CHAPTER - IV

INSTRUCTIONAL PROGRAMME
# CHAPTER - IV

**INSTRUCTIONAL PROGRAMME**

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4.4. Instructional Programme Part 'B' on Developing Understandings in Geography

4.4.1. Identification and Selection of Understandings in Geography

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4.0 Introduction:

The activity based Instructional Programme planned in the study involves the use of specially designed Instructional Programme on developing selected map skills and understandings in Geography among class VIII students.

The Instructional Programme consists of two parts - Part 'A' and Part 'B'. Part 'A' deals with the development of map skills, which is self instructional and meant to be used by the students with minimum teacher intervention. Part 'B' of the Instructional Programme deals with the development of understandings in Geography, meant to be used by the classroom teachers, which is in the form of Teacher Support Material.

4.1 Need for the Instructional Programme:

Need for the Instructional Programme to develop map skills and understandings among the students was mainly felt by the investigator after reviewing the related literature and studies which were discussed in Chapter I and Chapter II, making observations on the existing Geography textbook given in Chapter I caption 1.7.1 and the present status of the nature of interaction in the Social Studies class in general and Geography class in particular, which were already
discussed at length in Chapter I caption 1.7.2. The need was also felt for the Instructional Programme mainly after reviewing the present status of availability and effective utilization of teaching learning materials in Geography as discussed in Chapter I caption 1.7.1.

The above discussion given in first two Chapters indicated that there is a need for a teacher support material which helps teacher by providing instructional objectives, activities and evaluation items on the given content. It is also observed that a deliberate attempt should be made by the classroom teacher in developing map skills among the students. In other words, the present educational system needs an Instructional Programme which is, child centred, activity oriented and results in developing map skills and understandings among the students. Therefore, the investigator made an attempt towards developing a self explanatory Instructional Programme for better pupil achievement in map skills and understandings. The description related to the Instructional Programme is given in the following captions.

4.2 Instructional Programme:

The Instructional Programme which is designed by the investigator consists of two parts Part 'A' and Part 'B'.

Part 'A' deals with the development of map skills.

Part 'B' deals with the development of understandings in Geography content.

The description related to preparation and try out of the Instructional Programme on Part 'A' and Part 'B' is given separately in the following captions.

4.3 Instructional Programme - Part 'A' on Developing Map Skills:

Part 'A' of the Instructional Programme is on developing map skills among the students of class VIII which is in the form of 'self learning material'. The description related to identification, selection and sequencing of map skills, features and format and preparation and try out of the Instructional Programme Part 'A' on developing map skills is given below.

4.3.1 Identification of Map Skills:

Map is a very important teaching learning aid. It is through maps that students learn about distant environment. Using map implies the knowledge of reading, drawing and interpreting various symbols and colours used in a map including drawing and marking. According to Gerber et al., (1984) the Geography teacher just cannot present a class with
a map and expect every student to understand and learn merely by looking at it.

As described in Chapter II, caption 2.3.1 map using is a skill. Wilson (1980) has prepared a table of different essential skills required for map reading. All those skills have been identified by ten different authors. The details about the authors and the skills identified by them for reading maps, are given in Chapter II Table 2.1.

According to the Table 2.1 there are about 17 map reading skills. While Thralls and Askov, state only four of those skills as essential, Davies went to the extent of identifying 13 of them as essential map reading skills.

As the above list of map reading skills is exhaustive in nature and difficult to develop all of them within a limited time, it was necessary to make a selection for the purpose of the study.

4.3.2. Selection of Map Skills:

Map skills as indicated earlier need to be cultivated as they are not in-born skill. As the list of map reading skills given earlier had 17 map reading skills only nine of them were considered as most essential for inclusion into the
Instructional Programme by the investigator. The criteria that guided the selection of the map skills are as follows:

* The map reading skills which were considered to be essential by majority of the authors given in Chapter II Table 2.1.

* The skills which were required not only to read the maps but also to mark on the map.

* Relevance for the syllabus in Geography prescribed for standard VIII.

* The availability of instructional time for teaching Geography in the selected school.

* Adequacy for developing understandings in Geography expected at the end of standard VIII.

On the basis of the above criterion the nine map skills that were selected were direction, scale, distance, relative location, distribution, symbolisation, inferencing, map language and legend.

The investigator felt that some of the above map skills can be clubbed as they are components of the basic map skill. The justification for clubbing some of the above mentioned maps skills is given below.
Referring to the Table 2.1, 'direction' (accepted by 90% of the authors) and 'relative location' (accepted by 50% of the authors) were clubbed and named the skill as 'direction'. This was done because under 'direction', the students would study about two types of directions - cardinal and intermediate and under 'relative location' the students would study about the location of a given region in terms of direction in relation to another given region. Example: Madhya Pradesh is located to the north east of Karnataka.

According to table 2.1 the map skill of 'scale' is accepted as essential by 50% of the authors and 'distance' by 40% of the authors. These two were clubbed together as 'scale', as it is used to measure the distance between the given places on a map. In this case, calculating the distance is nothing but application of the knowledge of 'scale'. Example: Measuring the direct distance between Mangalore and Chennai using the map scale.

Another attempt was made by the investigator to club 'Symbolisation' (accepted by cent percent of the authors), 'Map Language' (accepted by 30% of the authors) and 'Legend' (accepted by 20% of the authors) which were given in Table 2.1, into one map skill. 'Symbol' means a figure which stands for something. 'Map Language' is nothing but
understanding various symbols used in a map. What do each of the symbols mean is given in a 'Legend' which is nothing but a table of symbols and their meaning. Hence, all the above three were clubbed into a map skill called 'Symbols'.

After observing the Table 2.1 the investigator felt that one of the important skills was missing in the table namely 'colour'. Knowledge of each of the colours and using the legend in relation to colours, especially in a physical map is an important aspect in reading and marking on the maps. So, the investigator included 'colour' as one more skill in the existing selected map skills.

Thus, the final list of map skills taken up for the study had the skills of direction, scale, distribution, inference, symbols, and colours.

After the selection of map skills, it was felt necessary to sequence them for the purpose of preparing the Instructional Programme. The details of the process of sequencing of map skills are given in caption 4.3.3.

4.3.3. Sequencing of Selected Map Skills:

The selected six map skills, namely direction, scale, distribution, inference, symbols and colours were classified into two sets - Set One and Set Two.
The 'Set-One' of the map skills consisted of basic map skills which are independent of each other and which are very necessary even in our daily life while using maps. They were direction, symbols, colours and scale. These skills are to certain extent introduced in class V in schools that follow NCERT syllabus. But in higher classes normally no deliberate effort is made by the classroom teachers to develop them further. The sequence followed in the textbook of class V, Environment Studies, Social Studies [Parakh et al., 1991] is Direction, Scale, Colours and Symbols. This sequencing was found to be appropriate and was maintained in the same sequence in the study.

The 'Set Two' of map skills consisted of 'Distribution' and 'Inference'. These map skills are dependent on the achievement of the skills of direction, scale, symbols and colours. Unless the four map skills of set-one are achieved it is not possible to develop the skill of 'distribution' and 'inference'. In other words, they included the integrated map skills; that is, to learn each of the integrated map skills the learning of basic map skills from Set-One becomes essential. Hence, they were under Set Two. As regards sequencing them, the skill of 'Distribution' is simple in nature, whereas the skill of 'Inference' involves reasoning.
So, the skill of 'Distribution' was taken up prior to the skill of 'Inference'.

Thus, the final list of selected map skills that were sequenced for the study were as follows i.e. Direction, Scale, Colours, Symbols, Distribution and Inference. These were considered to be essential or primary map skills as it is not possible to make use of the given map meaningfully without the acquisition of those skills. To read the script of any language, it is necessary to learn the alphabet and the words. In the same manner to understand maps, it is necessary to develop the selected map skills taken up in the study.

After the sequencing of the selected map skills, it was necessary to decide on the characteristic features and the format of the Instructional Programme - 'Part A' on map skills. These are described in the following captions.

4.3.4. Characteristic features of the Instructional Programme Part - 'A' on Map Skills:

The Instructional Programme designed in the study is intended to be self instructional and to be used by the students in order to develop the selected map skills namely Direction, Map Scale, Colours, Symbols, Distribution and Inference. The justification for developing the map skills
is given in Chapter II caption 2.3.2. The methodology employed in the preparation of the Instructional Programme has been detailed out in Chapter III, caption 3.2.

The Instructional Programme on map skills was designed keeping in mind certain sound pedagogic principles which were built into the programme. These formed the characteristic features of the Instructional Programme on Map Skills, which are detailed below.

i) Emphasis on the process of skill learning:

The skill performance depends on the performers understanding of relevant information. Hence, both the components of skill learning - cognitive and performance, have to be interrelated and integrated. The instructional material is amenable to the integration of those two components.

Skill learning normally takes place at three distinct levels - cognitive, fixation and autonomous. These phases of skill appear to be relevant to the learning of map skills as well.

The Instructional Programme is so structured as to develop each of the map skills at these phases, although the last two phases are not distinct (Lobo, 1990).
Cognitive Phase: For the development of map skills at the cognitive level, the description of the skill is provided in order to develop an understanding of each of the map skills. As the instructional material is self learning in nature, meant to be used by learners, the cognitive phase is built into the programme wherein students are expected to read on their own written form of the Instructional Programme and get the doubts cleared by the classroom teacher, wherever required in the form of oral explanation by the teacher.

Fixation and Autonomous Phase: After the students go through the Instructional Programme on their own, at the end of learning map skill they are required to work on a set of specially designed activities related to the map skill. There is a sequenced set of activities to be performed for learning each of the map skills. The students read the descriptive matter given in the Instructional Programme and learn to perform the given task. Learning takes place while performing the task. After performing the task correctly there are certain practice items and tasks to check their learning. These form the fixation and autonomous phase in the learning of map skill.
ii. Maintaining Uniformity in the Instructional Pattern:

The use of the Instructional Programme is made easy by following a uniform pattern while learning each of the map skills.

The different steps in the learning of the map skills are:

- Review
- What and Why learn?
- How does this unit help you?
- Learning Activities
- Practice Activities
- Task to check your learning

This pattern is followed throughout the learning of map skills. As a result, the students are helped to move in a given direction to acquire the map skills without any confusion.

iii) Reviewing previous learning, before learning each map skill:

Before introducing a new map skill, the student is tested for the retention of the previous map skill. This review section in the Instructional Programme provides for the continuity in the learning of map skills.
iv) Clarification of learning outcomes to the learners before learning each map skill:

Once the knowledge about each of the map skills is given to the students separately, the student is provided with the information about the use of that map skill and the expected learning outcomes. Knowledge of the expected instructional objective before learning any task facilitates learning of the task. (Mager et al., 1961; Kibler et al., 1974).

v) Promoting Motivation:

Desire to learn and continued desire to learn is one of the important pre-requisites for learning. In order to promote desire to learn among the students to accomplish the specified learning objective several measures were taken in the Instructional Programme. While exposing the students to the Instructional Programme on map skills the classroom teacher described the map and importance of the learning of map skills with illustration. Example: To find a house in an unknown locality with a route map understanding map is necessary [any such examples can be given by the teacher which is within the experience of the students]. As the activities designed are self directed, the students feel challenged and get motivated to learn, thus making learning more interesting and effective.
vi) Provision for giving overt active response:

The Instructional Programme provides for active response by the students in written form. The students are expected to give written responses within one word or one sentence, sometimes identifying the correct response given in a set of responses, including drawing, while performing each activity related to any map skill. These overt responses are indicators of learning to the classroom teacher.

vii) Monitoring and Supervision of learning process by the classroom teacher:

In order to maintain students 'motivation throughout and thus promoting effective learning, students should be given guidance and prompting while attempting to demonstrate new behaviours to be learnt (Kibler, et al., 1974). Keeping this in view the classroom teacher uses necessary prompts and guides the students as and when sought by them while using the Instructional Programme.

viii) Provision of opportunities for recapitulating:

Providing opportunities for recapitulating at the end of every meaningful learning task, facilitates retention of the learnt task. There is a section on 'Task to check your learning' in the Instructional Programme. This provides
opportunities for the students to respond to the questions based on the map skill already learnt. This reinforces learning.

ix) Emphasis on Individualizing Instruction:

Individualized instruction caters to the individual differences in the study. The Instructional Programme developed in the study is of self-learning in nature which enables the students to take their own time to complete the given task. This provides for self-pacing of learning, which is built into the programme. This very nature is an important feature of any self-learning approach. But, in the study, the students are free to approach the teacher whenever there is difficulty in performing or understanding the given task.

The above characteristic features are reflected in the Instructional Programme Part 'A' in a definite format. The description of the format followed is given in the following caption.

4.3.5. Description of the Format of the Instructional Programme Part 'A' on Map Skills:

An attempt was made by the investigator to develop an Instructional Programme basically 'self-instructional' in nature, to be used by the students towards achieving the map
skills. The Instructional Programme also tries to compensate for the drawbacks that are found in the existing teaching approaches. The format followed in the preparation of the Instructional Programme is as follows:

There are two sections.
Section one - Teachers' Handbook
Section two - Students Learning Material
The description of each of the sections are given below.

The Teachers' Handbook

The teachers' handbook (Appendix V - includes a sample on both - Section I and Section II) helps the teachers in developing knowledge about the use of the Instructional Programme and the way of using it.

This section has sub sections. They are
a. About the Handbook
b. List of Contents
   i) Time Chart
   ii) Ways of Motivating Students
   iii) Mode of Administration
   iv) Students Learning Material
   v) Key
The details regarding each of the above sub-sections are as follows:

a. About the Handbook

This sub section gives a brief description about the content, activities and role of the teacher as a guide in using the Instructional Programme.

b. List of Contents

This subsection has a list of contents that are included in the handbook.

i. Time Chart

This indicates the approximate time that could be taken by the student for learning each of the map skills.

ii. Ways of Motivating Students

In this part some ways that can be followed by the teacher to motivate the students to the learning of map skills are given.

iii. Mode of Administration

This intends to give a set of directions to the teachers which need to be followed during the use of the Instructional
Programme. The instructions are mainly related to the teachers' role, the students' role, the materials needed to use the Instructional Programme, the arrangement of the class, and so on. These set of directions are very much required to achieve the objectives of the Instructional Programme.

iv. Students' Learning Material

This is exactly the same as given in 'Students' Learning Material' in the succeeding caption - 'Students' Learning Material'.

v. Key

After the students perform the given set of activities, they have to approach the teacher as per the Instructional Programme to get their responses corrected. During this stage, it becomes necessary that the teacher knows the correct answer to provide feedback to the students. Here comes the role of 'key' which aids the teacher in correcting the student responses, without spending much time in searching for the correct answer. With the help of 'key', the teacher guides the learners in achieving the map skills. This section contains correct answer for all the activities that are expected to be performed by the students.
Students’ Learning Material:

The Students’ Learning Material is intended to be used by the learners - individually, which is in the form of self learning material. This section has two sub-sections.

i. Instructions to use and

ii. Learning Map skill

The description of each of these sub-sections is given below. A sample on one of the six map skills 'Inference' is given in Appendix V.

i. Instructions to use:

This sub-section intends to provide the learners with adequate and appropriate instructions about the way of using the sub-section on 'Learning Map Skill'. The instructions given are mainly related to the materials that are needed to learn the map skill— which map to be used, how to perform the activity, when to approach the teacher, need to understand learning activity and to take care while performing the task to check their learning. All these instructions are given in the beginning of the 'Students' Learning Material'. These instructions guide the learner in self learning with minimum help from the classroom teacher.
ii. Learning Map Skill:

This sub-section intends to facilitate the achievement of the learning of each of the six map skills by providing a number of self learning, practice and evaluative activities related to each of the map skills one after the other. For each map skill the sequence of steps given were the same. They are as below:

a) Review
b) What and why learn?
c) How does this unit help you?
d) Learning activities
e) Practice activities
f) Task to check your learning.

The details given in each of these steps are as follows:

a) Review

This step intends to check the retention of the previously learnt map skills by the students. By recalling the previous learning, it logically connects to the new map skill which is going to be learnt by him/her. The student checks the previous learning by recalling and writing the responses in the blanks provided.
b) What and Why learn!

This step provides a brief description of the meaning of the map skill that is going to be learnt by the student. It also includes a paragraph which describes the importance of learning that particular map skill to create an urge among the students to learn the map skill.

c) How does this unit help you?

This step is inserted prior to actual learning of map skill. It provides a list of the learning outcomes, which the student would be able to demonstrate at the end of the use of the section on 'Learning Map Skill'. The knowledge of the learning outcomes gives a set of directions to the students while learning the map skill.

d) Learning activities

The learning activities included in the 'Learning Map Skill' are all self learning, individual activities based on the learning outcomes. Students are required to perform them in the class under the guidance of the teacher. For each of the learning outcomes related to the map skill in focus, a set of learner activities are provided. The activities include locating from the map, indicating the given information or required information on the map or by filling
up blanks, selecting, classifying, arranging in sequence, drawing symbols, writing the statements of inferences, reading the required information from the map, measuring distances etc. These activities are so sequenced that they gradually take the learner from known to unknown, leading to the achievement of the intended learning outcomes with respect to the map skill in focus.

e) Practice activities

This step intends the learner to perform some more similar activities which have been performed under 'Learning Activities' with illustration. These activities being similar in nature to the learning activities are meant for reinforcing of the map skill that has been learnt in the previous step. These activities are again performed under the guidance of the teacher in the class, individually. At the end of this step the students are required to approach the teacher to know the correctness of their responses to the given set of activities which have been performed by them.

f) Tasks to check your learning

This is the last step in the sub-section of 'Learning Map Skill'. This step intends to give knowledge of the achievement of the learning outcomes by the students. There
are a few items under this step which are almost similar to those, which are found in the 'Practice Activities'. These are in the form of review questions which confirm to the students the level of achievement of the map skill.

On the whole, the 'Instructional Programme' on developing map skills is in the form of self-learning material to be used by the students. It is also accompanied by a teachers' handbook, that guides the teachers in helping the students to use the Instructional Programme. In other words, the Instructional Programme has been designed by the investigator to make a deliberate attempt to develop selected maps skills among the students in a normal classroom situation under the guidance of the teacher.

4.3.6. Preparation and Writing of The Instructional Programme Part - 'A' on Map Skills:

The procedure followed in the preparation and writing of the Instructional Programme on developing map skills in the study is listed below:

- Preparation for the Instructional Programme
- Writing of the Initial Draft
- Pre-try out of the Initial Draft
- Modification of the Initial Draft
- Try out of the Initial Draft
- Preparation of the Final Draft
- Final try out

Preparation for the Instructional Programme Part-A

Instructional Programme Part-A consists of two sections.

Section one - Teachers' Handbook

Section two - 'Students' Learning Material' on map skills.

Initially the students' learning material was prepared and subsequently, the Teachers' Handbook, which was meant to help the teacher to monitor the use of learning material as well as guide the students at appropriate places when they learn different map skills on their own, was prepared. Thus the section-two of the Instructional Programme Part 'A' was prepared first, followed by the preparation of Teachers' Handbook to complement the appropriate use of Section-two by the students. The details of procedure of preparation for section-two of the Instructional Programme Part-A has been given below.

Preparation for the Instructional Programme Part-'A', Section Two:

The review of related literature, the maps given in the Geography text book of class VIII and the role of the teacher in developing map skills among the students facilitated the
identification, selection and sequencing of the map skills in the study. A decision was also taken regarding the features, format and content of the Instructional Programme. After deciding on these specifications the following steps were followed in its preparation.

**Specification of Instructional Objectives and Task Analysis:**

Based on the content and purpose of the Instructional Programme, instructional objectives were written separately for each of the six map skills. They were further split into learning outcomes expressed as behavioural changes to be observed and measured in the learner.

**Task Analysis:**

After listing the learning outcomes on map skills, they were logically sequenced and written hierarchically keeping in mind the process of learning each of the map skills. The sequence of specific tasks to be learnt with respect to each of the map skills is presented in Appendix IV.

**Designing the Activities:**

With respect to each of the above specific tasks, activities—learning and practising were designed for achieving the respective learning outcomes. The activities
involved reading from the pictorial charts, preparing charts, reading passages, writing responses in blanks, drawing figures, measuring the distance, reading the maps, marking or locating on the maps etc. These were required to be performed by each of the students individually in the classroom using mainly paper, pencil, colours and Atlas and in some cases paper strips and thread.

Preparation of Evaluation Items:

For each of the specific learning tasks evaluation items were written which included mainly fill in the blanks, completing the figures, matching the given items, writing statements and completing the table. The responses to these items were not provided then and there. Instead, it was so designed that the students were to approach the teacher for checking their responses. Depending on their performance, teacher was required to give instruction to the students whether to proceed to the next map skill or go through the map skill activities not learnt properly.

Preparation for the Instructional Programme Part 'A' - Section One:

After making preparations for the section two of the Instructional Programme - Part 'A', the preparations were made for writing section one of the Instructional Programme
Part 'A' i.e., Teachers' Handbook. A brief outline of content of the handbook, purpose of the handbook, set of instructions to be followed by teachers while using the Instructional Programme-Part 'A' and the 'key' were written. Later those aspects were described in detail as per the format [caption 4.3.5] reflecting the features [caption 4.3.4] expected of the Instructional Programme Part 'A'.

4.3.7. Writing of the Initial Draft of the Instructional Programme Part 'A' on Map Skills:

As per the characteristic features and the format of the Instructional Programme Part 'A' detailed in captions 4.3.4 and 4.3.5 the initial draft on the 'Teachers' Handbook' (Section-one) and the 'students' learning material' (Section-two) were written separately. To check the feasibility of the Instructional Programme, the 'Students' Learning Material' was initially given to three students - one each from class VII, VIII and IX. This informal individual try out helped in restating some of the statements and usage of short and simple sentences.

The Instructional Programme Part 'A' (mainly Section two) was split into eighteen meaningful learning units which could be completed in about 17-20 periods of 40 minutes.
duration each. The table 4.1 gives the split of learning units for each of the selected map skills.

<table>
<thead>
<tr>
<th>Map Skill</th>
<th>Number of Learning Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direction</td>
<td>03</td>
</tr>
<tr>
<td>Map Scale</td>
<td>04</td>
</tr>
<tr>
<td>Colours</td>
<td>02</td>
</tr>
<tr>
<td>Symbols</td>
<td>03</td>
</tr>
<tr>
<td>Distribution</td>
<td>03</td>
</tr>
<tr>
<td>Inference</td>
<td>03</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

Initially the Instructional Programme Part 'A' was edited by the investigator mainly by checking for sequencing of instructions and the degree of complementarity between the Teachers' Handbook (Section one) and the Students' Learning Material (Section two). Later it was referred to the experts for suggestions.
4.3.8. Pre-Try out of the Initial Draft of the Instructional Programme Part 'A' on Map Skills:

i. Editing of the Initial Draft on Teachers' Handbook (Section one of Instructional Programme Part 'A'):

The draft on Teachers Handbook was given to experts including one high school teacher. They looked for content clarity, sequencing of instructions, simplicity of the sentences for the teachers and adequacy of information. The discrepancies pointed were as follows:

* Some sentences were too complex to comprehend and
* Instructions were to be made simple and clear.

In the light of the above observations the investigator presented the description of the map skill in simple sentences and instructions were rewritten in a simple form which could be understood easily by the teachers.

ii. Editing of the Initial Draft on Students' Learning Material (Section two of the Instructional Programme Part 'A'):

The draft on students' learning material on Map Skills was prepared following the structure given in 4.3.5. Six separate booklets were prepared on six map skills namely Direction, Scale, Colours, Symbols, Distribution and Inference. They were first given to the same two experts (who read through the Draft on Teachers' Handbook) to look.
for adequacy of description and graphics, logical sequencing of activities and difficulty level of the language. The following observations were made by the experts:

* Some statements needed the help of figures.

  Example: Measuring more than one time on the same map scale to find the complete total distance.

* Some map skills needed more than one practice items for strengthening learning.

  Example: Explaining Inference.

4.3.9. Modification of the Initial Draft:

In the light of the above observations the investigator made graphical presentation of the matter especially on using 'map scale' - eg. How to use a map scale while measuring the distance between two places on a map which are at a greater distance. An attempt was also made to increase the number of practice items to help students to learn explaining and predictive inferences.

4.3.10. Try out of the Initial Draft:

The initial draft on Students' Learning Material was administered to five students each, belonging to class VIII
and class VIII chosen randomly to look for difficulties in using the material from students' point of view.

The students expressed the following difficulties while using the material.

* About 8 of the 10 students could not follow the various steps given in using the map scale to find the distance between two places. They asked for a demonstration by the investigator.

* Some words were new to them and hence asked for their meaning. Example: bifurcating

Based on the difficulties expressed by the students the investigator made the following changes in the initial draft of the students' learning material.

* Only the familiar vocabulary was used for the students.

* Wherever possible verbal description was supplemented by a graphical presentation.

However, a large part of the Instructional Programme like content, learning activities, sequencing of activities and evaluation were found to be satisfactory and hence were retained as they were.

4.3.11. Preparation of the Final Draft of Instructional Programme Part 'A' on Map Skills:

The final draft was thus prepared by incorporating changes as suggested by the experts and by overcoming the
difficulties faced by the students during the pre try out without any change in the structure of the programme.

4.3.12. Final Try Out:

The final try out of the Instructional Programme on developing map skills was done on the students of Class VIII of Demonstration School, R.I.E., Mysore for about 17-20 periods of forty minutes duration each, during the end of the first half of the academic year. This try out formed a part of the main experimental treatment whose effectiveness has been studied in terms of developing map skills, in relation to parallel treatment. The details of methodology, analysis of data, results and discussion are given in Chapter III and V.

4.4 Instructional Programme - Part 'B' on Developing Understandings in Geography:

An attempt was made by the investigator towards designing an Instructional Programme for developing understandings among the students in Geography on the content 'Our Country -India' prescribed for Class VIII as per NCERT syllabus.

Prior to the writing of the Instructional Programme on understanding, the investigator identified a number of
understandings through the review of literature and selected a few for the study. The details about the process of identification of understandings, choice of the unit and selection of understanding are given in caption 4.4.1.

4.4.1. Identification and Selection of Understandings in Geography:

Understandings that need to be developed among the students in Social Studies in general and Geography in particular that are identified by different authors is given in Chapter II under caption 2.1.1.

The list of understandings given by Srivastava et al., (1990) is relevant for teaching of Geography. Whereas the list given by Anderson et al., (1946) is relevant for Social Studies, which includes Geography also. The latter's list is more comprehensive than the former's. This implied a need for the selection of understandings from the lists for the purposes of the study. The criteria that guided the selection of understandings were their relevance to (i) Geography learning in general and (ii) Geography content prescribed for class VIII in particular.

As the list of understandings in Social Studies provided by Anderson et al., (1946) was found to be more inclusive and
comprehensive, it was felt appropriate to make further selection from that list of understandings.

While examining the list of understandings given by Anderson et al., it was observed that the third broad goal namely 'Practising Desirable Social Relationships' is mainly related to the content of Civics as it aims at developing and practising democratic values. Although, remotely this understanding can be attempted to be developed to some extent while teaching Geography, from the point of view of the availability of time and the content in Geography prescribed for class VIII, this broad goal of understanding was dropped for the purpose of the study.

As regards the first goal of understanding namely 'Acquiring Functional Information', it was observed that the objective of (Ib) - 'Understanding Chronological Relationships', is highly applicable to the content of History and Civics and the objective namely 'Understanding Tables' a part of the objective under I-d is not found to be relevant as there are no tables in the Geography textbook of class VIII. Similarly the objective of (IId) - 'Applying Social Facts Generalizations and Value Principles to New Problems', which is under the second goal namely - 'Analysing Social Problems' is more related to History and Civics
content than Geography content. However, it may be possible to develop these two objectives of understanding while teaching the content units in Geography for class X. But, since the chosen sample for the study included class VIII students, this objective related to understanding could not be included for the purpose of the study and hence dropped.

After dropping a few instructional objectives which were not directly related to the teaching of Geography for class VIII, the investigator had to make a choice of the unit from the Geography textbook of class VIII. The process followed in the choice of the unit is described below.

i) Choice of the unit for the programme:

The textbook 'Lands and Peoples. Part-III' published by the NCERT is followed as the Geography textbook for class VIII under NCERT syllabus. The textbook mainly deals with lithosphere, land and resources of Asia and a detailed study of India. The following are the observations on the nature and coverage of the units as found in the syllabus for class VIII.

Lithosphere - A very small unit which deals with the structure of the earth and gradation.
Asia - This unit deals with land, climate and resources of Asia. It also gives a brief description of some of the important countries of Asia like Japan, China etc.

Our Country - This unit deals in detail with various aspects of India like land, climate, soil, vegetation, agriculture, minerals, industries, water resources, transportation and communication and people.

While the unit on Asia does not comprehensively cover all aspects of Asia in detail, the unit on India requires to be studied in detail by the students which covers more than 50% of the Geography syllabus prescribed for class VIII. Thus, the unit of India covers comprehensively various aspects related to India and is complete in itself.

In addition to that, the unit on India also provides a wider scope for developing map skills and understandings compared to other two units. The learning of those map skills under the unit can be useful for learning other units as well.

The unit on India being introduced in class IV is studied again in class X. Thus, the utility of the
Instructional Programme prepared on this unit will be more wide, compared to Instructional Programme prepared on other units.

On the whole, the detailed information on India, the opportunities for developing map skills and understandings and the scope for wider utility of the Instructional Programme resulted in the selection of the unit on 'Our Country - India' for the preparation of the Instructional Programme.

ii) Selection of Understandings:

Depending on the understandings that can be developed by teaching Geography, especially with the Geography content of class VIII chosen in the study and keeping in view the availability of time, six objectives (Ia, c and d; IIa, b and c) of two different goals (I and II) were selected. The description of each of those understandings is as follows:

The first goal which comes under understanding is -

I. Acquiring Functional Information:

Specific understanding objectives under the above goal of understanding are as follows:
Ia) Understanding special vocabulary of the subject: Geography, as a subject has some terms and concepts which are unique in nature. These are required to be understood by the student for further learning and better understanding of the subject.

Ic) Understanding maps: Map is a basic tool for visualizing geographical content. Maps can be understood better by developing map skills. By understanding maps the student will be able to draw inferences from the maps that are related to the content.

Id) Understanding graphs: Graph is not frequently used in elementary school level. But it is necessary that the students know about it, as it presents the information in an attractive way. Understanding graphs involve interpreting the legend, finding an item of information, recognizing and comparing trends and restating information.

The second goal which comes under understanding is -

II. Analysing Social Problems:

The specific understanding objectives under the above goal of understanding are as follows:
IIa) Knowledge of important concepts, generalisations and findings as a prerequisite to reaching valid conclusions about social problems. It is necessary that the student understands the concepts, generalisations and findings related to the content taught. Without these, it is not possible to reach valid conclusions about social problems.

IIb) Locating, selecting, organising and evaluating information: Acquisition of information is the lowest level of understanding. But to interpret the information it is necessary that the student after locating the information selects, organises and evaluates them on the basis of the objectives.

IIc) Drawing conclusions and stating them effectively: A bulk of information can easily be concised only by drawing conclusions. But, this conclusion need to be stated effectively on the basis of information collected and organised. This results in meaningful understanding of a vast body of information.

Thus, the investigator limited the study to two goals in understanding under which, six objectives in total were chosen.
4.4.2. Nature of the Instructional Programme - Part 'B':

It was felt that the Geography teacher needs to integrate the use of map skills while developing understandings in Geography. This had to be done deliberately as it is not inborn. Hence, it was considered more appropriate to prepare teacher support material with adequate guidance in this direction.

After selecting the understandings that were intended to be developed and deciding on the form of the Instructional Programme, the investigator listed out the important characteristic features that should be reflected in the Instructional Programme Part 'B' which is going to be a teacher support material. A brief description of each of those features is given below.

i) Characteristic features of the Instructional Programme Part 'B' on developing Understandings in Geography:

While designing the teacher support material in Geography, good principles of instruction for developing understandings which are generally supported by experience as well as empirical evidences were kept in view. In addition, the observations made regarding the loopholes and inadequacies on the use of maps for developing understandings in the textbook of Geography also were points for
consideration in the preparation of teacher support material. Keeping these two perspectives in view, it was decided to prepare the teacher support material in such a way that it would have the following features.

a) Providing specific instructional objectives:

Providing learners with instructional objectives for a unit before instruction is found to facilitate learning (Mager et al., 1961). But as most of the teachers are unable to formulate specific objectives (Ponkshe, 1983) a list of instructional objectives has been provided in the teacher support material in each of the chapters.

b) Opportunities for pupil activities:

All learning is an experience. Experiential learning is learning from experience or learning by doing (Mclamed, 1985). The involvement of pupils in activities, keeps the pupils active throughout the teaching-learning process which in turn results in better pupil achievement (Kapoor, 1993; Verma, et al., 1993; Panda, 1997). The teacher support material has provided for active pupil participation in the process of learning through a number of activities such as writing worksheets, map reading, marking on the maps, collection and presentation of matter and materials, answering the
questions, raising doubts, participating in discussion etc. Example: When wall map is hung in the class the students observe the map as per the direction of the teacher either in the wall map or in their atlases and find the required information.

c) Scope for variety of methods:

The use of a variety of methods increases the interest of pupils in their studies (Joint Year Book Committee, 1939), which produces effective learning. As Geography teaching emphasises the involvement of learners in activities, it utilises a variety of teaching strategies (Kapoor, 1993). Hence the teacher support material provides for group work, assignments, project method etc. For example, the chapter on 'Our Agriculture' has been taken up as a project work by nine groups in the class (Appendix IX).

d) Minimum teacher intervention:

Any understanding develops from within the learner, for which the teacher provides the necessary stimuli or creates the suitable environment, providing for self learning by the learners with minimum teacher intervention or guidance wherever required, leads to the development of better understanding than when the instructional process is teacher
dominated (Kibler et al., 1974). Keeping this principle in view the teacher support material is so designed as to provide more learner centred activities, where self-learning can take place with the teacher monitoring the learning process minimally and by providing guidance wherever required. Example: When the students are asked to find from the physical map of India, any five high peaks of Himalayas in India, if the students fail to locate the symbol of peak (A), then the teacher can indicate them on the board and guide the students to find the names and heights of the peaks.

e) Provision for the optimum use of map skills:

It has already been indicated earlier that use of maps is an integral part of developing understandings in Geography. The understandings in Geography cannot be adequately developed without the help of map skills. Hence, the use of maps and map skills are built into the teacher support material throughout, at appropriate places for developing understandings related to the content chosen. Example: While finding the conditions needed for the growth of cotton textile industry - students look into industries map of India, transportation map of India, soil map of India, crops map of India and even political map of India. These
maps provide information about centres of cotton textile industries in India and the factors which have helped their growth.

f) Provision for processing of the information:

In order that the student develops understandings in Geography, he/she needs to be provided with not only a good information base but also be able to process them to build connections, seeing relationships etc. In other words, providing opportunities for both acquisition of information as well as processing of the information meaningfully leads to the acquisition of understandings. Hence, a deliberate attempt is made in the teacher support material to provide for the use of information processing skills namely, observation, classification, comparison, generalising, reasoning, distinguishing etc., in the activities that are included. This helps students to attend to relevant information and build connections among pieces of information (Mager, et al., 1961).

g) Opportunities for both individual and group activities:

Understandings can be developed both in the individual context as well as in the group context. The individual learning and group learning have their relative merits and
demerits. While designing the learning activities in the teacher support material both individual and group learning, opportunities have been provided at appropriate places for the teacher to initiate the development of understandings in Geography.

Example: Writing the names of the rivers which rise in the northern mountain region and flow into India, is given as individual work. While participating in the project work on 'Agriculture' it is a group work.

h) Provision for continuous evaluation:

Evaluation reflects the strengths and weaknesses of the teaching strategies and also controls the curriculum transaction (Rajput, 1994). For better reflection of any teaching strategy, evaluation must be built into the system and must be continuous for better pupil achievement. Hence, continuous evaluation has been built into the teacher support material.

Example: At the end of the completion of every chapter there is formal testing of the students to keep track of the development of understandings among them.
1) Provision for immediate feedback:

A careful and proper use of reinforcement helps a teacher in effective handling of the overall education of the child (Sharma 1994). Timely feedback always results in progressive meaningful learning. When it is immediate it also motivates the child towards learning. Opportunities have been provided for immediate feedback in the teacher support material mainly by the teacher with pupil participation.

Example: Whenever a student activity is given either as a class work or as a home work, the activity is immediately corrected jointly by the students and the teacher and the students are made known about the correctness of their work and if necessary guided towards correct performance by the teacher.

j) Adequate use of teaching-learning aids:

Use of teaching learning aids help in making instruction interesting (Golani, 1988) by adding variety, in concretising learning as well as for developing understandings. Hence, in teacher support material provision has been made for different types of teaching learning aids like maps, charts, pictures, samples of primary and secondary
products etc., both for teacher initiated activities and for learner centered activities. Such activities involve the use of these aids for acquisition of information as well as for developing understandings.

**Example:** Maps and charts on different soil types were used. Pictures of industries, mountain ranges, dams were also used. Primary products and related secondary products like cotton and cotton textile, woollen and sweater, sugarcane and sugar, iron ore and knife etc., were collected and displayed.

### 4.4.3. Format of the Instructional Programme- Part B (Teacher Support Material):

The Teacher Support Material developed in the study consists of three divisions. They are:

1) **Introduction**
2) **Teacher’s Handbook**
3) **Evaluation Material**

**i) Introduction:**

The first division of the Teacher Support Material is the introduction. Introduction gives a brief out-line on the content unit or chapters on 'Our Country India' taken from the prescribed textbook selected for the purpose of the study
in which the understandings in Geography selected in the study would be developed. A brief mention is also made of the format of the Teacher Support Material and the types of activities that are included in the Teacher Support Material. Towards the end, it gives certain general prescriptions to the teacher about how the Teacher Support Material has to be used for developing understandings selected for the study. Details are given in Appendix VIII.

ii) Teacher’s Handbook:

The second division of the Teacher Support Material namely, Teacher’s Handbook includes two sub-sections, Section, ‘a’ Teacher’s Guide and Section ‘b’ student work sheets.

a) Teacher’s Guide:

The section on ‘Teacher’s Guide’ is broadly divided into nine teaching units related to nine different chapters on ‘Our Country - India’. They are -

* The Face of our Motherland
* The Land of Monsoon
* Soil and Land use
* Our Agriculture
* Our Water Resources
* Our Underground Wealth
* Industries in India
* The Lifelines of our Country
* People - The Greatest Resource.

For each of the above Chapters the 'Teachers' Guide' has similar details and format as described below except for the chapter on 'Our Agriculture' which has been selected for 'Project work'.

The Teacher's Guide opens with a list of teaching points related to that chapter. For each of the teaching points the investigator has suggested the instructional hour, the learning outcomes, teacher activity or teacher student activity followed by student activity and tips to the teacher. It also indicates the teaching-learning aids required to perform the activities either by the teacher or by the learner or by both. The student activity is time bound. After the scheduled time the teacher goes by the tips given in the Teacher's Guide for checking the correctness of the student activity performed. In a few cases as indicated in the Teacher's Guide, student activities are given as home assignments.

To illustrate, a portion of the part of 'Teacher Support Material' related to the chapter on 'The Face of Our Mother-
Land is given in the Appendix-VIII, which is inclusive of 
'Students' Activity Sheets'

b) Student Activity Sheets:

All the teacher activities are followed by student 
activities such as map reading and marking, filling in the 
blanks, classifying, distinguishing, giving reasons, drawing 
inferences, collecting and presenting the information with 
visuals, discussing etc.

Although some of the student activities expect students 
to give oral or behavioural responses in terms of answering a 
question or locating on the maps, mostly they require the 
students to work on, work-sheets called 'Student Activity 
Sheets'. Generally these worksheets requiring the student to 
work on it individually are preceded by a teacher activity. 
These worksheets are meant to serve both the purposes of self 
instruction and evaluation.

As each of the student activities is numbered according 
to the chapter and teaching point, it is easy on the part of 
the teacher to ask the students to go to the given serial 
number of the activity. For example, in the activity 
numbered 1.1.4, first digit stands for chapter number, second 
digit for teaching point and third digit for activity number.
In other words, the above activity number (1.1.4) refers to student activity number four, for the first teaching point, in chapter number one.

After the completion of student activity by all the students either in groups or individually within the given time frame, the teacher provides feedback through a group discussion to check the correctness of the work done. All the students correct their responses themselves under the supervision of the teacher.

The modality of getting the responses corrected by the students themselves is not prescribed rigidly and the teacher has the freedom to have her/his own modality so as to provide immediate feedback to each and every student.

iii) Evaluation material:

The third part of Teacher Support Material includes evaluation material to be used by the teacher as and when he/she completes a particular chapter to find the level of achievement of the objectives among the students in the understanding areas namely,

i) Acquiring functional information, and
ii) Analysing social problems.
The evaluation material is generally in the form of teacher made tests on each of the nine chapters selected for the study. The performance of students in tests related to any chapter is assessed in the form of scores which indicates the level of achievement of understandings by the student. Feedback is given immediately by the teacher to the students before proceeding to the next chapter.

4.4.4. Modes of Teaching Learning Process in the Geography Class while Transacting Instructional Programme:

The transacting of the Instructional Programme in the Geography class implies teacher and students performing the activity that are included in the programme. The methodologies/modes of teaching learning built into these activities are generally of four different types. Each one of them is described below.

Question and Answer Mode:

The teacher students activities involved different types of visuals like maps, pictures, models, samples etc., of which maps were the most commonly used. The classroom transaction involved teacher asking questions related to these visuals which expected students to make observation of the visuals or draw inferences based on the observations.
Such an interaction is likely to have promoted the development of inductive thinking. This mode of interaction involving teacher questions and students answers could maximize pupil participation during classroom transaction as well as encourage/motivate all the students including the low achievers to participate in the teaching learning process.

**Observation Mode:**

Any experience which is sensed by five sensory organs - eyes, ears, tongue, nose and skin is called an observation. This mode was mainly used while map reading and gathering required information. Many of the student activities were based on observations made by them either in group or individual context depending on directions given by the teacher. The instructions given by the teacher or the questions asked by the teacher helped in guided observation by the students.

**Discussion Mode:**

Discussion is an orderly process involving a group of individuals in informal face to face cooperative interaction with a purpose of sharing information, decision making and problem solving (Turney, 1976).
According to Gall (1987), the discussion method of teaching is a processes in which a small group assembles to communicate with each other using speaking, listening and non-verbal processes in order to achieve instructional objectives. These processes would facilitate organisation of learners' 'thinking' and help them to share ideas and promote an ability to give expression to one's thought.

Discussion under an able moderator results in generation of information, focuses mainly on the instructional objectives, distributes participation, promotes contribution, analyses views, clarifies the information and achieves closure.

While Hill (1977) found out that discussion promoted positive thinking and motivation, the studies reviewed by Mckeachie and Kulik (1975) indicated that the discussion is more effective for promoting information at higher level.

Experiential Learning Mode:

Experiential learning is the learning that occurs when changes in judgements, feelings, knowledge or skills result for a particular person from living through an event or events (Chickering, 1977). While all learning is an experience, 'experiential learning' in its simplest form
connotes learning from experience or learning by doing (McLamed, 1985). The experiential learning includes all types of experiences which the learner passes through - informal, non formal and formal, to achieve the instructional objectives in relation to teaching-learning process.

According to Bank et al., (1981) in the classroom at the elementary level, the role of the teacher is "to provide a variety of concrete materials for the children to manipulate, to allow and encourage them to work with and learn from one another, and to assist them in their efforts to assimilate information from their environment by asking them questions which will help them to think about and interpret their experiences".

In the present study, the teaching learning activities enumerated in the instructional programme make use of experiential learning mode, intentionally, to provide direct experience to the students in achieving learning outcomes. In the processes of performance of activities, like collecting samples and displaying, preparing charts, collecting information from additional sources, locating and marking on the maps, participating in discussion, describing visuals under the guidance of the teacher the student gain
experiences resulting in the achievement of instructional objectives.

In the Instructional Programme (Part A) while developing map skills in Geography, the student reads the given instruction, acts accordingly and develops the map skills, which helps in better understanding of the subject. Whereas in the study of Geography content on 'Our Country - India', the student is exposed to a variety of experiences from reading and writing to preparation of charts, map work, paper presentation, discussion and so on, while developing understandings related to the selected content.

4.4.5. Preparation of The Instructional Programme Part 'B' on Developing Understandings in Geography:

The procedure followed in the study in the preparation of Instructional Programme on the development of understandings in Geography can be divided into seven different stages.

i) Preparation for the Instructional Programme.

ii) Writing of the initial draft of the Instructional Programme.

iii) Referral to experienced practitioners.

iv) Modification in the initial draft.
v) Try out of the draft.
vi) Writing and try out of the final draft of the Instructional Programme.

i) Preparation for the Instructional Programme:

Review of literature was done related to objectives, methods and present status of teaching Geography. This review facilitated the identification and selection of understandings that can be developed through teaching Geography. The selection of the content helped in identifying specific objectives related to understandings. After deciding on the content in relation to the general objectives of the Instructional Programme, the following steps were followed in its preparation.

a) Specification of instructional objectives:

Keeping in mind the content and the understandings, the general instructional goals for each of the nine chapter were written. These general goals were further analysed into instructional objectives and learning outcomes in behavioural terms.
b) Content Analysis:

The content of all the nine chapters selected in the study were analysed (Appendix VI). The teaching points were listed down for each of the chapters (Appendix VII). Based on the teaching points, the special vocabulary of the subject, important concepts, generalisations and findings were also identified. Activities were also designed, keeping the student environment in mind, towards achieving different learning outcomes.

c) Preparation of the test:

Two criterion referenced tests were developed, one to be used as pre-achievement test in Geography and the other one to be used as post test on understandings in Geography after the completion of the treatment. The details of preparation and development of these tests are given in chapter III caption 3.3.

iii) Writing of the Instructional Programme:

Keeping in view the flow chart of the content analysis (Appendix VI - A Sample) vocabulary of the subject, concepts, generalisation, and format of the Instructional Programme and feasibility to use, the initial draft of the Instructional Programme was prepared. To look for feasibility of the
programme, a few of the activities were initially tried out on the students of the previous batch in the regular classroom. This informal try out helped in restating some of the statements and writing short and simple sentences before passing on the draft to the regular practitioners.

iii) Reference to Experienced Practitioners:

The initial draft of the Instructional Programme was given to a small group of experienced practitioners which comprised of a classroom teacher and a teacher educator. They were requested to check the Instructional Programme and give suggestions with regard to suitability of language and format, logical sequencing of the content and activities, suitability and adequacy of examples, instructions, exercises and time allotted for the different activities.

The reactions of these experienced practitioners were sought through personal discussion for modification of the draft.

4.4.6. Modification of the Initial Draft of the Instructional Programme Part 'B'

Based on the discussions held with the experienced practitioners, the initial draft was modified on the following lines.
- Some of the complex sentences were split into simple sentences that made comprehension easy.

- In few cases the content was rearranged for logical sequencing.

- 'Student Activity Sheets' were included in the 'Teacher's Handbook' to help the teacher in monitoring student activities.

- Detailed instructions were given wherever the students had to refer maps for the performance of the activities.

4.4.7. Try Out of the Draft:

Some parts of the draft of the Instructional Programme were tried in the regular classroom on the batch of students who were not included in the experimental treatment to find the workability of the programme.

Based on the try-out, the following changes were made in the Instructional Programme Part 'B' which was used in the final try out.

- Few individual activities which required more time to complete were given as home assignments.
Example: Marking physical features of India on the outline map of India using appropriate colours and symbols.

- Some simple activities, wherein the students themselves can check the correctness of the given responses under teacher guidance were directed for self evaluation.

Example: i) Filling in the blanks

   ii) Completing the data chart.

4.4.8 Preparation of the Final Draft of the Instructional Programme:

The final draft of the Instructional Programme on developing understandings in Geography was prepared incorporating the above mentioned changes in the initial draft after a try out.

4.4.9. Final Try Out:

The students of class VIII of Demonstration School, Regional Institute of Education, Mysore, were considered as treatment groups during second half of the academic year for the final try out of the Instructional Programme Part 'B'on developing understandings in Geography namely, Teacher Support Material. This try out formed the main experimental treatment whose effectiveness has been studied in terms of
developing understandings in Geography on the content 'Our Country - India' in relation to parallel treatment.

The experimentation of the Teacher Support Material was done by the investigator. While using this part of the Instructional Programme (Part B) care was taken to see that the given teacher student activities were transacted in the same manner and in the same sequence. In other words, the investigator adhered strictly to the Instructional Programme.