the delegates therein. The information gathered through the interviews were codified for ease in analysing the data.

The interviews were transcribed verbatim and content validated by 25 experienced teachers who modified the wordings and the number of items, and matched the research purpose with the interview questions. Data dependability and trustworthiness were maintained through methodological triangulation, where observations and interviews were directed to gather the same information.
Thus, the data gathered through the semi-structured mode of interrogation served as a footstool to identify a few reflective practices capable of building a language framework that could assist teachers and students alike, to interact effectively with the instructional content.

4.4.2 Self–Assessment Rubric on Communicative Competence

A rubric is an assessment tool that verbally describes and scales levels of student achievement on performance tasks (Burke, 2008). The rubric specifies the presence or absence of certain identified attributes against which a student’s performance or end product is judged. According to him, rubrics allow individuals to assess and track numerical data in an expanded way. Burke (2008) is quick in adding that rubrics serve to assist students in improving their own performance.

In the context of the present study, a Self–Assessment Rubric on Communicative Competence – a linguistic version enabling the teacher educands to discover the underlying system of grammatical rules, sociolinguistic features, discourse skills, and strategic competence was developed. The rubric was analytical in nature as it was designed to provide information regarding specific expectations and give descriptors that clearly outline what is needed for a higher level of performance. The tool was meant to build a theoretical framework of communicative competence by taking into account the various elements required for generating discourse knowledge, and by identifying areas of performance that need attention.
The rubric was prepared after extensive reading and consultation with experts and was developed in consonance with the phase specified by Goodrich (2001).

The different stages involved in the construction of the Rubric are given in Figure 4.4.

**Figure 4.4 Progression of the Rubric**

In the first stage ‘Listing Criteria’, preliminary decisions on the components to be evaluated were made by preparing a checklist of observable criteria. The criteria identified were: ‘word choice’, ‘sentence fluency’, ‘understanding of context’, ‘reformulation of ideas’, ‘summarization skill’, and the like.

In the second stage ‘Refining Criteria’, the above mentioned criteria were expanded in the rubric to include various levels of performance. Each criterion identified above were subsumed under four heads namely, grammatical, sociolinguistic, discourse, and strategic competencies. Grammatical competence included vocabulary knowledge, word formation,
appropriateness of syntax, accuracy of pronunciation and correctness of spelling. It also included knowledge of grammatical rules and their use.

Sociolinguistic competence comprised of: ability to contextualise situations, knowledge of accentuation patterns, use of idiomatic expressions, ability to analyse problems and specify solutions in the context.

Discourse competence included the ability to a) reformulate ideas into different linguistic forms, b) differentiate meaning according to the situation, c) display clarity of thought and organizational ability and d) use coherent and cohesive devices.

Strategic competence included the skill for using a) appropriate paragraphing, b) accurate words and phrases, c) impressionistic manner of conveying ideas, d) good evaluating capacity, and for understanding other's point of view and maintaining continuity and coherence.

In the third stage ‘Developing Continuum’, the point scale for the rubric was decided. Accordingly, the scale ranging from 1 to 4 was selected. The strongest performance level was given a score of 4 and the weakest performance level was given 1. The performance descriptors for the various levels were chosen as: Proficient, Advanced, Intermediate and Novice as these performance levels are often considered to be suitable for describing the language-using capabilities of learners in general (Eileen, 2007). The ‘Proficient’ level implied the ability to communicate with ease and dexterity; the ‘Advanced’ level specified an ongoing movement towards being proficient but lacking a blend of all the essential attributes required to communicate
effectively; the ‘Intermediate’ level meant possessing communicative ability more than the basic level but not yet advanced, and the ‘Novice’ level represented teacher educands who lacked the ability to communicate in English even at the basic level. The descriptors for each level of quality were then developed beginning from the highest level of quality to the lowest. Care was taken to make the descriptors clear and precise and the scoring procedures were then ascertained. “Yes” responses for all elements related to each component could be summed across the total instrument to obtain overall rating on the goals decided earlier.

In the fourth and final stage ‘Evaluating Effectiveness’, the rubric was pilot-tested on 80 teacher educands and necessary modifications in the wordings were made.

The final draft of the Rubric has been appended as Appendix B.

The Rubric which was meant to be a self-assessment tool was then administered on the select sample of teacher educands at Primary Level to assess the extent of attainment of the set levels of communicative competence.

In order to ensure the trustworthiness of the ratings made by the select sample of teacher educands, the data obtained from them were corroborated through the opinions of their respective teacher educators.

The Rubric is valid as it was subjected to expert opinion (Appendix F) and ratification and is reliable as the construct specified in the tool are based
on sound theoretical framework that define the essential features of communicative competence.

The objectivity of the instrument was ensured by submitting the Rubric before the panel of language experts. They assured the authenticity of the Rubric in terms of:

- Attainment of communicative objectives,
- Clarity of the dimensions described,
- Subjectivity,
- Utility and practicability,
- Coverage of the prominent dimensions of communicative competence, and
- Current conception of communicative ability.

Since the present Rubric is modelled on several standardized formats it has not deviated from the conventional norms. The formats referred to are: Rubrics by Goodrich, (1997), and Moskal, (2000). The data gathered in this regard have been analysed in the succeeding chapter.

4.4.3 English Language Test on Communicative Competence

As data-gathering devices, tests are among the most useful tools of educational research as they provide the data for most experimental and descriptive studies in education (Best & Kahn, 2007).

In the context of language learning, tests that are of a descriptive nature are of greater relevance as they enable the evaluators to assess the
learners’ capability of mobilizing his linguistic competence and performing abilities in an integrated way. As the study is focused on analyzing the communicative competence of teacher educands, test tasks that give a convincing proof of the candidate’s ability to actually use the language in ways and contexts which correspond to real life were desirable to:

- Find out the aggregate effect of the interplay of the four prominent dimensions of communicative competence namely, grammatical, socio-linguistic, discourse, and strategic competencies of teacher educands at Primary Level;

- Assess the criterion behaviour of teacher educands both prior to and after the treatment; and

- Evaluate the efficacy of the select reflective teaching strategies.

As no specific standardized tests were available to test the communicative ability of teacher educands at Primary Level and to know the impact of the select treatment on their communicative competence, a standardized test was prepared and administered in the present study.

For the purpose of standardization of the test, a draft form comprising 13 items was initially prepared and was pilot-tested on 80 teacher educands. The ‘Facility value’ and ‘Discrimination index’ of the questions were calculated using the formulae specified by the Examination Reform Committee, Department of Calicut University (1974). They are:
Facility value of a question = \[
\frac{\text{Total mark obtained by all students on the particular question}}{\text{No. of students} \times \text{Maximum marks allotted to the question}} \times 100
\]

Discrimination index = (Facility value of top-ranking 27% students) – (Facility value of low-ranking 27% students)

The questions that had facility value (validity) 50% or nearer to it were considered valid. The questions with discrimination index between 0.2 and 0.6 were accepted, as such questions could discriminate higher ability students from lower ability and average ability teacher educands. Five questions were thus selected for the test. They were then subjected to expert judgment (Table 4.3).

**Table 4.3**

**Experts Consulted for Validating the English Language Test on Communicative Competence**

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Educators</td>
<td></td>
</tr>
<tr>
<td>M.Ed.</td>
<td>15</td>
</tr>
<tr>
<td>B.Ed.</td>
<td>35</td>
</tr>
<tr>
<td>D.Ed.</td>
<td>10</td>
</tr>
<tr>
<td>Lecturers of the Language Certifying Bodies</td>
<td></td>
</tr>
<tr>
<td>IELTS</td>
<td>10</td>
</tr>
<tr>
<td>TOEFL</td>
<td>8</td>
</tr>
<tr>
<td>Lecturers of English at the Arts and Science Colleges</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
</tr>
</tbody>
</table>

The table shows the list of experts consulted in this regard. The test is criterion-referenced in that it sets out to show whether or not the teacher
educands can perform a set of specified activities in a communicative situation.

The test has content validity as the test accurately reflects the objectives specified in the curriculum of language learning at the Teacher Training Institutes at Primary Level. It has construct validity in that the test reflects accurately the principles of the language theories specified by leading linguists like Hymes (1994), Savignon (1997), Mandler (2004), Anandan (2006), and Vandervert (2009). The test has predictive validity as it accurately predicts performance in subsequent situations.

The final format of the test used for the experimental purpose was administered for a maximum score of 25 marks and a duration of 45 minutes. Adequate instructions were given in the question paper. To assist in the scoring process a scoring key was also prepared.

The attainment of communicative competence by the select sample of teacher educands was assessed by considering their total score on the thus developed English language test for communicative competence. But in order to identify the extent of impact that each select reflective teaching strategy could exercise on the prominent components of communicative competence, the scores on the individual dimensions were also considered for analysis.

4.4.4 Lesson Design on Concept-Mapping Strategy

The reflective teaching strategy, namely, concept-mapping, is a hierarchical framework that encourages both deliberative and dialectical
thinking. Here, situational knowledge is suspended for a while so as to encourage students to look beyond it and use multiple sources of information to tune their thinking. It leads to forums where the lower-level procedures and higher-level strategies are applied to a new challenge through adequate questioning and contemplation.

The core principles of Concept-Mapping were proposed by Novak (1991) and the lesson design on this select strategy was developed focusing on the stages specified by him. They are:

- Exploration stage
- Bridging stage
- Context-Guided Integration stage
- Layout/Evaluation stage

The stages are explained below in detail specifying what the teacher educands do in each stage and what linguistic components develop as the learners progress through the cycle of creating concept maps.

**Stage 1: Exploration**

A well-made concept map grows within a context frame defined by an explicit ‘focus questions’. This paves way for making smart choices that are appropriate for the learner’s purpose, audience, and setting. In the present study, the stage ‘exploration’ demands that teacher educands identify issues that emerge during the reading of the text – issues that trigger conscious deliberations and invite the use of interpretative skills of learners so as to perform the literary act as expected through the interpretation of the text. They
are to scan the text closely, weigh the information given therein in terms of the context in which it is presented and identify a specific passage, sentence, phrase, or word that can serve as building blocks for subsequent information to be mapped on to it and to develop coherent mental structures.

An exploration of the textual information is aided by the effective use of questions that can help learners to focus on relevant information that has the most impact on the plot of the passage. The task development and the language processing features are highlighted in Figure 4.5.

**Figure 4.5 Exploration- Stage of Concept-Mapping**

This stage considers the grammatical, syntactical, socio-linguistic, and discourse features of a communicative task. Thus, the initial processing of language is strictly ‘bottom-up’ with word meaning being activated, phrases being constructed and propositions being formed with no consideration of the discourse context in its complete sense.
Stage 2: Bridging

The second stage is characterized by developing mental structures by mapping on information that coheres or relates to previous information. The identified issue is analyzed through a multi-levelled conceptual lens and its relevance is examined in the light of various supportive evidences that are represented as conceptual nodes. When the incoming information is less coherent or related, learners have to shift their focus and initiate a new set of conceptual nodes that form the foundation for a new sub-structure.

In this stage, the teacher educands are to categorize the concepts that help define the problematic or main issue in terms of its contextual and semantic relevance and in consonance with grammatical and syntactic norms of language use. They are to collaborate in establishing a dialogue lexica in order to support sustained communication about a particular topic. The descriptions are to be formulated so as to be unambiguous in that context. Simultaneous co-ordination of semantic and conceptual processing is to take place. The major highlights of this stage are given in Figure 4.6.

**Figure 4.6 Bridging Stage of Concept-Mapping**
This stage wherein the inclusive concepts are analyzed and presented into various categories paves way for integrating concepts into a coherent whole.

**Stage 3: Context – Guided Integration**

Integration in the present context is that stage of concept-mapping wherein teacher educands are to structure the identified concepts into a hierarchy based on the context. The concepts that can be subsumed under different heads are clubbed together. Propositions or meaningful units are established by showing how each concept is related to the previous one. New links are discussed and mapped in such a manner that the problematic issue gets addressed in due course as concepts get mapped on to the framework. The highlights would be as shown in Figure 4.7.

![Figure 4.7 Context-Guided Integration Stage of Concept-Mapping](image)

**Figure 4.7 Context-Guided Integration Stage of Concept-Mapping**

This stage explains the various solution pathway adopted by the teacher educand to address the problem in its totality by previewing the main ideas and its sub-part, attending to the key words, phrases, linguistic
marker, and checking one’s comprehension during the process of constructing maps and being in a position to give summaries of the details presented.

**Stage 4: Layout / Evaluation**

In order to proceed with the communicative task, the teacher educands are required to acquire a cognitive framework to control their action. This framework specifies how the subsumed concept and, its different sub-structures can be presented more meaningfully so as to make it feasible for access and for future modifications.

In this stage, the teacher educands are accorded freedom to arrange the concept in a manner deemed appropriate to them with each concept being linked in accordance with grammatical patterns of the language. Teacher educands are to decide as to what expressions to use and what to put in their message. The content of a message is to typically include more than ‘just the facts’ that the student intends to convey, going beyond them to incorporate information specifically tailored to the communicative context. The main message has to signal the relative prominence of its components. In brief, the layout or the sketch will come closer to a blueprint of how normal speakers draw on their linguistic knowledge to formulate utterances and offer a better understanding of the cognitive architecture of human language and its contribution to human communication. The wholeness of the reasoning of learners is adjudged by their individually constructed maps.
Figure 4.8 Layout/Evaluation Stage of Concept-Mapping

Thus each stage of the concept–map construction encourages teacher educands to reflect on their language processing modes and select appropriate lexical features based on the social context to be addressed. The entire process assists in language comprehension and production. The learning strategies typically practised in each phase of the lesson are: self-monitoring (teacher educands check their language production), organizational planning (planning how to develop a written report of a lesson), resourcing (using resource materials), grouping (classifying concepts, events, and terminology), summarizing, imagery making (making maps), elaboration, co-
operation, and questioning for clarification. The final format of the lesson design is appended as Appendix D₁.

4.4.5 Lesson Design on Problem-Solving Strategy

Problem solving is a process whereby individuals discover and identify inadequacies and disharmonies in their outlooks and engage in formulating hypotheses and testing them with all available pertinent evidences. It reflects the conviction that learners study and learn best when they are seeking both the intellectual and emotional relevance of their learning to significant aspects of their lives.

An understanding of how to solve problems according to principles of scientific reflection is perhaps the most intellectual tool a person can possess which involves the co-ordination of a range of demanding and interrelated skills.

These skills include:

- Understanding and representing the problem;
- Hypotheses-testing, and decision-making;
- Gathering and organizing relevant information; and
- Constructing and managing a plan-of-action.

For the purpose of the study, a five-stage model of problem-solving was adopted. The steps specified by its proponents Wallace and Adams (1993), who use the acronym TASC, for ‘Thinking Actively in a Social Context’ to classify the various steps, was adopted as these set out a generic framework for the development of a thinking and problem-solving curriculum.
The specific stages of the select TASC model selected for the study are detailed here:

**Stage 1: Problem Identification**

The first stage namely, ‘Problem Identification’ is important because learners need to bring what they already know into their working memory ready for thinking, repair and extension. In the context of the study, it implies establishing what is already known; identifying gaps and misconceptions; showing how information is linked; identifying questions that can be asked and identifying the section(s) to be focused on. Teacher educands are thus enabled to bring knowledge into the working memory and put fragments into a whole picture; assess prior learning and identify the lacunae in their thinking. The stage would focus on the following questions shown in Figure 4.9.

**Figure 4.9 Highlights of Problem Identification Stage**
Stage 2: Problem Defining

The second stage namely, ‘Problem Defining’ is primarily characterized by ensuring learner’s involvement in the task. At first, the investigator and teacher educands take turns in leading a discussion about the passage, including how to generate a question, summarize the text, classify a portion of the text, and make predictions. When disagreements arise, all participants re-read the text and discuss options until option consensus is reached. Teacher educands having organised preliminary information regarding the newly set task are to clarify the task and explain the same in their own words. They are to establish the purpose of the task and thereby establish the clear criteria for outcome. In the process, they are to link information and formulate hypothesis accordingly, which implies that teacher educands are to substantiate their ideas with supportive evidences. Thus, they are led to identify their goals as well as obstacles in the way of attaining their goals. The outcome of this stage is that the teacher educands grow to appreciate the opportunity to investigate problems on their own, and their learning is enhanced through the general study atmosphere that prevails. Student questioning and interaction, rather than teachers’ knowledge base, drives the learning experience.

The active involvement of learners in the task leads them to consider the textual features closely, analyzing the discourse patterns, the lexical items used, the semantic processes involved and thereby structure their statements accordingly. The schematic mode of this stage is presented in Figure 4.10.
Stage 3: Strategy-Formulation Stage

In the third stage, ‘Strategy-Formulation’, mutual exchange of ideas takes place. In order to assist learners in extending their thoughts and in identifying the appropriate problem, the investigator describes her cognitive processes while engaging in an academic task. She offers hints, comments, and critiques to students working on the academic task. For example, she may ask them to describe the audience of the essay and similar analogies that spark their thinking. In extending their ideas, the investigator and teacher educands take turns in describing their strategies for a given task. Through this phase, teacher educands learn how to use four widely acclaimed reading comprehension strategies: ‘questioning’, through which teacher educands generate appropriate questions for a passage; ‘classifying’, in which they
detect and correct potentially difficult portions of the passage; ‘summarizing’, in which they produce a concise summary of a passage; and ‘predicting’, in which teacher educands suggest what will come next in the passage. Teacher educands extend their ideas through questioning and arguments. Deconstruction and reconstruction of ideas take place which is followed by a convergence of ideas for the selection of appropriate problem. Having identified the major problem, solutions are generated through brainstorming. Later, the members of the group discuss on the feasibility and consequences of the planned solutions and reach a consensus regarding the most suitable solution to the problem.

The outcome of this stage is that the teacher educands are empowered to think divergently and develop the necessary decision-making skills. The use of language functions in appropriate context gets strengthened. Teacher educands are motivated to link ideas coherently and build a discourse structure which is in alignment with the outcome of the task. The schematic representation of the cues highlighted in this stage is shown in Figure 4.11.
In the next stage, namely, ‘Implementation’, the actual execution of the solution (problem solving) takes place based on each individual’s style thereby allowing for a sense of satisfaction and achievement. It is in this state that the actual reporting of what was done takes place. Teacher educands plan for the presentation pattern catering to the needs of their audience group. Planning takes place with regard to the following aspects like, how the matter can be presented, the style of language to be used and the intonation patterns to be adopted, and thus justify the purpose or decisions taken. They are to
present supportive evidences, recall main points and also interpret ideas meaningfully. The highlights of this stage are given in Figure 4.12.

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<th>Process Involved</th>
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Figure 4.12  Highlights of Implementation Stage

**Stage 5: Evaluation and Reflection**

Having communicated in the above manner, the teacher educands monitor their way of working, decide on a way to record and check the progress of work, and revise procedures intermittently. They also check their solutions against the set criteria of outcome and evaluate the entire process of implementing the task. The teacher educands get an opportunity to reflect on their problem-solving experiences, analyse what has been learned compared to their previous learning, crystallise new learning, revise ideas and transfer them to new contexts – all being essential features of communicative competence. The prominent questions are given in Figure 4.13.
EVALUATION & REFLECTION

Figure: 4.13 Highlights of Evaluation and Reflection Stage

The reflective teaching strategy, namely, problem-solving, was introduced to teacher educands constituting the second experimental group. Sufficient instructions and guidance were rendered to familiarize the select sample with this phased programme. The format of the lesson design for problem solving is appended as Appendix D2.

4.4.6 Lesson Design for Portfolio-Writing

The third facilitative teaching strategy, namely, portfolio writing, was adopted for the third experimental group with a view to enhance their communicative capabilities by engaging them in developing a student portfolio – a collection of evidences supporting their understanding of a topic through structured reflection. Portfolio preparation is mainly intended to incorporate diversity of insight which favours a stimulating reflective attitude and an active

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<th>Process Involved</th>
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<td>Questions to be Addressed</td>
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<table>
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<tr>
<th>Evaluating the strategy</th>
<th>Questions to be Addressed</th>
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<tbody>
<tr>
<td></td>
<td>Was the strategy effective?</td>
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<td>Did it highlight social values?</td>
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<td>Is it feasible/relevant, etc.?</td>
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<th>Reflection</th>
<th>Questions to be Addressed</th>
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<tr>
<td></td>
<td>How can the strategy be improved?</td>
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<td></td>
<td>What changes can be incorporated?</td>
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<td></td>
<td>What alternate modes can be suggested for strategy implementation?</td>
</tr>
</tbody>
</table>
and constructive training modality. Interplay of self-performance and self-regulation processes try to balance the conceptual content, procedure and behavioural aspects facilitating the students’ reflection over their own learning process.

In order to familiarize the select sample of teacher educands with the processes of portfolio construction they were led through the following specific stages suggested by Johnson et al. (2006).

- Theme-Generation stage
- Task-Analysis stage, and
- Reflection stage

**Stage 1: Theme-Generation**

In the first stage, namely, the ‘theme generation’ phase, the teacher educands are exposed to a task and made to identify the major themes that are implicit therein. These themes are generated through peer interaction, reading of the material, and interaction with the teacher. The themes are discussed and their supporting details are provided. Through collaboration, the students agree upon a major theme that is highlighted.

The identified theme is then analyzed in multi-dimensional ways so that several sub-themes could emerge. Having identified the theme, the learners are to enlist the objectives or goals that are to be achieved once the portfolio is completed. As is unique for every portfolio, teacher educands need to project their personal philosophy for undertaking such a work.
Through their oral presentations, written statements, discussions, referencing, and the like, the teacher educands take stock of their linguistic and grammatical skills. The genuineness of the theme is established through the presentation pattern adopted by the teacher educands and it serves in assessing their communicative competence. Their linguistic, grammatical, syntax patterning, conceptual understanding, and the like, become explicit. The diagrammatic representation of this stage is shown in Figure 4.14.

Figure 4.14 Theme-Generation of Portfolio

**Stage 2: Task-Analysis**

The second phase, namely, the ‘Task-Analysis’, comprises the following sub-phases: action-planning, collection and selection of artefacts. The first sub-phase sets the foreground for structuring the student portfolio. This sub-phase involves laying out a blueprint for collecting and organizing artefacts so as make the portfolio process meaningful and informative. Contextual, temporal, spatial and human issues like the purpose to be served, the competencies to be attained, the criteria to be adopted, the time to be taken, the format and design to be adopted and the people to be involved during the collection and evaluation of the portfolio content and the like, are to
be discussed by the teacher educands prior to proceeding with the collection of artefacts.

Having outlined the specific mode of approach toward seeking amicable solutions, teacher educands are to collect the artefacts that support their understanding of the theme. The artefacts can be collected from any source deemed appropriate. The collected artefacts are finally sorted out and the most appropriate ones are selected based on the criteria identified in the planning stage. The artefacts are to be prioritized so as to reveal their proper understanding of the theme.

As teacher educands progress through the sub-phases of the task-analysis stage (Figure 4.14), they engage in interpreting syntax, prosody, and semantics, in order to construct a hierarchical structure of presentation. They are to creatively use their skills to analyze, synthesize, compare and categorise in order to demonstrate a thoughtful plan of action. This phase provides them opportunities to listen to other’s explanations, interact, and become aware of their changing ideas.

![Figure 4.15 Task-Analysis of Portfolio-Writing](image)

Figure 4.15 Task-Analysis of Portfolio-Writing
As learners involve themselves in validating artefacts through rejection, acceptance, revision, and integration, they enter into the final phase of portfolio construction, namely, the reflection phase, which is detailed next.

**Stage 3: Reflection**

The final and critical phase of portfolio construction, namely, ‘Reflection’ helps teacher educands to undergo the process of construction, deconstruction, and reconstruction of their ideas. Each artefact is to be reflected upon so as to make them authentic evidences in the context of the bigger picture that emerges through portfolio construction (Figure 4.16). This process is facilitated by specific inquiry questions that enable the learners to self-evaluate their presentation after the peer evaluation.

![Reflection Stage of Portfolio Writing](image)

**Figure 4.16  Reflection Stage of Portfolio Writing**

In this stage, a brief report of the entire process undergone right from the theme generation phase to the reflection phase is to be presented in writing which is a true indication of the extent of discourse-patterning, syntactic and semantic interpretations that the teacher educands are capable of executing in a communicative environment.
The reflection phase ultimately leads the teacher educands to refine their presentations and modify the content of their student portfolio.

The entire process of portfolio construction is captured in Figure 4.17.

**THEME GENERATION**

- Posing the task
- Identifying the theme
- Setting ground for portfolio construction

**REFLECTION**

- Presentation
- Peer Evaluation
- Self Evaluation
- Reflection

**TASK ANALYSIS**

- Problem Analysis
- Collection of Artefacts
- Selection of Artefacts
- Plan-of-Action

**Figure 4.17 Process involved in Portfolio Construction**

Each stage of the Reflective Teaching strategy highlighted above is rooted in constructivist notions of ‘knowledge’ and ‘knowing’ and the derived conceptions of learning and teaching, and are geared to elicit individual and social knowledge construction through dialogue and reflection. They use a virtual environment that complements the regular classroom meetings to create a knowledge-building community by means of discussion forums.

The format of the lesson design of portfolio strategy has been appended as Appendix D3.
4.4.7 Strategy Evaluation Proforma (for teacher educands)

An Evaluation Proforma is a tool with a set of statements that requires the respondent to state their opinions regarding a phenomenon in an authentic manner (Selinger & Shohamy, 1989).

In the present study, where prospective teachers at Primary Level were being addressed for a couple of weeks, it was observed that the educands exposed to the select Reflective teaching strategies showed explicit change in their interaction patterns than the educands who were facing the conventional mode of teaching. These changes that are vital cannot be represented through test scores alone. Therefore, qualitative interpretations on the efficacy of the select strategies was necessary as the teacher educands were the beneficiaries of these strategies for a period of not less than three weeks – a time period which is sufficient to throw deeper insight into the effect of the select reflective practices. For this purpose, an Evaluation Proforma comprising of 10 statements was administered to each of the experimental groups. The Evaluation Proforma for each strategy have been appended as Appendices E₁, E₂, E₃.

4.4.8 Case study

A case study is an in-depth investigation of an individual, group or institution. They offer illuminative portrayals that would not be exposed in large-scale quantitative studies (Best & Kahn, 2007). Rather than using samples and following a rigid protocol to examine limited number of variables,
case study method involves an in-depth, longitudinal examination of a single instance or event – a case. Case studies provide a systematic way of looking at events, of collecting data, of analysing information, and of reporting the results. The researcher thus gains a deeper insight into why the instance happened as it did, and what might become important to look at more extensively in future research.

In the context of the study, the case study was employed to investigate into the phenomenon of reflective teaching within its real-life context. It relied on multiple sources of evidence.

When selecting a case for a case study, researchers often use information-oriented sampling, as opposed to random sampling. This is because the typical average case is often not the richest in information. Extremes or atypical cases reveal more information because they activate more basic mechanisms and more actors in the situation studied. In addition to both an understanding-oriented and an action-oriented perspective, it is often more important to clarify the deeper causes behind a given problem and its consequences than to describe the symptoms of the problem and how frequently they occur. Random samples emphasising representativeness will seldom be able to produce the kind of insight required and so it is more appropriate to select some few chosen cases for their validity. In the present study, critical cases were selected for the purpose of case study so as to find how the select teacher educands succeeded in applying reflective teaching principles in actual classroom setting.
Educands who represented the ‘below average’ group of students with regard to their communicative abilities were selected for this purpose from a training institute in the Alappuzha district. One teacher educand each was selected from the three experimental groups (Concept mapping, Problem solving and Portfolio).

The data were gathered through:

(a) Participant observations by the researcher, teacher educators and practising school teachers;
(b) Interviews with the Principal, teacher educator, school mentors, pupils and the subject herself.
(c) Teaching assessment battery to observe classroom performance.

In order to assist in the process of observing classroom behaviour of teacher educands, an observation schedule delineating the various aspects to be observed were prepared. The classroom interaction of educands, their ability to communicate and make changes, their peer association pattern and attitude towards making changes were observed. Instance of occurrences were tally-marked and codified under various sub-themes. The results of the case study have been presented in the succeeding chapter.

Unstructured interviews with the educands, their teacher educators and school teachers were also held to get data on a casual basis without creating any inhibition in the interviewees. No specific time or venue was set apart for this purpose. However, the points were noted down after the informal interviews. The classroom interaction pattern of teacher educands were
noted through a teaching assessment battery that primarily focused on the systematic presentation, appropriate explanation, immediate feedback given, meaningful integration of ideas and appropriate evaluation techniques used. The teaching pattern of the select sample was observed by the school teachers and their teacher educators too.

The analysis of the data thus gathered has been presented in the subsequent chapter.

4.5 PROCEDURE ADOPTED

As the prime objective of conducting the study was to find out the effect of the select reflective teaching strategies namely concept-mapping, problem-solving and portfolio-writing on the communicative competence of teacher educands at Primary Level, an intermix of both quantitative and qualitative approaches was adopted.

As an initial step towards this direction, a survey was conducted to identify the prevailing curriculum transaction modes for teaching English at the Teacher Training Institutes at Primary Level, to locate the constraints experienced by teachers and teacher educands alike, in attaining communicative goals and, to seek suggestions for remedial modes to address pertinent issues with regard to enhancing the communicative performance of learners in general. An interview with a select sample of experts in linguistics, instructors of Language Certifying bodies, and practising teachers at various levels paved way for garnering valuable insights in this regard.
As a prelude to the experimental procedures, an attempt was made to assess the communicative ability of teacher educands at Primary Level through a Communicative Competence Self-Assessment Rubric, which was specialised developed for this purpose. A select sample of teacher educands (n=327) hailing from eight Teacher Training Institutes coming under three districts in the Central Travancore region (Allappuzha, Pathanamthitta, Kottayam) were identified and the rubric was administered on them. The investigator sought permission from the respective heads of the institutions and as per the time allotted, the tool was administered to the select sample. Necessary instructions and clarifications were made.

From among the above mentioned sample of teacher educands, 200 were selected for the experimental design namely, Pretest Posttest Non-Equivalent Groups Design. An English language test for communicative competence developed by the investigator in consultation with the supervising teacher was administered on the select sample. Based on the performance of teacher educands on the set test, they were classified into high, average and low groups. The select sample of teacher educands were then randomly divided into four groups in such a manner that each group had representatives from the high, average, and low performing sections. The treatment was then randomly assigned to the four select groups in the order shown below.
Group 1: Control treatment (Activity-Oriented mode)
Group 2: Experimental treatment (Concept-Mapping)
Group 3: Experimental treatment (Problem-Solving)
Group 4: Experimental treatment (Portfolio-Writing)

The experiment was conducted during the regular hours at the institutes. Prior sanction was sought by the concerned authorities in this respect.

Having conducted the experiment following the phased procedures mentioned in the lesson designs developed for the study, posttest was conducted to ascertain the impact of the select strategies on their communicative competence and the scores were statistically analysed.

To complement the quantitative approach, a Strategy Evaluation Proforma was also administered on the teacher educands of the three experimental groups. This was done so as to evaluate the magnitude of impact that the strategy could have on them, not only with regard to the enhancement of certain cognitive aspects but also with regard to the affective and psychomotor domains. The Self-Assessment Rubric was re-administered to assess the enhancement in the self-worthiness of teacher educands after the experiment. Simultaneously with the conduct of experimental study, the investigator selected specific cases from the three experimental groups so as to monitor them and gain a wider and clearer picture of how the select reflective teaching strategies could have its effect on teacher educands from the lower strata with regard to their acquisition of the specified components of
communicative competence and their students whom they taught during their teaching practice session. The conduct of the case studies implied getting permission not only from the Heads of the concerned Training Institutes but also from the School Administrators and School mentors.

The outcome of this study is therefore, a result of the networking established among teacher educators, language experts, teacher educands, school authorities and students at school. The statistical techniques employed for analyzing the data are being mentioned next.

4.6 STATISTICAL TECHNIQUES ADOPTED

The pretest and posttest scores of the experimental and control groups were considered for statistical analysis. As the investigator wanted to find the effect of the select reflective teaching strategies on the communicative competence of teacher educands at Primary Level, the test of significance of differences between means was applied and critical ratios were found out. Further, Analysis of Covariance (ANCOVA) was applied to test the effectiveness of the three select reflective teaching strategies over the prevailing method of transacting English language curriculum.

In the case of qualitative data, attempts were made to codify the results and the ratings were made in percentage scores. The detailed analysis of data thus procured have been presented in the succeeding chapter.