Chapter 4
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4.1 Methodology- A Guideline

As Educational Research is the systematic and scholarly application of the scientific method to the solution of educational problems, the methodology adopted is given an important role in the conduct of the study. Methodology refers to the theoretical arguments that researchers use in order to justify their research methods and design (Case & Light, 2011). So the Research Methodology not only implies the research methods but also considers the logic behind the methods that has been used in the context of the research study. The Methodology involves the strategies, the plan of action, process, or design lying behind the choice, use of particular methods and linking the choice and use of methods to the desired outcomes (Crotty, 1998).

Burton (2002) provides a practical and accessible definition of what a discussion of methodology will entail for a particular study:

- Why the researcher chose that focus?
- Why the study was designed by the researcher in that way?
- Why alternatives were rejected?
- What were the questions the researcher was asking? and
- How the researcher ensured that, confidence could be felt in the data gathered and in the analysis of those data?

By answering the above questions, the Investigator attempted to present the methodology as a detailed account in this chapter.

This chapter encompass the details related to the methodology and procedure followed in the present study. It depicts the Research Design adopted by the Investigator which gives a bird’s eye view of the study. This chapter deals with the preparation of the teaching learning materials of the two models of value education viz. Value Analysis Model and Value Clarification Model, Validation of the materials, the different phases of the construction of the Affective Domain Process Scale, validity and reliability of the scale and description of Emotional Maturity Scale. It also gives an account of Population, Sampling technique and the Sample
selected for the present study. The procedure for data collection, scoring and consolidation of the data and the Statistical procedure adopted by the Investigator are also explained. The presentation of this chapter can be viewed under the following heads.

4.2 Method Adopted for the Study

4.3 Population and Sample of the Study

4.4 Data Gathering Devices and Materials Used for the Study

4.5 Outline of the Experimental Procedure

4.6 Statistical Techniques Used for the Study

**4.2 Method Adopted for the Study**

The credibility of the research depends very much upon the credibility of the method used. A pre planned and well designed methodology will provide the researcher a scientific and feasible plan for the problem under analysis. The first step in this regard is to select the method for the conduct of the study keeping in view the objectives of the study.

The major objective of the present study was to find the effectiveness of select models of Value Education on the Affective Domain Processes of Secondary School Students. The Models of Value Education selected for this purpose were Value Analysis Model (1971) developed by Frankel and Coombs and the Value Clarification Model (1978) developed by Raths, Harmin and Simon.

Experimental method was adopted to test the effectiveness of Value Analysis Model (VAM) and Value Clarification Model (VCM) on the Affective Domain Processes of students by comparing these with the Direct Instruction Method (DIM) of teaching and learning of Value Education in schools. Experimental research provides a systematic and logical method of answering the question ‘if this is done under carefully controlled conditions what will happen’? Experimentation is the most sophisticated, exact and powerful method of discovering and developing an organized body of scientific knowledge which attempts to provide a precise answer to
a precise question. In order to answer the research questions in the present study, the best suited method was Experimental method.

4.2.1 Design of the Study

The design selected for the present study is an experimental one. Experimental design is the blueprint of the procedures that enable the researcher to test the hypothesis by reaching valid conclusions about relationships between independent and dependent variables. Selection of a particular design is based on the purposes of the experiment, the type of variables to be manipulated, and the conditions or limiting factors under which it is conducted (Best and Kahn, 2007).

For the purpose of the conduct of the experiment, the Investigator analysed the different types of experimental designs. In a true experimental design, the equivalence of the experimental and control groups is made by assigning the subjects randomly to the experimental and control groups. It is difficult to organize true experimental designs in the classroom settings, because obtaining the matched pairs by matching person to person is not feasible as the subjects belong to different class divisions in different schools. Bringing them altogether for the purpose of the experiment is not found practical as it will disturb the usual class schedules.

The Investigator therefore decided to take the intact non-equated classrooms and then statistically equate the groups for the purpose of experimentation. The design selected for the present study was Pre test - Post test Non-equivalent Group Design. The present study utilizes three groups, out of which the first experimental group was exposed to experimental treatment using Value Analysis Model (VAM) and the second group using Value Clarification Model (VAM) and the third group being the control group was exposed to the Direct Instruction Method (DIM) of teaching of Value Education. The design is diagrammatically represented in the following figure.
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4.2.2 Variables of the study

The variables are the conditions or characteristics that the experimenter manipulates, controls or observes (Best and Kahn, 2003). Reducing a phenomenon into variables focus the researcher’s attention on specific events out of the many that may be related to the phenomenon (Mc Burney, 2001 & 2006). The present study, being an experimental one incorporates both independent and dependent variables.

4.2.2.1 Independent Variable

The independent variables are the conditions or characteristics that the experimenter manipulates or controls in his or her attempt to ascertain their relationship to observed phenomena. In an educational research an independent variable may be a particular teaching method, type of teaching materials, a reward, a period of exposure to a particular condition, or an attribute such as sex or level of intelligence (Best and Kahn, 2003)
The independent variables involved in the present study are,

1. Value Analysis Model
2. Value Clarification Model

4.2.2.2 Dependent variable

The dependent variables are the measured changes in student performance attributable to the influence of the independent variables. Though people achieve very sophisticatedly in their cognitive capacities, their Affective Domain is not so strong and they often fail in the personal, interpersonal and societal life. So the role of affect in personal and societal integration is to be taken seriously. In the present study Affective Domain Processes is taken as the dependent variable.

The Investigator had incorporated values as the core of the research study, since emotions, motivation, interest are all manifestations of values hold by a person. Peterson and Seligman (2004) have prepared an important resource for the Affective Domain in their comprehensive scholarly review of what they refer to as “Character strengths and virtues” in the categories of wisdom and knowledge, courage, humanity, justice, temperance and transcendence.

The ‘Taxonomy of Educational Objectives: Handbook II, The Affective Domain’ (Bloom, Masia & Krathwohl,1964) deals with the detail of the 'Affective Domain'. Affective domain is comprised of five affective processes. These processes are sequenced and identified as receiving, responding, valuing, organisation and characterisation. An important premise of Bloom's Taxonomy is that each category/level must be mastered before progressing to the next. As such, the categories within each domain are levels of learning development, and these levels increase in difficulty. The processes in the affective domain, which are more complex and integrative, are almost parallel to Maslow’s (1954) hierarchy of needs, and Mayer and Salovey’s (1997) conceptualization of emotional intelligence. But the difference between the Affective Domain Taxonomy and Maslow’s hierarchy of needs is that, the former is pure mental disposition at the lower stages which are culminated in to actions at the later stages and the latter is achievement of physical needs at the lower stages and mental dispositions at the later stages. Mayer and Salovey (1993) viewed
Emotional Intelligence as the ability to monitor one’s own and other’s feelings and emotions, to discriminate among them and use the information to guide one’s thinking and action. Similar to this view, Affective Domain Continuum also moves from the lower levels of thinking and choosing processes to the higher levels of acting thus reaching the characterization stage. Human beings are always susceptible to the lower levels of Affective Domain Processes such as Receiving and Responding and since higher levels are more complicated, the following higher levels of Affective Domain Processes with its sub components are included in the study.

![Affective Domain Processes Diagram]

*Figure 4.2: Selected Components and Sub-components of Affective Domain Processes*

### 4.2.2.3 Confounding Variables

The confounding or basal variables are those aspects of the study that might influence the dependent variables or that may have a significant effect upon the results of the study. Many research findings are questionable because of the influence of the confounding variables. These are also called basal variables which cannot be altered by the experimenter. The confounding variables selected for the present study are,
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- Gender
- Religion
- Stream of study
- Birth order
- Number of siblings.
- Type of family

4.3 Population and Sample of the Study

By population, we mean the aggregate or totality of objects or individuals regarding which information are to be made in a research study. A population is any group of individuals that have one or more characteristics in common that are of interest to the researcher. Population is the large group about which the Investigator is going to make a study.

4.3.1 Population of the study

The population of this study consists of all the students in eighth, ninth and tenth standards of CBSE and State Syllabus in the secondary schools of Kerala State. It means the population includes all the Secondary School Students studying 14 Districts of Kerala State. They consist of both boys and girls in the age group of 14-16 years who belong to the major religions of Kerala.

4.3.2 Sampling Procedure

Sampling is a process of selecting the sample from the entire population. In order to select the sample, the Investigator followed Multi-stage Purposive Sampling Method. Kerala State is divided into 14 revenue districts. As per the website of Government of Kerala, on the basis of geographical, historical, and cultural similarities, the districts are generally grouped into North Kerala (Kasaragod, Kannur, Wayanad, Kozhikode, Malappuram), Central Kerala (Palakkad, Thrissur, Eranakulam, Idukki) and South Kerala (Thiruvananthapuram, Kollam, Alappuzha, Pathanamthitta, Kottayam). From these three divisions, districts from the Central Kerala are selected at the first level.
In the next level the schools were selected on the basis of teaching of Values Education who eventually follows the same pattern of Value Education. So from the four districts of Central Kerala viz. Palakkad, Thrissur, Eranakulam, Idukki, schools coming under two districts namely Idukki and Ernakulam were selected due to their similarity in the pattern of Values Education. Since in none of the government schools moral/value educations is dealt with, they were avoided at the initial stage of sampling itself.

At the next stage of selecting the sample, the Investigator put forward the following criteria.

- In order to have students of similar regional background, two semi urban schools are to be selected.
- In order to allow for a differential analysis on the basis of stream of study, one school following state syllabus and the other following CBSE syllabus are to be selected.
- Since the sample of the study consists of ninth standard students, the schools having minimum of three divisions each in standard nine are to be selected, of which two divisions were to be treated as experimental groups and one as control group.

Since the study was concerned with Values Education, one school from each district which satisfies the above mentioned criteria and which follows the same pattern of Values Education was considered for the study. The sampling procedure adopted is shown in Figure. 4.3
4.3.3 Sample of the Study

‘A sample is a small portion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn’ (Best & Kahn, 2005). It is a collection consisting of a part or subset of the objects or
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individuals of population which is selected for the expressed purpose of representing the population which provides for generalization. Generalization is legitimate if the sample is representative of the larger population. This is an issue of external validity (Miller, 2007). The sample selected for the present study is described below.

For the present study, the initial sample consists of 210 ninth standard students of two secondary schools namely Infant Jesus High School, Koothattukulam in Ernakulam District and Shanthal Jyothi Public School, Muttom in Idukki District which follow the same Values Education syllabus.

- **Selection of divisions for Experimentation**

Of the three divisions each from the two selected schools, the treatments viz VAM, VCM and DIM were allotted randomly. The break-up of the sample selected for experimentation is presented below in table. 4.1.

Table 4.1

*Break-up of sample selected for Experimentation*

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Independent Variable</th>
<th>School</th>
<th>Division</th>
<th>No. of students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VAM</td>
<td>Shantal Jyothi</td>
<td>A</td>
<td>36</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infant Jesus</td>
<td>C</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>VCM</td>
<td>Shantal Jyothi</td>
<td>B</td>
<td>36</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infant Jesus</td>
<td>A</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DIM</td>
<td>Shantal Jyothi</td>
<td>C</td>
<td>35</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infant Jesus</td>
<td>B</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>210</strong></td>
<td></td>
</tr>
</tbody>
</table>

The sample was selected by giving due representation to Gender (Boys and Girls) and Stream of Study (CBSE and State Syllabus). The selected sample was also classified based on Birth order of children, Type of family and Number of Siblings.

Towards the end of the data collection the initial sample got changed due to the removal of certain number of response sheets. The reasons are,
A few response sheets were removed at the pre test level due to incomplete entries.

In each class two or three students could not attend at least 12 lessons on each model.

A few response sheets were not considered at the post test level due to incomplete entries.

At the delayed post test level also a few response sheets were removed.

So only those students whose response sheets were complete in all respects were considered as the final sample of the present study. The break-up of the final sample for the differential analysis of the present study is given in table 4.2 and that of experimentation was given as table 4.3.

Table 4.2

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Variable</th>
<th>Groups</th>
<th>No.of Students</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>District</td>
<td>Idukki</td>
<td>102</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ernakulam</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td>Boys</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Girls</td>
<td>110</td>
<td>196</td>
</tr>
<tr>
<td>3</td>
<td>Stream of Study</td>
<td>State</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CBSE</td>
<td>102</td>
<td>196</td>
</tr>
</tbody>
</table>

Table 4.3

Break-up of Final Sample for Experimentation

<table>
<thead>
<tr>
<th>Groups</th>
<th>Treatments</th>
<th>No.of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group -1</td>
<td>VAM</td>
<td>67</td>
</tr>
<tr>
<td>Experimental Group-2</td>
<td>VCM</td>
<td>67</td>
</tr>
<tr>
<td>Control Group</td>
<td>DIM</td>
<td>62</td>
</tr>
</tbody>
</table>
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- **Rationale behind the selection of Ninth Standard Students**

  The present research study is rooted in Kohlberg's (1969) Theory on Moral Development. According to Kohlberg, in the moral development a shift occurs at the Post conventional level which starts at the age 13 onwards. Individuals at the post conventional level moves beyond unquestioning support for the rules and laws of their own society. At this level individuals judge morality in terms of abstract principles and values that apply to all situations and societies. Individuals evaluate morality in terms of internalized moral principles.

  Also there are many more details in Piaget's work on moral judgment, where he essentially found a series of changes that occur between the ages of 10 and 12, just when the child begins to enter the general stage of formal operations. So the Investigator decided to select ninth standard students as sample who fall in the age 13-14 years.

**4.4 Data Gathering Devices**

As the purpose points to the research question and the research question informs the choice of the method, so the method fits the type of data to be collected (Richards & Morse, 2013). Any scientific investigation requires data gathering tools or techniques which may vary in their complexity, design, administration and interpretation. Each tool is selected to be appropriate for the collection of certain type of evidence or information. Best (1998) says “Like the tools in the carpenter’s chest, each tool is appropriate in a given situation”. Selection of the tool thus catches importance in a successful research study.

Measurement is the assignment of numbers to events or objects according to rules that permit important properties of the objects or events to be represented by properties of the number system. (McBurney,2006). The underlying principle for any measure is to match it to the specific conceptual definition of the construct that will be used in the study.

The data gathering devices used in the present study are the following.

a) Personal Data Sheet

b) Instructional Materials based on Value Analysis Model (VAM)
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c) Value Analysis Work Sheet
d) Instructional Materials based on Value Clarification Model (VCM)
e) Value Clarification Work Sheet
f) Dilemma Sheet
g) Teaching Analysis Guide for Value Analysis Model (TAG for VAM)
h) Value Clarification Task Sheet
i) Instructional Materials based on Direct Instruction Method (DIM)
j) Affective Domain Process Scale
k) Emotional Maturity Scale

4.4.1 Personal Data Sheet

The intended differential analysis of data of the present study required the personal details of the students so as to classify them on the basis of gender, birth order, type of family, number of siblings etc. So the Investigator prepared a Personal Data Sheet to be filled in by the students which would provide all the necessary data regarding the students in both experimental groups and control group. The Personal Data Sheet is given as Appendix-A.

Development of Instructional Materials

The present study employs Value Analysis Model and Value Clarification Model to investigate their effect on the Affective Domain Processes of Secondary School Students. Each of these models is explained in detail.

4.4.2 Value Analysis Model

Value Analysis Model developed by Coombs (1971) is a highly systematic, step-by-step process for making moral decisions. It deals with gathering and weighing the facts in a value judgement. The major assumptions of Value Analysis Model are given below.

4.4.2.1 Major Assumptions of Value Analysis Model (VAM)

If one has to acquaint with Value Analysis Model, it is indispensable to understand the major assumptions behind it.

- As students began to identify and think about values, they will be able to realize that, values often conflict.
- Value conflict is a fact of life. Nobody can live without value conflict.
• Value conflict may often lead to inconsistencies in the behaviour of individuals.
• Value Conflict puts the individual in a painful situation. The individual tries to come out of the value conflict. He arrives at an appropriate and desirable conclusion.
• If students are given opportunities to identify, discuss and evaluate the alternative courses of actions along with the desirable consequences, they will be able to arrive at a conclusion relevant to the situation.
• Students can be helped to use logical thinking and scientific investigation to decide value issues and questions.
• Students can be helped to use rational, analytical processes in interrelating and conceptualizing their values.

4.4.2.2 Main Concepts used in the Value Analysis Model

The main concepts used in the value Analysis Model are explained below.

✦ Value Analysis

Value Analysis is a comprehensive, step-by-step processing of issues that are burdened with value clashes involving large number of facts and possible consequences. Value Analysis helps individuals to deal rationally with ethical problems related to his/her personal and social life. The skill in analysing a problem helps the person, to have an awareness of the facts involved in the problem, and to look at a problem from different angles, so the he/she can arrive at a solution in a logic manner.

✦ Value Dilemma

Value dilemma is a situation, argument or illustration in which one or more individuals are faced with a choice between two or more conflicting alternatives, each of which is desirable to some degree. The moral development technique most often used is to present a hypothetical or factual value dilemma story which is then discussed in small groups. Students are presented with alternative viewpoints within these discussions which hypothesized to lead to higher, more developed moral thinking.
The features of a value dilemma are: the individual is required to do either of the two (or more) actions; the individual can do each of these actions; but the individual cannot do both (or all) of these actions. There are three critical variables that make a dilemma appropriate:

1. The story must present "a real conflict for the central character", include "a number of moral issues for consideration", and "generate differences of opinion among students about the appropriate response to the situation."
2. A leader who can help to focus the discussion on moral reasoning.
3. A classroom climate that encourages students to express their moral reasoning freely (Gailbraith & Jones, 1975).

**Value Conflict**

When an individual faces a value dilemma, he faces a problem of selecting an alternative from two or more alternatives. The problem of selection of an alternative arises due to the conflict in values possessed by the alternatives. This type of conflict which an individual faces while dealing with a dilemma is a value conflict. Value conflict is the incompatibility of a person to decide which value he/she should select in that particular situation because both the values may be equally important for him. The intensity of the value conflict depends upon the values cherished by the individual or the society where he/she lives. It also differs from person to person, place to place and culture to culture.

**Probe Questions**

Probe questions invite students to explore the logic of their assertions and to interact with classmates in a manner that challenges their general pattern of thought. Probe questions are also known as in-depth questions which force students to grapple with completing claims and rival rationales. A ‘why’ or ‘what’ question is not sufficient to stimulate value reasoning. Students are needed to listen extended arguments from one another so that they can be able to understand others’ reasoning and logic.
Conceivable Alternatives

Alternatives are choices before the individual while facing a problem. Any dilemma will have certain alternatives that open a door in solving the problem. But these alternatives or choices will be available only when logical thinking is applied.

Value Criterion

To evaluate the desirability of consequences, it is necessary to have a set of criterion. A criterion is the characteristic or set of characteristics which make a consequence desirable or undesirable. Criteria are essential for intelligent, reasoned ranking. The development or selection of criteria is an extremely important task, because it gives a guideline to students by which they measure things. A value criterion ascribes value to some class of conditions (Coombs, 1971). They determine whether facts will be positive, negative or equal. The students should be exposed to think about a wide variety of criteria so that they will be equipped to look at consequences from all sides. Some criteria for the evaluation of consequences are given below and is appended as B.

- Moral
- Legal
- Aesthetic
- Environmental
- Economic
- Health
- Safety
- Religious
- Justice
- Liberty
- Loyalty
- Friendship
- Equality etc.

4.4.2.3 Framework of Instructional Materials based on Value Analysis Model (VAM)

The Investigator prepared a lesson plan guide and lesson transcripts based on VAM. On the basis of lesson plan guide the Investigator prepared the lesson transcripts based on Value conflicting situations. The format of the lesson plan guide
consisted of preliminary details, objectives and the seven phases of VAM. It is followed by the actual lesson transcripts.

The Investigator prepared the instructional material based on the selected contents. The format of the instructional material consisted of preliminary details, objectives and the seven phases of VAM.

(1) **Preliminary Details**: The investigator provided preliminary details such as Teacher’s Name, Class, Subject, Method of Teaching, Values in the Dilemma etc. in the instructional material.

(2) **Instructional Objectives**: An instructional objective is a specific and immediate goal attainable as a result of instruction. It is the description of the student’s terminal behaviour expected out of the ongoing classroom instruction. The instructional objectives of Value Analysis Model stated by the Investigator are:

The learner will;

1. Identify the values, which conflict in the value dilemma.
2. Think divergently in suggesting alternative courses of action.
3. Find out the possible consequence of each alternative.
4. Develop skill in selecting the criteria for evaluation of desirability of consequences.
5. Acquaint himself / herself with scientific scoring procedure based on selected criteria.
6. Develop the ability to suggest the best alternative.
7. Acquire the ability to propose suitable reasons for the selection of the best alternative.
8. Develop the skill of processing and analyzing the value conflicting situation.
9. Develop the skill of applying the value processing procedure in their daily life situations.

(3) **Syntax of Value Analysis Model (VAM)**

In the preparation of instructional materials based on VAM, the Investigator followed seven phases as described below.
Phase One: Presenting the Dilemma

In a class room, the value dilemma may be presented in the form of short readings, via film, film strip, LCD/OHP projection, xerox copies etc. After the presentation of the dilemma, the teacher asks certain questions in order to help the students to analyse the circumstances involved in the dilemma, defines terms, identifies the characteristics of the central character and states the exact nature of the dilemma.

In the present study, the Investigator prepared fifteen dilemmatic stories and sufficient copies of each story were taken. After introductory part in each class, copies of one dilemma were distributed among the students. The story was read by the Investigator while the students were reading the story silently.

An example of the dilemma presented to the students is given below.

<table>
<thead>
<tr>
<th>Dilemma- 1</th>
</tr>
</thead>
</table>

Mathew and Rajan are neighbours. They are very close friends. Mathew is a higher secondary school teacher and Rajan is a clerk in a Government office. Rajan’s son Roopesh is a XI student studying in Mathew’s class. When Mathew evaluated Roopesh’s Mathematics answer sheet of the XI final exam, to his surprise, he found that Roopesh had failed. Then he remembered that Roopesh was sick on the eve of Mathematics examination. He again went through the answer paper to see if he had missed any answer without giving mark. But his evaluation was correct. He knows that if Roopesh is not given two marks, he will have to write the exam again. Now Mathew is in a dilemmatic situation. Whether to evaluate the paper again to give the extra 2 marks needed for passing the exam or to be strict in evaluation without considering the friendship with Rajan. What should Mathew do in this situation?

After presenting the dilemma, the Investigator invited students to read out main points in the dilemma and write the same in their worksheet. Here the students are asked to describe what has happened in the incident. The difficult terms were defined by the Investigator incorporating the ideas of the students. Then the students were encouraged to ask factual questions related to the situation and the Investigator
answered in such a way that the situation seem to the students really conflicting. For this purpose the Investigator prepared in advance as many factual questions as possible together with answers. The clarification of factual questions helped students to have a clear understanding of the conflicting situation. Eg.

_Factual Question: Is there any other student who failed in the exam?_

_Answer_: No, only Roopesh has failed.

If the answer given by the teacher is ‘Many other students have failed along with Roopesh’, then the weightage given to the conflicting values seem varying. Then the students may think, if so-many students have failed, then let Roopesh also write the re-exam along with other students. In such a situation the dilemma become weak.

**Phase Two: Identification and Clarification of the Value Conflict**

In the second phase of the VAM, the teacher clarifies the value question and helps students to do the same. The responsibility of the clarification of Value conflict should be shared by teacher and students. The teacher might probe the exact value definition and relevant points of view. When the students do not know precisely what they are evaluating or from what standpoint they are to make, the deliberation tends to be frustrating and unproductive (Hersh, Miller and Fielding, 1980).

In this phase, the Investigator after clarifying questions posed by the students, encourage them to find the conflicting values faced by the central character. The Investigator defined each value in the situation. In certain cases the students find out more than two conflicting values in the same situation. In such cases the Investigator helped them to classify those values under two categories.

In the above mentioned dilemma, at one side there are _truthfulness_ (of teacher towards his profession) and _justice_ (of teacher towards other students) and at the other end _loyalty to friend or friendship_ (of teacher towards his friend) and _humanitarian consideration_ (of teacher towards his student).
Phase Three: Asking for Conceivable Alternatives

During this phase, the students are encouraged to enlist as many alternatives as possible. Then the most important two or three alternatives are to be selected, by eliminating the unimportant alternatives on the basis of feasibility.

Here the Investigator asked the students to write two important alternatives open to the central character. After eliciting the ideas from the students, the Investigator helped them to construct sentences. A few students were allowed to read out their selected alternatives so as to make sure that all students have fallen in to either of the two category.

In the present dilemma, the two alternatives selected by the students are the following.

Alternative. 1. Give two marks to Roopesh

Alternative. 2. Mathew should be strict in evaluation (Mathew should be truthful)

Phase Four: Asking for Possible Consequences of Each Alternative

In this phase students predict the consequences of each alternative. For this, the teacher asks the following questions.

1. What might be the consequences of each of these alternatives?
2. Who would be affected and how?
3. How will the future generation be affected?

Here the Investigator allowed the students for brainstorming and they were instructed to write all possible consequences of each alternative in the space provided in the worksheet. This phase required the Investigator to be very attentive in order to include consequences that are relevant and appropriate to the alternatives. The possible consequences of alternative II are given below.

Eg. Possible consequences of Alternative 2

1. Roopesh will fail in the exam
2. Rajan will be angry with Mathew.
3. Other students will get justice.
4. The friendship between Mathew and Rajan will be broken.

5. Mathew will be a truthful teacher in the future also.

6. The two families may become enemies.

7. Roopesh will study well to pass the exam

Phase Five: Asking for Evidence to Support the Likelihood of each Consequences occurring.

In this phase the teacher asks the students to search for evidence to estimate the degree of desirability of consequences which they support. The question encourages the students to search for data, reports, newspaper articles, television news etc. These evidences describe what happened in similar situations. The teacher assesses the relevance of each of the evidence.

In this phase of the present study the Investigator and students shared similar incidents they have heard or encountered. The Investigator brought before the students, the reports and photos from newspapers and magazines as an evidence to support the consequences.

In the above example, the Investigator brought a newspaper cutting which contains news about a student who committed suicide on his failure of class 10 exam.

Phase Six: Evaluation of the Desirability of Likely Consequences

Here the students evaluate the desirability of possible consequences of the alternatives. The criteria for evaluation may vary from dilemma to dilemma and from person to person. Each of the consequence is to be rated on a five-point scale on the basis of the selected criteria. If the consequence is undesirable the rating will be -2 to -1. If the consequence is desirable the rating will be from +2 to +1. If the consequence is neutral the rating will be zero. If the consequence does not show any relation with the selected criteria, it will be marked as ‘N.A’. The criterion-wise algebraic scores of each consequence of both alternatives will be calculated. These scores will then be totalled and thus get separate total scores for each alternative. The alternative which has got the higher score will be taken as the best alternative.
In this phase the Investigator asked the students to find out all the related general values of each alternative by analysing their consequences. These were written as the value criterion to find out the desirability of the possible consequences. After writing the criterion, the students have assigned scores from +2 to -2 according to their logic. Here the Investigator did not interfere so as to give maximum freedom to students in deciding their values. The doubts raised by the students were clarified then and there. Again care was taken in this phase to avoid any discussion among students, which may manipulate the results. After assigning the scores, the students were asked to total them and based on the total score, give rank to each of the consequences. A model of scoring procedure is given in the VAM Lesson Transcript in the Appendices.

**Phase Seven: Asking for a Judgment as to which Alternative is best and why?**

Based on the scores, the students decide that some consequences are desirable and some others are undesirable. The choices are ranked from the most desirable to the least desirable. They state the reasons for the selection of a particular alternative as the most desirable in this situation.

In the same manner, students will be able to analyze their value conflicts in different life situations and arrive at a logic decision by stating the reason for their selection.

In the last phase of Value Analysis Model of teaching, the students were asked to find out the most desirable alternative which has got the highest total score. Then the Investigator asked the students to find out the reason for their selection of alternative which is indicated by the highest subtotal of the consequence of the selected alternative. By doing this, the students make it clear that why they have selected that particular alternative in that situation and what prompted them to select that alternative. Though the majority students select either of the two alternatives as the best alternative, there may be a minority group also who select the other alternative.

Whatever be the choice of alternative, the reason behind the selection of a particular alternative will vary from student to student.
Eg. Best alternative for the central character

‘Mathew should be strict in his evaluation’

• Reason behind the best alternative.

Some students may say ‘Other students will get justice’ others may say ‘Mathew can be a truthful teacher in the future also’. The different perspectives on the same dilemma exhibited by students can be seen in this phase. Based on the syntax, a lesson transcript on VAM is appended as C.

4.4.3 Preparation of Value Analysis Model Worksheet

The Value Analysis Model of Teaching is an activity oriented method which helps the students to arrive at a decision through consecutive steps as prescribed in the model. The final decision depends upon the execution of different phases and the scientific scoring implied in the model. The worksheet developed by Passi and Singh(2004) was modified by the Investigator. The earlier version of the students’ worksheet is given as Appendix-D.

Due to the following inconsistencies, the Investigator decided to modify the worksheet.

• Turning over the page each time to assign five different scores to each of the consequences was very difficult.
• Consumes more time.
• Criteria selected are written at the end of the scoring column which made it difficult to assign scores.
• The short range and long range consequences concerning self and others make the students confused.

While the theoretical part of the student’s worksheet remained the same, the design was modified by the Investigator. The modified version of Student’s worksheet consisted of the following.
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1. **Database of Student**: A column at the top in the worksheet is provided to fill in the details of the students such as name, class, gender, subject, name of school etc.

2. **Main Points in the Value Dilemma**: While the teacher presents the Value dilemma, the students write the main points of the dilemma in the space provided in the worksheet.

3. **Difficult Terms**: The students are asked to identify and write the difficult terms in the value dilemma. The teacher gives explanation for the difficult terms.

4. **Factual Questions**: Here the students write the questions which need more explanation. The teacher clarifies the questions in such a manner that the students will feel the two sides of the value dilemma as equally strong or conflicting.

5. **Value Conflict in the Dilemma**: Here the students write about the dilemma faced by the central character by specifying the conflicting values in the given situation.

6. **Alternatives Open to the Central Character**: The students write the major alternatives open to the central character.

7. **Possible Consequences of each Alternative**: Here the students identify and write five possible consequences of each alternative.

8. **Desirability of Possible Consequences**: The students find out and write suitable value criterion to evaluate the desirability of the consequences. On the basis of selected criterion, the students assign scores to the five consequences and find the rank order of the consequences.

9. **Best alternative Open to the Central Character**: Here the students write the best alternative open to the central character by selecting the alternative which has obtained the highest score.

10. **Reasons for the selection of the Best Alternative**: Here the students write the reasons for the best alternative open to the central character.

The modified version of Value Analysis Model Worksheet is given as Appendix-E
4.4.4 Value Clarification Model

Value Clarification Model developed by Raths, Harmin and Simon (1978) is an attempt to provide an education solution that will reduce the behaviour symptoms of value confusion. To arrive at our own values, we must engage in the process of choosing, prizing and acting on conflicting values. The Value Clarification process is designed to promote intelligent value choice through the process of choosing, prizing and behaving. The major assumptions behind Value Clarification Model are given below.

4.4.4.1 Major Assumptions of Value Clarification Model (VCM)

- Students are mostly unaware of their own values.
- Through clarification process, students are able to compare their values with that of their friends, adults, different groups in society, and even other societies in other times.
- As awareness of one’s own value increases, students will reconsider and perhaps modify poorly founded values while, at the same time, hold more confidently values which stand the test of review and comparison.
- The students will be able to explain or provide reasons for holding a specific value position. Providing reason for a decision taken is the clarification aspect of the strategy.
- The students are able to communicate openly and honestly with others about their values.
- The students are able to use both rational thinking and emotional awareness to examine their personal feelings, values, and behaviour patterns.

4.4.4.2 Main concepts used in Value Clarification Model (VCM)

The value clarifying process involves seven sub processes.

**Choosing Freely:**

Choosing freely means persons choose something not as a result of peer or authority pressure but with a free will. There is little likelihood that an individual who is forced to adopt a particular value will integrate that value into his/her value
structure. It also denotes that the individual in many situations prefer to choose values irrationally or without applying cognitive abilities.

✦ **Choosing from Alternatives:**

This is closely related to the first process, Choosing Freely. Making a number of choices available to the individual increases the chance that the individual can choose with ease. It involves considering the alternatives before a choice is made.

✦ **Choosing after Considering the Consequences:**

Value clarification involves carefully examining the consequences of each alternative. Impulsive thoughtless choices do not lead to values. For something to guide one’s life meaningfully, it must emerge from understanding and judging. Only when the consequences of the alternatives are clearly understood, one can make intelligent choices.

✦ **Prizing and Cherishing:**

One should cherish his values and consider them an integral aspect of one’s existence. Person should be proud of and happy about his choice, not boastful pride but feeling good about it. Prizing and Cherishing means we are happy with our values and it flow from choices that we are glad to make.

✦ **Publicly Affirming**

If one has chosen his values freely after considering the consequences, one should be willing to affirm those values. One should not be ashamed of one’s values but should be willing to share them when occasion arises. This process involves sharing our convictions with others, standing up for what we believe, to voice our opinions, to publicly affirm our position.

✦ **Acting upon choices**

The values one hold should be apparent from our actions. It involves acting according to our choice and not just having good intentions. When we hold a dear value, it shows up in all aspects of our life. We have limited time, money and energy. How we spend our time, money and energy reveal what we value. Young people are
continually formulating beliefs, goals and ideals. As part of their education, they should be encouraged to act upon their beliefs, goals and ideals.

+ **Repeating**

If one acts on his own values, he should do so in a consistent and repeated pattern. It involves acting repeatedly and incorporating the behaviour into our life pattern. Our value will show in different situations, at different times with consistency and become a pattern of action.

### 4.4.4.3 Framework of Value Clarification Model

The Investigator prepared a lesson plan guide and lesson transcripts based on VCM. On the basis of lesson plan guide the Investigator prepared the lesson transcripts based on Value conflicting situations. The format of the lesson plan guide consisted of preliminary details, objectives and the seven phases of VAM. It is followed by the actual lesson transcripts.

1. **Preliminary details**: The preliminary details in this model are given which are similar to that of Value Analysis Model.

2. **Instructional objectives**:
   - The students indicate their position on an issue in an overt and explicit manner.
   - The students explain or provide reasons for holding a specific value position.
   - The students will be able to relate themselves with issues that have historical importance or are related to current social or political concerns.
   - Students will be able to affirm their position publicly.

3. **Syntax of Value Clarification Model (VCM)**

   The syntax of Value Clarification Model is given below. The differences and similarities observed between VAM and VCM are also provided wherever necessary.

**Introductory Part**: Here the Teacher presents a conflicting situation in which two or more values contradict with equal force. The doubts regarding the given situation are clarified by the teacher. The students are asked to form different groups and think of the conflicting situation.
Phase One : Choosing Freely

Here the students are asked to find an immediate solution independently, without any discussion with others. There is little likelihood that an individual who is forced to adopt a particular value will integrate that value in to her value structure. As soon as the student reads out or understands the dilemma, there arises an immediate solution. This immediate solution is the product of this phase. On the basis of the story narrated in the syntax of Value Analysis Model, examples are given at each phase of VCM. At this phase of the present conflicting situation students may find an immediate solution such as the following example.

Eg. Roopesh needs only two marks to pass the exam. Let the teacher help him out.

Phase Two: Choosing from Alternatives

In this phase, the students will work out in their respective groups. They are encouraged to find out all the possible alternatives open to the central character. Then each student chooses any one alternative which seems important to him/her.

In the above example, the students consider the other side also. Ie they opine that the teacher should comply with his ethical rules and so he should be truthful to his profession.

Phase Three: Choosing after Considering the Consequences

Here the students are asked to concentrate on the first alternative and write all the possible consequences of that alternative which are similar to that of VAM. The positive and negative consequences are to be found out by group effort. After writing all the positive and negative consequences for the both alternatives, the students are requested to select any one alternative on the basis of the consequences written.

This phase of Value Clarification Model is more or less similar to the fourth stage of Value Analysis Model.
Phase Four: Prizing and Cherishing

At this phase, the students are asked to find out the most important consequence for which they prize and cherish a particular alternative. For this, the students have to go through all the consequences and then find out the most important one and write the selected consequence in their worksheet. When the students discuss the consequences, the teacher asks questions such as ‘why this alternative is so important for the you? What will happen if this particular consequence is not paid attention?’

- Difference between VAM and VCM

In VCM this stage is progressing through clarifying questions and responses between teachers and students while in VAM, evaluation of possible consequences on the basis of selected criteria is done by the students.

In VCM teacher and students share equal responsibility in conducting this stage, while in VAM, it is the students who are carrying out the activity and teacher is only a facilitator here.

Phase Five: Affirming

Here the students read out the alternative selected by them and the reason for selecting that particular alternative for the central character. If there are differences in opinion within the group, this also has to be publicized. If the consequence or alternative selected by a student differs with other students in the group, the teacher should appreciate those students for the courage to think divergently. This is the most important stage of Value Clarification strategy as students provide the reason for the selection of a particular value, which shows that the students are completely aware of their value position.

Teacher: Student A, are you ready to affirm the option selected by you and clarify your position?

Student: Yes teacher, I feel that Mathew should be truthful in his evaluation, because if people are not honest to their profession, corruption will be crept in to all walks of life.
This phase of VCM is more or less similar with the seventh stage of VAM where students state the reason for the selection of the most desirable alternative.

**Phase Six: Acting when Situation Demands**

Here the students should be asked what will be their decision if they face a similar value dilemma in their life. Students should be asked to announce their own decision. Here the teacher should try to instil that particular value in the minds of the students. The teacher can encourage the students to act upon when situation demands.

Eg: Student: *If I were a teacher and face such a dilemma, I would evaluate the paper truthfully.*

**Phase Seven: Acting with a Pattern of Consistency**

If one acts on his values, he should do so in a consistent and repeated pattern. In this phase the students are asked to write individually their own life experience where they had selected this particular value i.e. truthfulness.

Based on the syntax a lesson transcript on VCM is appended as F.

**Instructional and Nurturant Effects of VAM and VCM**

The instructional and nurturant effects of VAM and VCM are the following.

- Identification of value conflict
- Selecting alternatives through divergent thinking
- Identifying consequences of the alternatives
- Developing skill of scientific scoring
- Identifying reason for best alternative
- Development of value judgement
- Development of Affective Domain Process skills

**Social System**

A moderately structured environment is desirable for both the models. The teacher is responsible for starting the phases and guiding students through the activity within each phase. Students depending upon their ability take major responsibility for
analyzing the values. Teacher makes sure whether students are moving from phase to phase or not. A non-judgmental attitude on the part of the teacher is essential.

- **Principles of Reaction**

  In the execution of Value Analysis Model and Value Clarification Model the following roles should be played by the teacher when he/she interacts with the students’ action:

  - The teacher should accept students’ responses (alternatives, consequences and judgment) in a non-evaluative manner.
  - The teacher should respond in such a way that students will be able to explore the various sides of the problem, generating alternatives and evaluating them.
  - The teacher should take a rule of discussant and guide or mediator, rather than an authority figure who has established a separate place.

- **Support system**

  Support system used for the implementation of VAM and VCM are,

  - Dilemma sheets for VAM and VCM
  - Chart showing criteria for evaluating consequences
  - Students worksheet for Value Analysis Model
  - Students worksheet for Value Clarification Model

- **Preparation of Instructional Materials based on Value Analysis Model and Value Clarification Model.**

  The first experimental group were to be treated with Value Analysis Model and second experimental group were to be treated with Value Clarification Model. The preparation of the instructional materials in both the models was done in the following five stages.

  1. Initial draft of the lesson transcripts
  2. Validation of the lesson transcript by experts
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3. Try-out
4. Final Draft of the lesson transcript

The primary requisition in the preparation of the instructional materials was to make discussions with secondary school teachers to find out the conflicting situations which secondary school students usually face. As per their suggestions and discussions with secondary school teachers and experts in the field of Value Education, fifty percent of conflicting situations were selected from the day to day conflicts in the adolescent stage and the remaining situations were produced in a future oriented way which describes conflicting situations that may arise in their future. The value conflicting situations were developed according to the syntax of Value Analysis Model and Value Clarification Model. Same situations were selected for both models in order to have control over the experiment.

1. **Initial draft of the Lesson Transcript**

The instructional materials for the first experimental group were prepared on the basis of Value Analysis Model of Teaching. The thread for the lessons was selected from value conflicting situations from school, family, society and other significant areas. Discussions with Secondary School Teachers were made in this phase to find out dilemmatic situations usually faced by the high school students. These situations were developed into stories that are devoid of loopholes, which prompt the individual to select either of the two alternatives. While preparing the dilemma care was taken in the following things,

- At the end of the story, the possible alternatives were given and care was taken that the students will not go for unnecessary alternatives.
- Contradicting values were given equal weightage, so that the student after reading the story would feel a real dilemma in his mind.
- The probing questions which were expected in each dilemmatic situation were prepared before hand and these questions were answered in such a way that no irrelevant options or alternatives will emerge.

Twenty such lesson transcripts were prepared by strictly following the steps of Value Analysis Model.
The instructional materials for the second experimental group were prepared on the basis of Value Clarification Model. The situations were similar to that of Value Analysis model. During the construction of dilemmatic situation, care was taken to see that the dilemma seems to the students as very crucial, and each dilemma aroused a genuine interest among the students to solve the problem with enthusiasm. Twenty lesson transcripts were prepared by following the steps in the Value Clarification Model.

2. **Validation of the lesson transcripts by experts.**

   The instructional materials prepared by the Investigator was given to the supervising teacher for modification. Two situations were altered as per the suggestions of the supervising teacher. Remaining eighteen situations were slightly modified. These lesson transcripts were submitted to four experts for validation. Among these experts, two of them were in the field of Value Education.

3. **Try-out**

   Both the instructional materials were then tried out on IX th standard students of two divisions of Holy Cross High School, Cherpunkal. The time needed to apply a lesson in the class and the pros and cons during the conduct of the lesson were noted down by the Investigator. As per the design of the study, fifteen lesson plans were selected with the help of the experts.

4. **Final Draft of the Lesson Transcripts**

   By incorporating the suggestions by the experts and the minor alterations in the light of try –out, the final draft of the lesson transcripts were prepared by the Investigator. The specimen copy of the final draft of one lesson transcript each in Value Analysis Model and Value Clarification Model are appended.

4.4.5 **Preparation of Students’ Worksheet based on Value Clarification Model (VCM)**

   In order to prepare the worksheet on the basis of Value Clarification, the Investigator searched internet and a number of books but could not find a suitable one. There were many clarification strategies such as, Clarifying response, Value sheets, Role-playing, Value continuum, etc on the basis of which lesson plans and
Methodology

student’s worksheets were evolved. The Investigator decided to prepare a worksheet for students based on Clarifying Response.

The basic strategy involved in Values Clarification is called the ‘Clarifying Response’. The Clarifying Response is “a way of responding to a student that results in his considering what he has chosen, what he prizes, and/or what he is doing. It stimulates him to clarify his thinking and behaviour and thus to clarify his values; it encourages him to think about them” (Raths, et al., 1966).

In tune with the Clarifying Response offered by Raths et.al, the Investigator prepared clarifying questions and responses which require the students to write their clarifying response in the space provided for. After each sub process one or two clarifying questions were given. The clarifying response is supposed to get the student to clarify his thinking and to examine his behaviour in order to determine consistency with his ideas—thereby clarifying what the student genuinely holds as a value. The clarifying response is designed to raise questions in the student’s mind. Further it was assured that no attempt from the part of the teacher is made to moralize, criticize and suggest values.

Eg. “Is this something that you prize?”
“Did you consider any alternatives?”
“Did you have to choose that; was it a free choice?”

The Student’s Worksheet on Value Clarification Model is given as appendix-G

4.4.6 Dilemma Sheet

Dilemma sheets were prepared for the purpose of helping the students while they are undergoing through VAM and VCM. These sheets contain dilemmatic stories which are presented by the teacher during the conduct of each lesson. These sheets are distributed among students before the session starts. A specimen copy of dilemma sheet is appended as H.

Observation Schedule

In the present study, two observation schedules namely TAG and Tasksheet were used for VAM and VCM respectively which are described below.
4.4.7 Teaching Analysis Guide for VAM (TAG)

Since values are considered as abstract concept, any transgression or misbehaviour will affect the quality of the study. In order to make the study trustworthy and to improve the quality of the treatment, the Investigator arranged faculty in each school to observe the classes taken by the Investigator. In those experimental classes where VAM was applied, the observer was provided with Teaching Analysis Guide (TAG) prepared by Passi and Singh (2004) TAG is mainly used for analysing the exhibited and unexhibited behaviours of the teacher when he/she is conducting the Value Analysis Model. As the VAM is progressing through consecutive stages, the observer uses the TAG and mark whether the teacher has exhibited the expected behaviour. Eg. At stage I- Presenting the Dilemma, the teacher has to clarify the questions related to the terms and facts related to the dilemma. If the observer mark VME, it means the behaviour of the teacher was very much effective and gets a score of +5. Accordingly for ME, AE, LE and VLE the scores such as 4,3,2 and 1 are given respectively. For the unexhibited behaviours negatives scores are given for VMN, MN, AN, LN and VLN in the reverse order. In other words the teacher has clarified all the questions related to the terms and facts in the dilemma. The response format is given in table 4.4 and 4.5

Table.4.4

Scale I – Scale for Unexhibited Behaviours

<table>
<thead>
<tr>
<th>Points</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Necessary (NN)</td>
<td>0</td>
</tr>
<tr>
<td>Very Less Necessary (VLN)</td>
<td>-1</td>
</tr>
<tr>
<td>Less Necessary (LN)</td>
<td>-2</td>
</tr>
<tr>
<td>Average Necessary (AN)</td>
<td>-3</td>
</tr>
<tr>
<td>Much Necessary (MN)</td>
<td>-4</td>
</tr>
<tr>
<td>Very Much Necessary (VMN)</td>
<td>-5</td>
</tr>
</tbody>
</table>

The score range of a teacher on this scale will be –95 to zero.
Table 4.5

Scale II – Scale for Exhibited Behaviours

<table>
<thead>
<tr>
<th>Points</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Effective (NE)</td>
<td>0</td>
</tr>
<tr>
<td>Very Less Effective (VLE)</td>
<td>1</td>
</tr>
<tr>
<td>Less Effective (LE)</td>
<td>2</td>
</tr>
<tr>
<td>Average Effective (AE)</td>
<td>3</td>
</tr>
<tr>
<td>Much Effective (ME)</td>
<td>4</td>
</tr>
<tr>
<td>Very Much Effective (VME)</td>
<td>5</td>
</tr>
</tbody>
</table>

The score range of a teacher on this scale will be zero to 95

With the application of TAG, the Investigator could examine the improvement of teaching through VAM day by day and make necessary modifications in the light of observations. The TAG is appended as I.

4.4.8 Value Clarification Task Sheet

In those experimental classes where VCM was used, the observer was provided with the Value Clarification Task Sheet and was requested to observe the class, complete the checklist and put the remarks at the end of the checklist. The observer had to verify whether the strategy seemed to fit logically into the lesson being taught and whether the teacher accepted the students' responses without judgment or evaluation and without imposing his or her own values and opinions and whether attempts were made to involve all students during intervention. The observer had to write his/her comments in addition to completing the checklist. As per the observations, the interference of the teacher in imposing her view points on students were minimised and the involvement of the whole class in the intervention was enhanced. Thus like TAG, VCM Task Sheet also helped the Investigator to enhance quality of teaching through Value Clarification Model. The Value Clarification Task Sheet adapted from Graduate School of Education, University of California is given as Appendix- J
4.4.9 Instructional Material based on Direct Instruction Method

For the control group values were taught to the students following Direct Instruction Method ie. the teacher adopted the lecture method incorporating only moral stories in her class, for teaching values.

4.4.10 Construction of Affective Domain Process Scale

An affective instrument should produce scores that differentiate people in terms of their level on one or more affective characteristics (McCoach, 2013). This task is challenging because affective characteristics such as self-efficacy, prejudice, values etc cannot be directly observed. Instead we must infer people’s degree or level of the trait based on the sample of their behaviours. In other words, the person must do something or respond in some overt way for us to make inferences about these internal, latent characteristics.

The term ‘scaling’ is applied to the procedures for attempting to determine quantitative measures of subjective abstract concepts. Scaling has been defined as a “procedure for the assignment of numbers (or other symbols) to a property of objects in order to impart some of the characteristics of numbers to the properties in question” (Kothari, 2004). Scales are common in situations in which a researcher wants to measure how an individual feels or thinks about something. The rationale for why this study employs a scale is given below.

- Rationale behind the selection of type of tool

Measurement Instruments that are collections of items combined into a composite score and intended to reveal levels of theoretical variables not readily observable by direct means are often referred to as scales. The present study utilizes a scale titled ‘Affective Domain Process Scale’ (ADPS) in order to substitute the observation techniques which was a good measure of Affective characteristics. Though direct observation is most suited for assessing Affective Domain, the person may exhibit overt behaviours that belie his or her attitude. In addition people tend to monitor their behaviour more carefully when they know that they are being observed. Direct observations are both costly and time consuming, making the method impractical for large scale data collection.
Further in this study a construct rather than an idea or concept is being measured. A few questions in an interview, or a number of items in a questionnaire may not capture the complexity of the phenomenon of interest. Multiple items in a scale may be able to capture the essence of such a construct with a degree of precision. Constructing a tool titled ‘Affective Domain Process Scale’ is thus justified.

- **Affective Domain Process- A latent variable**

The underlying phenomenon or construct that a scale is intended to reflect is often called the latent variable (De Vellis, 2012). The study of Affective characteristics compels researchers to quantify postulated attributes that cannot be observed directly. Such variables are often referred to as latent variables, constructs or factors. A construct is a thought that is systematically put together, an orderly arrangement of ideas, facts and impressions (Laurence, 2008). Some constructs are highly abstract and complex and the measurement of such construct is not an easy task.

Bollen (2002) identified three non-formal definitions of latent variables that psychologists and social scientists routinely adopt when they include these variables in statistical models. Researchers usually conceive of latent variable as (1) hypothetical constructs,(Harman 1960) , (2) variables that “can not be measured “(Joreskog and Sorbom 1979) or (3) simply data reduction devices that “ attain a parsimonious description of observed data” (Harman 1960).

In order to measure a construct like Affective Domain Process, the Investigator conceptualized the construct and gave a conceptual definition. Then this construct was operationalized and was given an operational definition. Operational definition is the process of defining a variable in terms of the specific actions to measure or indicate it in the empirical world. Keeping this theory in mind, the Investigator determined that among the many of the measuring tools, scaling technique would be appropriate for the present study.
**Methodology**

- **Latent variable- Best measured by Attitude Scales**

  Affective characteristics are latent constructs; therefore, their measurement relies upon the ability to make inferences from the attitudes exhibited on affective characteristic of interest by the respondents. The importance of attitudes in life is very great. They permeate our whole life and our self-concept. They make a great difference in almost every one’s life. They offer great possibilities for successful achievements as well as failure in life. Efficiency results when a person is impelled by his attitude to start, continue, and complete a project rather than to avoid an unpleasant task. Thus, attitudes are considered as an important motivator of behaviour and affect all human values. Crow and Crow (1969) wrote “His Attitudes towards others determines his social values. If the individual can learn to forget self and to be of service to those who need help, he has achieved personality characteristics that are essential in gaining of appreciation from others”.

- **Deciding on the type of Attitude Scales**

  Of all methods for the measurement of attitudes, by the most widely used and the most carefully designed and tested is the so called attitude scale, which typically yields a total score indicating the direction and intensity of an individual’s attitude towards the object. An attitude scale consists of a set of numerical values. The pattern of an individual’s responses provides a way of inference, something about his attitudes.

  In the present study Summated scale or Likert scale is being used in order to measure the subject’s agreement or disagreement with a particular statement. This scale was developed by utilizing the item analysis approach, by which each item is evaluated on the basis of how well it discriminates between those persons whose total score is high and those whose total score is low.

  The construction of Affective Domain Process Scale was done by observing the following steps as suggested by Likert in 1932. The phases in the construction of Affective Domain Process Scale are given below.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Reviewing the Literature</td>
</tr>
<tr>
<td>II</td>
<td>Determination of Aspects of Affective Domain Process Scale</td>
</tr>
<tr>
<td>III</td>
<td>Construction of Items</td>
</tr>
<tr>
<td>IV</td>
<td>Preparation of Initial Draft</td>
</tr>
<tr>
<td>V</td>
<td>Evaluation of Initial Draft</td>
</tr>
<tr>
<td>VI</td>
<td>Preparation of Second Draft</td>
</tr>
<tr>
<td>VII</td>
<td>Validation of the Scale</td>
</tr>
<tr>
<td>VIII</td>
<td>Pilot Form of the Scale</td>
</tr>
<tr>
<td>IX</td>
<td>Preparation of Scoring Key and Response Sheet</td>
</tr>
<tr>
<td>X</td>
<td>Administration of Pilot for of Scale</td>
</tr>
<tr>
<td>XI</td>
<td>Item Analysis</td>
</tr>
<tr>
<td>XII</td>
<td>Preparation of Final Scale</td>
</tr>
<tr>
<td>XIII</td>
<td>Reliability of ADPS</td>
</tr>
<tr>
<td>XIV</td>
<td>Validity of ADPS</td>
</tr>
</tbody>
</table>

**Phase I. Reviewing the Literature**

In the first step of constructing the tool, the Investigator studied and procured the tools available in the educational field. Sufficient number of items depicting the values from the past research studies and the documents were collected. The literature and researches related to the Affective domain and its components, Receiving, Responding, Valuing, Organization and Characterization were studied.

**Phase II. Determination of aspects of Affective Domain Process Scale**

The Investigator determined the aspects of Affective Domain Processes in the following way.

- **Selection of content for the Affective Domain Process Scale**

  The content of the ADPS was determined by taking into consideration the dominant place of ‘values’ in the Affective Domain leaving the other dimensions
such as motivation, emotions, interest, attitudes etc. Affective achievement is characterized by the degree of internalization of the underlying values associated with personal and social life of an individual.

Secondly, values are the base on which the objectives in the Affective Domain Taxonomy is built. The Affective continuum start with Receiving, the achievement of which means that, the learner is sensitized to the existence of certain phenomena and stimuli. The next level Responding is concerned with the responses which go beyond merely attending to the phenomenon. This is the category that many teachers will find best describes their “interest” objectives. From the next level itself, the criterion of worth or value is attached to a thing, phenomenon or behaviour. From this level, the learner displays this behaviour with sufficient consistency in appropriate situations that he/she comes to be perceived as holding a value. After internalising a value, the learner will need to organise different values in to a system. At the highest level of Characterization, the individual is characterized by a value or value complex in a consistent way. Here it can be understood that values are the core of the higher three levels of Affective continuum. With this rationale, in the present study, values are taken as the content for measuring the Affective Domain Processes of students. The Investigator made a thorough study on the classification of Values such as,

- Rokeach’s two fold classification of Values
- Plato’s classification of Values
- Parker’s Classification of Values
- Walter G Everett’s Eight Value Classification

Though the above classifications are of great importance in the general point of view, none of them seemed to suit the requirements of Affective Domain Processes of adolescents in the light of the present research. So the Investigator decided to construct the Affective Domain Process Scale by picking up, the most important values which the adolescents often come across, from a pool of values. In any classification, values seem overlapping and mutually exclusive so it is difficult to follow any particular classification. Therefore discussions were made with experts and as per their suggestion, a list of values was given to eight secondary school teachers, requesting them to select eighteen major values the students should possess for the development of their Affective Domain. A categorization of these eighteen values as per the classification by eminent scholars was not possible, as this study
required conflicting values for each of the dilemmas and these conflicting values should be from different categories. The first two categories were determined by the suggestions of experts as Social and Moral values which include the essential values that help the individual for a healthy living. The NCF, 2005 particularly emphasizes Education for Peace as one of the national and global concerns. As the position paper on Education for Peace prepared by the National Focus Group as part of NCF, 2005 puts it, “Peace is contextually appropriate and pedagogical gainful point of coherence of values”. Peace concretizes the purpose of values and motivates their internalization.” Education for Peace has been considered as a strategy to make value education operative. As peace values aim at equipping students with the values and attitudes required for living in harmony with oneself and others as responsible citizens. Recognizing its importance the third category were determined to be Peace values. Hence in order to prepare nine situations, nine values under Moral, Social and Peace Values were selected and the other nine values were used for making conflicting situations.

The following Nine sets of conflicting values were included in the blueprint for the construction of ADPS.

1. Social Responsibility x Friendship
2. Co-operation x Achievement
3. Equality x Team spirit
4. Honesty x Dutifulness
5. Justice x Empathy
6. Dignity of Life x Obedience
7. Tolerance x Excellence
8. Forgiveness x Love
9. Peace x Loyalty

➢ Selection of components for the Affective Domain Process Scale

Affective Domain consists of five components which are hierarchically arranged from lower level to higher level in a continuum of internalization, viz. Receiving, Responding, Valuing, Organization, and Characterization. As the level go
higher, the complexity also increases. For the present study, the higher three levels in the Affective continuum are selected because of the following reasons.

1. The higher three levels are indicative of a character system.
2. The lower levels are included in the higher levels in the continuum
3. Receiving and Responding levels are always operative from childhood onwards, and the higher three levels are more important in the adolescent age.
4. Delimiting the study was also necessary, as selecting all the five components would make the study too vague.

The components selected for the present study with their subcomponents are enlisted below.

1. Valuing
   a. Acceptance of a Value
   b. Preference for a value
   c. Commitment
2. Organization
   a. Conceptualization of a Value
   b. Organization of a Value System
3. Characterization by a Value or Value complex.
   a. Generalized set
   b. Characterization

**Phase III. Construction of Items**

For preparing items one can use three sources namely:

(1) Existing scales,
(2) Review of available literature and documents
(3) Discussion with persons working in the field.

For the present investigation, all the sources were fully utilized. The Investigator searched through the available existing scale, literature, past research studies and documents on the Affective instruments. Though the data obtained were meagre, it could back-up the discussions regarding tool construction with the experts in the field of Education especially in Values Education. On the basis of these, the
Investigator constructed the items for the preparation form of the scale to measure the Affective Domain Processes of students in the following steps.

**Preparation of Blueprint**

The blueprint of the Affective Domain Process Scale was prepared based on the higher three components in the Affective Domain Taxonomy. The components were Valuing, Organization and Characterization and the contents were Social, Moral and Peace values. Details are given in the table below.

Table. 4.6
*Weightage given to components of ADP*

<table>
<thead>
<tr>
<th>Components of ADPS</th>
<th>Subcomponents</th>
<th>No of Items</th>
<th>Subtotal</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuing</td>
<td>Acceptance of a Value</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preference for a Value</td>
<td>9</td>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Commitment</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>Conceptualization of a Value</td>
<td>12</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Organization of a Value Complex</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characterization</td>
<td>Generalized set</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>by a Value Complex</td>
<td>Characterization</td>
<td>12</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>75</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The number of sub components under each component were 3, 2 and 2 respectively. The total number of items taken under each subcomponent of Valuing was nine and each of the sub components under Organization and Characterization were 12 items. Weightage given to the contents of ADPS is presented in the table 4.7
Table 4.7

Weightage given to contents of ADP

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Contents of ADPS</th>
<th>Values</th>
<th>No of Items</th>
<th>Sub total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social Values</td>
<td>Social Responsibility</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co-operation</td>
<td>9</td>
<td>26</td>
<td>34.66 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equality</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Moral Values</td>
<td>Honesty</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Justice</td>
<td>8</td>
<td>24</td>
<td>32 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dignity of Life</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Peace Values</td>
<td>Peace</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tolerance</td>
<td>8</td>
<td>25</td>
<td>33.33 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forgiveness</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>75</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

By giving due weightage to the content and components, the Investigator prepared the blueprint. The total number of items in the blueprint was 75 and it is given as Appendix-L.

- **Writing Dilemmatic Situations**

  In order to write the dilemmatic situations, the Investigator enlisted all the Social, Moral, and Peace Values as per the blueprint. Then the thread of the stories was crafted in which two major values seemed conflicting. These threads were developed into fine stories which depict a value dilemma. Each dilemma has a central character and a situation where the central character is facing a value conflict. Nine such stories were developed by the Investigator.

- **Writing of Items**

  The present scale was a situation based scale, the items of which can be answered only on the basis of the dilemmatic situation prior to the items. On the basis of each dilemmatic situation, statements were written by considering the components and subcomponents of the scale. Two or more statements were written under each subcomponent. De Vellis (2012) says, “if the item pool is exceptionally large, the
researcher can eliminate some items based on a priori criteria, such as lack of clarity, questionable relevance or undesirable similarity to other items”. Keeping this idea in mind, the Investigator prepared one hundred and fifty seven statements on the basis of nine value conflicting situations. At this phase the Investigator felt a need to modify the blueprint due to some insight gained from scrutinizing the theoretical overview and the upcoming reliability measures of the tool.

**Modification of Blueprint**

The theory says that the components and the subcomponents in the Taxonomy of Affective Domain objectives are arranged in the hierarchical order. The accomplishment of one level leads to the next higher level. So once content is selected ie the story is written incorporating two conflicting values, then the items should be written in accordance with the hierarchical order of sub components from lower to higher level.

Further, in order to permit split-half reliability, the blueprint had to be modified. The final blueprint consists of a total of 64 items. 63 items were allotted under seven components and nine contents allowing one item each. The lowest sub component under Valuing was allotted an additional item. The final blueprint is given as Appendix-M.

While selecting the items, the Investigator carefully placed each statement in the continuum of internalization from lowest to highest. During this stage, it was observed that the items depicting the facts should not be included. Instead they should depict the actions the individual might have take up in a given situation. The wording of the statement was simple, so that even the beginner could read and understand. Therefore, the complex sentences were avoided as far as possible. Items having double meanings, special meanings etc were avoided in the initial stage of preparation itself. Ambiguous items were simplified. The pool of items were then analysed for the purpose of classification.

**Screening and Scaling of the Items**

After selecting the items, it is necessary to screen them by checking it whether it depicts the intended attitude. For this, the Investigator with the help of the
Methodology

The supervising teacher screened the items. Thus all the items which screened for grammatical framework and the contents and components were measured for its intended purpose also. In order to classify the items, they were then scaled for its positive and negative polarity in terms of intended attitude.

- The Classification of Items.

The classification of items in the present scale was done based on the intended attitude. Following is the rationale for the inclusion of more positively worded items.

- Rationale for the Inclusion of more Positively Worded Items

Many scale developers choose to write negatively worded items that represent low levels or even the absence of the construct of interest as well as the more common positively worded items which represent the presence of the construct of interest. The goal is to arrive at a set of items, some of which indicate a high level of the latent variable when endorsed and others that indicate a high level when not endorsed. The intent of wording items both positively and negatively within the same scale is usually to avoid an acquiescence, affirmation or agreement bias. These interchangeable items refer to a respondent’s tendency to agree with items irrespective of their content.

In the present scale, each item should depict any one of the conflicting values in the dilemma. Most of the statements (positively worded) while adhering to any one of the values, mark the absence of the opposing value with regard to the dilemmatic situation. At the same time if a negatively worded statement is used it may mark the absence of a particular value included in the statement but that does not assure the presence of the opposing value. ADPS is intended to measure the presence of values (not the absence of values) that may ultimately lead to characterization of individuals. So negatively worded sentences are rarely used and whenever used care was taken to see that the intended attitude is exhibited in the statement.

Eg. I won’t act unfairly except when it is to save a human life.

As against the usual procedure of scaling the items on the basis of positively and negatively worded items, the items in this tool were scaled on the basis of intended attitude.

- Items in terms of intended and unintended attitude:

The items which were in favour of the intended attitude were scaled as positive and the remaining items which were against these were scaled as negative.
Methodology

Usually an item measure one latent variable on a specified content. But the present ADPS deals with two contents at the same time in the form of conflicting values. Each item when showing an agreement with one value mechanically disagree with the opposing value mentioned in the situation. In the first dilemmatic situation, the conflicting values are Social Responsibility and Friendship. The intended attitude on the basis of Models of Value Education in this situation is the Social Responsibility.

Eg. *I always use my energy and time for the welfare of the society.*

If the respondent agrees with this statement he agrees with the intended attitude ie. Social Responsibility and at the same time disagrees with the unintended attitude, Friendship.

The number of positive and negative items based on the intended attitude is shown in the following table 4.8

Table 4.8

*Number of Positive and Negative Items in terms of intended attitude under each Component in the Preparation Form of ADPS*

<table>
<thead>
<tr>
<th>Components of Affective Domain Processing</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>Valuing</td>
<td>24</td>
</tr>
<tr>
<td>Organization</td>
<td>21</td>
</tr>
<tr>
<td>Characterization</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
</tr>
</tbody>
</table>

A total of 52 items under Valuing were selected of which 24 items positive and 28 negative items. Organization have a total of 37 items consisting of 21 positive and 11 negative items and Characterization have 16 positive and seven negative items constituting a total of 23 items. Thus the ADPS consists of 107 items. The table below presents the break-up of intended and unintended attitude items under each dilemmatic situation given in the ADPS.
Table 4. 9

*Break-up of intended and unintended attitude items under different dilemmatic situations for the Draft Scale*

<table>
<thead>
<tr>
<th>Dilemma No.</th>
<th>Intended Attitude</th>
<th>Unintended Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>O</td>
</tr>
<tr>
<td>Friendship x Social responsibility</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Honest x Duty towards family</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Dignity of life x Obedience</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Achievement x Cooperation</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Equality x Team spirit</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Empathy x Justice</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Tolerance x Excellence</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Peace x Loyalty</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Forgiveness x Love</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sub total</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>46</td>
</tr>
<tr>
<td>Grand Total</td>
<td>107</td>
<td></td>
</tr>
</tbody>
</table>

Note: V = Valuing  O= Organization  C= Characterization

The total number of items depicting the intended attitude was 61, of which Valuing, Organization and Characterization were given 24, 21 and 16 respectively. Compared to intended attitude, the unintended attitude were given less number items i.e. 46. Under the unintended attitude, fewer items were included as the levels go higher because measuring an unintended attitude is less worthy especially at the higher levels.
Phase IV: Preparation of initial draft

The initial draft of the Affective Domain Process Scale comprised of nine value conflicting stories/situations followed by one hundred and fifty seven statements. The contents and sub contents were specified at the beginning of each story. The major values which are conflicting in the situation were given as the title of the story with a view to helping the experts for validation. At the beginning of each statement, the component and sub components were specified.

Phase V: Evaluation of initial draft

The initial draft of the scale was then given to the research supervisor for evaluation. Out of total items, seven were removed in order to avoid repetition. Thirty statements were marked for re-writing as they required more clarity. Forty eight statements which were ambiguous were corrected to make it more meaningful.

Phase VI: Preparation of second draft

A second draft was prepared after making necessary changes as suggested by the supervisor. A total of one hundred and fifty statements were included in the second draft. In this draft also, the components and subcomponents were kept as they would be needed at the time of validation of the scale. The response part was removed from this draft and a separate scoring key was prepared. As per the suggestion by the research supervisor the second draft was prepared with a view to making it ready for validation. So this draft began with the instructions to students for answering the scale. After the instructions, a sample question and response were given.

Phase VII: Validation of the tool

After preparing the response sheet and scoring key, the tool was given for a critical scrutiny to five well qualified experts in the field of Teacher Education who had done either Value Education research or guided the same. List of experts is attached as Appendix- N. A write-up on what do the components and sub components in Affective Domain Processes mean, together with blueprint was also
provided for the easy validation of the tool. The experts were requested to look critically into the tool, keeping in mind the following aspects.

- Whether the items measure the components of Affective Domain Processes
- Whether the contents and specifications are appropriate
- Specificity and clarity of items
- Suitability and accuracy of the language
- Suggest any other specific aspects related to the items prepared

After the validation, the number of items in the tool was reduced to one hundred and seven by complying to the general agreement of the experts. The item on which at least three judges were agreed was selected. Forty three items were removed because of the disagreement of three or more judges. Some of the items were altered for giving clarity and objectivity. After this first phase of validation the tool, it was given to three language experts for checking the language of the tool.

**Phase VIII: Pilot form of the scale**

Keeping in view the suggestions by the experts, a third draft was prepared which obviously became the pilot form of the Affective Domain Process Scale. All the additional information provided in the tool for the purpose of validation was removed. They include the specifications on content, component, sub component, scoring key and positive / negative markings. This draft was ready for pilot testing. The pilot form of ADPS is given as Appendix- O.

**Phase IX: Preparation of Scoring Key**

The response format were decided to be a five point scale. It means each item in the scale was followed by five responses. The scoring key for the tool titled “Affective Domain Process Scale” was thus prepared by the Investigator. The responses indicating degree of strength of attitude are Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD). Arbitrary scoring weights of 5,4,3,2 and 1 are used for SA,A,U,D, and SD for the statements favouring a point of view and weights of 1,2,3,4 and 5 are used for the statements which shows unfavourable attitude. The scoring key includes 107 rows and 6 columns. The
tentative highest score for the total items in this draft was 535 and the lowest score was 107. The scoring key for the second draft is appended as P final tool as Q.

**Phase X: Preparation of Response sheet**

The response sheet to be given to the students was prepared in advance as this would also require validation by experts. The preliminary details of the students like name, class, gender and name of the school were asked in the beginning of the response sheet. The response sheet is given as Appendix – R.

**Phase XI: Administration of the pilot form of the scale.**

After preparing the pilot form of the scale, it was administered on the selected sample. The sample was selected in such a way that it should have the representation of the total population. Hence, it was decided to follow a random method of seeking the sample. Accordingly for the pilot testing of the tool titled “Affective Domain Process Scale” four schools were selected. These schools were Holy Cross HSS Cherpunkal, St. Sebastians HSS, Kadanad and Vimala Public school, Thodupuza and Shantal Jyothi Public School, Muttom. The scale was applied to 387 students of standard nine. Nine incomplete response sheets were removed. Further eight response sheets were removed randomly in order to reduce the number to 370, to follow the statistical procedures for item analysis. The time required for the administration of the tool ranged from 55 minutes to one hour.

**Phase XII: Item Analysis of ADPS**

In order to prepare the final form of the attitude scale, the Investigator had done item analysis. The purpose of item analysis is to select from a pool of items the ones which most effectively obtain the information one wants and to eliminate the less effective items from the draft scale. Many techniques have been developed to show the degree to which an item is effective in discriminating individuals having most favourable and least favourable attitudes on either the total score or some other external criteria. Here the method adopted by the Investigator was to set up two extreme groups on the basis of the total scores on the scale. For this, the responses of each student were scored and they were fed to the computer for item analysis. On the basis of the total scores, the students were arranged in ascending order. The 27% of
the top scorers (NH= 100) and another 27 % of the low scorers (NL=100) were taken for item analysis. The frequency distribution of responses for all the 107 statements and the ‘t’ -value of each item belonging to both halves were found out. The value of ‘t’ is a measure of the extent to which a given statement differentiate between the high group and the low group. The ‘t’ value was found out using the formula,

\[
t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum(X_H - \bar{X}_H)^2 + \sum(X_L - \bar{X}_L)^2}{N(N-1)}}}
\]

Where,

\(\bar{X}_H\) - the mean score on a given statement for the high group

\(\bar{X}_L\) - the mean score on the same statement for the low group

\(X_H\) - the score of a given individual for a given statement in the high group

\(X_L\) - the score of a given individual for a given statement in the low group

\(N\) – the number of subjects in the criterion groups

The ‘t’ values equal to or greater than 1.75 indicates that the responses of the high and low group to a statement differ significantly. From the total of 107 items, 14 items were discarded at the initial phase of item selection as they had a discriminating power below 1.75. Among these 14 items, 3 items had negative discriminating power. 93 items were good items; most of them having high discriminating power which ranged from 1.75 to 8.32. As per the blue print of the Affective Domain Process Scale, a component wise selection is made and thus 64 items were selected for the scale, the t values of which ranged from 2.18 to 8.32. Though some intended items had a discriminating power of above 5, they were not included in order to consider an unintended item under a particular component. Since majority of the items had high discriminating power, the Investigator had the opportunity to select the items on the basis of their positive and negative polarity. The ‘t’- values of responses to 107 statements are given as Appendix –S.
Phase XIII: Preparation of Final Tool

The final tool is comprised of 64 items including 38 intended and 26 unintended items of which 46 items are positively worded and 18 are negatively worded. Usually an attitude scale comprises of equal number of positive and negative items. But in the present study it was determined to increase the number of positive items in terms of intended attitude and positively worded items, and following is the rationale for such selection.

• Rationale for including more intended items

In most of the attitude scale if a person disagrees with a particular positive statement, he/she would score high on that statement and that means the person has favourable attitude towards the specified component. It can also be observed that each item comprises of presence or absence of only one aspect at a time.

But in this scale, the dilemma is self explanatory that there are two equally contradicting values. Each intended attitude item while overtly expressing the presence of one value, covertly expresses the absence or less desirability of the opposing value. But a unintended attitude item while disagreeing with the ‘unselected’ value does not always guarantee that he has selected the other value. In other words the person after studying the dilemmatic situation would decide to stick to a particular value in that particular dilemma. As characterization is the internalization of values, it is better we define it in terms of presence of a particular value and there by holding a value system. In such a situation it is better to agree with an intended attitude, instead of disagreeing with an unintended statement, though both of them would yield the highest score. In order to comply with the characteristics of each component, the Investigator included more intended items in the blueprint and constructed the items accordingly.

The number of intended and unintended items of the final tool is given in the table 4.10.
Table 4.10

Break-up of Intended and Unintended Attitude Items Under Different Dilemmatic Situations for the Final Tool

<table>
<thead>
<tr>
<th>Dilemma No.</th>
<th>Intended Attitude</th>
<th>Unintended Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>O</td>
</tr>
<tr>
<td>Friendship x Social responsibility</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Honest x Duty towards family</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dignity of life x Obedience</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Achievement x Cooperation</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Equality x Team spirit</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Empathy x Justice</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tolerance x Excellence</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Peace x Loyalty</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Forgiveness x Love</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sub total</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

Note: V = Valuing  O= Organization  C= Characterization

**Rationale for the sequential order of the items in the scale**

The statements under each dilemmatic situation followed a pattern, lower to higher levels, because the higher levels could be achieved only after achieving the lower level. Thus the statements were placed in a sequential manner as they would ensure accomplishment or non- accomplishment of a certain level. i.e. Without Receiving, no one can Respond, and without Responding, the level Valuing cannot be achieved.

The maximum and minimum scores which the students score on ‘Affective Domain Process Scale’ was 320 and 64 respectively. The final ADPS is given as Appendix- T and response sheet of the scale is given as Appendix- U.
**Reliability of Measuring tools**

Whenever anything is measured, whether in the physical, biological or behavioural sciences, there is some possibility of chance error or measurement error. So any investigation would require reliable measuring tools. Joppe (2000) defines reliability as ‘the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable’.

Kirk and Miller (1986) identify three types of reliability referred to in quantitative research, which relate to: (1) the degree to which a measurement given repeatedly remains the same (2) the stability of a measurement over time; and (3) the similarity of measurements within a given time period.

The different methods of estimating reliability coefficient are the following.

1. **Test-Retest Reliability or Coefficient of Stability**: In this method, a single test is administered twice on the sample with a reasonable gap. Pearson’s method of correlation is used for obtaining coefficient of reliability. A high coefficient of stability shows that there is low variable error in the sets of obtained scores.

2. **Parallel Form of Reliability**: This method of reliability requires that two forms of the test are administered on same sample of subjects on the same day after a considerable interval. The Pearson’s method of correlation is used for calculating the coefficient of correlation between the scores of two sets of scores obtained by administering the two forms of the test.

3. **Split half- Reliability**: The Reliability by split-half Method is the simplest obvious method of obtaining measures from the same test. The agreements between the two sets of scores of odd numbered and even numbered items of the same test is determined by means of correlation co-efficient.

**Phase XIV: Reliability of Affective Domain Process Scale**

To assert the reliability of the Affective Domain Process Scale, it was very essential to obtain the final evidence of the scale. Its merits should be established; no matter how carefully the scale was planned and prepared. In order to report the results of the measuring tool to enable the users to evaluate better, it was necessary that this step to be performed.
In the present study, the researcher decided to employ Split-half Reliability using Spearman-Brown formula. There are different ways to split the test into two halves.

a. First - Last halves
b. Odd number- Even number halves
c. Balanced halves
d. Random halves

The components and sub components of Affective Domain objectives are arranged in a hierarchical order. Therefore odd - even halves are not suitable since each item represent a higher level to the item below. So the scale can not be halved equally. Further this scale consisted of 9 dilemma situations and their corresponding items. First half- Last half method is not suitable here since equal weightage can not be given to both halves. Random assignment of items is also not possible due to the above mentioned reasons. The most suitable method of splitting the scale into two equal halves was Balanced halves method. As the scale consisted of three components such as Valuing, Organization and Characterization the 64 items were equally divided into two halves by giving due representation to these components maintaining a balanced approach. The value of co-efficient of correlation between the half tests was .6784. The reliability co-efficient of the whole test was calculated using Spearman Brown Prophecy formula $R= \frac{2r}{1+r}$ where ‘$R$’ is the reliability co-efficient of the whole test and ‘$r$’ is the co-efficient of correlation between the half tests. The reliability coefficient of the whole test was calculated as .6813.

Care taken during item preparation for enhancing reliability

The Investigator carefully studied different books on scale development and due care was taken while preparing the items for the scale. The items were prepared by following the essential rules of scale development and by taking into consideration the theoretical base of the present study. The major aspects concerning item preparation are given below.

- Rule of ‘time frame’ in the item preparation consistent with theory of the present study

Items developed can take different forms which are intended to assess relatively transient states or relatively enduring traits (Zuckerman, 1983). Theory is an
important guide in this process. The important questions in this regard are, Is the phenomenon of interest a fundamental and enduring aspect of individual’s personalities, or Is it likely to be dependent on changing circumstances? In the present scale both these forms are incorporated. At the lower levels of Affective Domain Processes, especially in Organization Process the respondent’s transitory nature is measured as in the following example.

Eg. *Even though I stand for friendship, I will ignore my friend’s personal needs when it comes to matters of protecting social security.*

In theory the sub component of Organization ie. *Conceptualization of a Value* permits the individual to see how the value relates to those already holds or to new ones that he is coming to hold. This is somewhat transitory or relative in nature.

But when it comes to the level of Characterization the objectives categorised are more than generalized sets in the sense that they involve a greater inclusiveness and, within the group of attitudes, behaviours, beliefs or ideas, an emphasis on internal consistency (Krathowl, Bloom and Masia, 1964). This internal consistency is measured in the present study in tune with the ‘enduring trait’ presented by Zuckerman (1983) in the following way.

Eg.1. *I have the maturity to comprehend and satisfy the needs of the society, putting aside my personal needs.*
Eg. 2. *I always ensure my full co-operation in matters of common good.*

- **Use of Redundancies in the initial draft of scale**

  Redundancy is an attempt to capture the phenomenon of interest by developing a set of items that reveal the phenomenon in different ways. In the present study, relevant redundancies are used in order to use more reliable item sets.

Eg.1. *I always see to it that relationships (affiliation) are not hindrance to helping someone.*
Eg. 2. *When it comes to saving a life, I won’t allow other considerations like parents, family and society to hinder my actions.*

The above type of redundancies which express the similar idea in somewhat different ways are used in the ADPS where ever possible. They are redundant with respect to the variable of interest and not with respect to the grammatical structure and incidental vocabulary.
Phase XV: Validity of Affective Domain Processes Scale

A standardized tool is always designed for general use and therefore it should be a valid besides being reliable. Validity requires accurate representation of what you are studying (Maxwell, 1992). When a measure is valid, it reports data along only one dimension and prevents the Investigator from making erroneous conclusions about the nature of results (Nation, 1997). Most of the users before selecting the test for use look carefully into the values of validity; therefore the constructor of the scale should make clear the concept of the validity.

The validity is an important characteristic of any research tool. It depends upon the efficiency with which it measures that it attempts to measure. In other words it is defined as the accuracy with which a tool measure what it claims to measure. The term validity and purpose of the test are very closely associated with each other. A scale, which fulfils the purpose for which it is designed, is called a valid scale.

Freeman (1970) has defined validity index as: “An index of validity shows the degree to which a test measure what its purpose to measure with accepted criteria.” Freeman suggested that for validating the test, it must be compared with some accepted standards or other criteria, which are regarded by experts as the evidence of the traits of ability to be measured by the scale. Consequently, the selection of validation criteria is of prime importance in the process of scale validation.

The attitude scale constructed for this research study possess mainly three kinds of validity ie, face validity, content validity and construct validity.

a) Face Validity:

Face validity is an estimate of the degree to which a measure is clearly and unambiguously tapping the construct it purports to assess. Thus, face validity refers to the “obviousness” of a test—the degree to which the purpose of the test is apparent to those taking it. Tests wherein the purpose is clear, even to naïve respondents, are said to have high face validity; tests wherein the purpose is unclear have low face validity (Nevo, 1985).

In ADPS the respondents are provided with the knowledge that this particular scale is used to measure the affective characteristics such as values and attitudes. Each item in the scale clearly measures either an attitude or a value. Therefore it is evident that from the very appearance ADPS possess face validity. In order to ensure face
validity of the present scale, the tool was given for a critical scrutiny to five well qualified experts in the field of Teacher Education who had done either Value Education research or guided the same. The experts were requested to look critically in to the tool, keeping in mind the following aspects ie. specificity and clarity of each items, suitability and accuracy of the language used.

b) **Content Validity**: Content Validity is also named as rational or logical validity. It is estimated by evaluating the relevance of the test items in relation to instructional objectives and actual subject matter. Content validity concerns item sampling adequacy- the extent to which a specific set of items reflects a content domain. The issue of content validity is subtle when measuring attributes such as beliefs, attitudes or dispositions because it is difficult to determine exactly what the range of potential items is representative. However having items reviewed by experts for relevance to the domain of interest can help maximise item appropriateness.

As content validity is intimately linked to the definition of the construct being examined, the Investigator carefully defined the variables operationally. At the initial stage of the tool construction the content validity was ensured by giving due weightage to contents and components. The items were constructed on the basis of the blueprint prepared in advance. Then the scale was given to a panel of experts in the field of Value Education. The experts were requested to judge the relevance of each item ie. whether each item measures what it intends to measure, its adequacy and clarity and whether each item corresponds to the definition of the constructs of the present study. Suggestions given by the experts were incorporated in the scale during preparation of draft form of the scale. Thus ADPS possess content validity.

c) **Construct Validity**: For the present scale, the construct validity was employed to estimate the validity index by the statistical techniques. In the case of determining the construct validity the first task is to define the measure. Thorndike and Hagen (1957) have rightly explained what the phrase “Construct” really means: “Again we are thrown back on rational analysis, but this time we are trying to analyze concept and see what is implied by it, rather than to make a catalogue of content.” For establishing the construct validity of the present scale, the concept of Affective Domain Processes scale translated into different aspects. It was analyzed in the behaviour of aspects. It was against this analysis the researcher should check his own
scale to see the construct validity. Thorndike and Hagen (1957) have rightly put: “the
analysis and the evaluation are now concerned not with content or subject matter
acted upon but with the function of process that are applied to some content.” For
establishing the construct validity of the scale Item-Test Correlation was applied to
the data obtained from 370 students. The value calculated by the item-test correlation
method is mentioned below in table 4.11

Table: 4.11

Construct Validity of Components of Affective Domain Processes Scale

<table>
<thead>
<tr>
<th>Components of Affective Domain Processes</th>
<th>Validity Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valuing</td>
<td>.689</td>
</tr>
<tr>
<td>Organization</td>
<td>.623</td>
</tr>
<tr>
<td>Characterization</td>
<td>.598</td>
</tr>
</tbody>
</table>

4.4.11 Emotional Maturity Scale (EMS)

The present study employs Emotional Maturity Scale constructed and
standardised by Singh and Bhargava (2010) for measuring the Emotional Maturity of
students. This was used for classifying the students as High, Average and Low
Emotional Maturity Groups and to compare the effectiveness of VAM and VCM with
respect to these groups. A brief narration of Emotional Maturity Scale is followed and
the scale is appended as V.

Smitson (1974) defines Emotional Maturity as “the process in which the
personality is continuously striving for greater sense of emotional health, both intra-
psychically and intra-personality” (as cited in Singh & Bhargava, 2010).

Criteria of Mature Emotional Behaviour

Bernard (1954) gives the following as the criteria of mature emotional
behaviour.

1. Inhibition of direct expression of negative emotions
2. Cultivation of positive, up building emotions
3. Development of higher tolerance for disagreeable circumstances
Methodology

4. Increasing satisfaction from socially approved responses
5. Increasing dependence of actions
6. Ability to make a choice and not broad about other choices
7. Freedom from unreasonable fear
8. Understanding an action in accordance with limitations
9. Awareness of the ability achievement of others
10. Ability to err without feeling disgraced
11. Ability to carry victory and prestige with grace
12. Ability to delay gratification of impulse
13. The enjoyment of daily living

Emotional Maturity Scale consists of five broad categories of Emotional Maturity as its dimensions. They are,

a. Emotional Stability
b. Emotional Progression
c. Social Adjustment
d. Personality Integration
e. Independence

**Emotional Stability**

Emotional Stability refers to the characteristics of a person that does not allow him to react excessively or given to swings in mood or marked changes in any emotive situation. The emotionally stable person is able to do what is required of him in any given situation.

**Emotional Progression**

Emotional Progression is the characteristic of a person that refers to a feeling of adequate advancement and growing vitality of emotions in relation to the environment to ensure a positive thinking imbued with righteousness and contentment.
Social Adjustment

Social Adjustment refers to a process of interaction between the needs of a person and demands of the social environment in any given situation, so that they can maintain and adapt a desired relationship with environment. Therefore, it may be described as a person’s harmonious relationship with his social world.

Personality Integration

Personality integration is the process of firmly unifying the diverse elements of an individual’s motives and dynamic tendencies, resulting in harmonious coactions and de-escalation of the inner conflict (English and English, 1958) in the undaunted expression of behaviour.

Independence

Independence is the capacity of a person’s attitudinal tendency to be self reliant or of resistance by others, where he can take his decisions by his own judgement based on facts by utilizing his intellectual and creative potentialities. He would never like to show any habitual reliance upon another person in making his decisions or carrying out difficult actions.

Emotional Maturity Scale is a self-reporting five Point Scale which consist of 48 items. Items of the scale are in question form demanding information for each in either of the five options, viz. Very Much, Much, Undecided, Probably and never. The items are so stated that if the answer is Very Much, a score of 5 is given, 4 for Much, 3 for Undecided, 2 for Probably and 1 for Never is awarded. If the student scores low in the scale he/she is said to be emotionally mature whereas the greater the total score on the scale is expressed in terms of emotional immaturity.

Description and Scoring

Emotional Maturity scale has a total of 48 items under the five categories which is given in table 4.12.
Methodology

Table 4.12

No. of Items under each category of Emotional Maturity Scale

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Categories</th>
<th>Total No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Emotional Stability</td>
<td>10</td>
</tr>
<tr>
<td>b</td>
<td>Emotional Progression</td>
<td>10</td>
</tr>
<tr>
<td>c</td>
<td>Social Adjustment</td>
<td>10</td>
</tr>
<tr>
<td>d</td>
<td>Personality integration</td>
<td>10</td>
</tr>
<tr>
<td>e</td>
<td>Independence</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

EMS is a self-reporting five point scale. Items of the scale are in question form demanding information for each in either of the five options. The items are so stated that if the answer is very much a score of five is given; for much 4; for undecided 3; and for probably 2 and for negative answer of never 1 is to be awarded. Therefore, total score on the scale is indicative of emotional maturity whereas the greater the total score on the scale is expressed in terms of emotional immaturity.

Reliability

The reliability of the scale was determined by: (i) Test-retest Method, and (ii) Internal Consistency.

(i) **Test-retest Reliability** - The scale was measured for its test-retest reliability by administering upon a group of college students (N=150) including male and female student aged 20-24 years. The time interval between the two testing was that of six months. The product moment ‘r’ between the two testing was 75.

(ii) **Internal Consistency** - The internal consistency of the scale was checked by calculating the coefficient of correlations between total score and score on each of the five areas. Table 4.13 given below, shows the values of internal Consistency.
Table 4.13
Statistical Values of Internal Consistency of EMS

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Areas</th>
<th>Total No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Emotional Stability</td>
<td>.75</td>
</tr>
<tr>
<td>b</td>
<td>Emotional Progression</td>
<td>.63</td>
</tr>
<tr>
<td>c</td>
<td>Social Adjustment</td>
<td>.58</td>
</tr>
<tr>
<td>d</td>
<td>Personality integration</td>
<td>.86</td>
</tr>
<tr>
<td>e</td>
<td>Independence</td>
<td>.42</td>
</tr>
</tbody>
</table>

Validity

The scale was validated against external criteria, i.e.; the ‘Gha’ area of the adjustment inventory for college students by Sinha and Singh (2008). The inventory has ‘Gha’ area measuring emotional adjustment of college students. The number of items of this area is twenty-one. Product moment correlation obtained between total scores on all twenty-one ‘Gha’ items and total scores on EMS was .64 (N=46).

Interpretation

The scale was administered upon 198 collegiate students belonging to urban as well as rural background. The three quartiles calculated for the scores of all the respondents were Q1=80 , Q2=88.5 and Q3 = 106.7 (N= 198; M=100, F=98). The interpretation of scores is given in the table.

Table 4.14
Interpretation of Scores in the Emotional Maturity Scale

<table>
<thead>
<tr>
<th>Scores</th>
<th>Interpretation (Level of Maturity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-80</td>
<td>Extremely Emotional Mature</td>
</tr>
<tr>
<td>81-88</td>
<td>Moderately Emotional Mature</td>
</tr>
<tr>
<td>89-106</td>
<td>Emotionally Immature</td>
</tr>
<tr>
<td>107-240</td>
<td>Extremely Emotional Immature</td>
</tr>
</tbody>
</table>

4.5 Outline of the Experimental Procedure

The Investigator conducted the experimental study to find out the effect of the select models of Values Education on the ADP of Secondary School Students. The Experimental procedure of the present study was extended for five months as there
were three divisions in each school which were to be treated differently. The Experimental procedure followed in the present study is given as Figure 4.4
Administration of Pre test

At the first phase, the Affective Domain Process Scale and the Emotional Maturity Scale were administered on the students of selected schools as pre test. The Investigator, with prior notice, visited the two schools for a second time in order to conduct the pre test on those absenteees and thus the data from all the students were collected.

On the specified day the Investigator visited each class for administering the Preliminary Data Sheet, Affective Domain Process Scale and Emotional Maturity. In the beginning of the class, the Investigator was introduced to the students by the class teachers of each class. Then the Investigator made rapport with the students with an informal talk about their whereabouts followed by an introduction about the purpose of the Investigator’s visit in the particular class. The students were made aware of their importance in this particular study and they were assured that these data will be used for research purpose only. Also they were requested to respond each scale genuinely without any distortion of data as they would influence the study negatively.

The Affective Domain Process Scale was administered first. The students were given the scale and response sheet. After reading the instructions by the students themselves, the Investigator explained those instructions once again. The first dilemma and the statements under these dilemmas were read out by the Investigator. The students marked their responses in the space provided in the response sheet. The remaining dilemmas were read by the students themselves individually and they marked their responses. The Investigator carefully observed the students in order to avoid discussion of any kind among the students, in the mean time the Investigator clarified their doubts which aroused occasionally.

The Emotional Maturity scale was administered to the same class of students on another period in the same day. After giving the instructions, the students were requested to fill in the preliminary data. While administering this tool, the Investigator had to translate a few sentences into Malayalam, as they were not understood by the students. The students took 30 minutes to mark the response sheet.
Methodology

➢ Treatment Phase

In the second phase, the Investigator assigned VAM, VCM and DIM in the three divisions of ninth standard in each school. The Investigator randomly assigned each model to these three divisions by taking lots with the help of class teachers. Values Education classes were conducted in the experimental group using the Value Analysis Model of Teaching and Value Clarification Model of Teaching. Fifteen lessons on each model of teaching were taught. The control group were given Values Education classes through the present mode of direct teaching of values which the Investigator termed as Direct Instruction Method (DIM).

➢ Administration of Post Test

In the third phase, Affective Domain Process Scale was administered on the students of both the experimental and control groups as post test. For this one period for each class was arranged after the completion of the treatment. In order to avoid the administration of post test for a second time for those absentees, the students were informed earlier about the date of post test and among the six classes post test was administered on the pre fixed date. Since there were absentees in two classes, the Investigator visited the schools again to conduct the post test.

➢ Administration of Delayed Post Test

After an interval of four months, the Investigator, with prior notice visited the schools and conducted the delayed post test on ADP.

4.6 Statistical Techniques used in the study

The scores of pre, post and delayed post tests on Affective Domain Process, and the test scores of Emotional Maturity of the two experimental groups and one control group were consolidated for statistical analysis. Details of the sample regarding gender, religion, steam of study, type of family and birth order were taken for preliminary analysis.

The collected data were analyzed by using Mean, Median, Mode, Skewness, Kurtosis, Percentage, Standard Deviation, ‘t’-test, One-way ANOVA, One-factor Repeated Measures ANOVA with Huynh- Feldt Correction, Pair-wise Multiple Comparison with Bonferroni Correction, ANCOVA with two groups and ANCOVA with three groups. The analysis and interpretation data is presented in the next chapter.