CHAPTER II

REVIEW OF RELATED LITERATURE
CHAPTER II

REVIEW OF RELATED LITERATURE

STUDY OF RELATED LITERATURE

The review of literature is an exacting task, calling for a deep insight and clear perspective of the overall fields. "A summary of the writings of recognized authorities and of previous research provides evidences that the researcher is familiar with what is already known and what is still unknown and untested. Since effective research must be based upon past knowledge, this step helps to eliminate the duplication of what has been done and provides useful hypothesis and helpful suggestion for significant investigation". (Best and Kahn, 1996).

Review of related literature is a crucial step which invariably minimizes the risk of dead ends, rejected topics, rejected studies, wasted effort, trial and error activity oriented towards approaches already discarded by previous investigators and even more important erroneous findings based on a faulty research design (Mouly, 1964).

Review of the related literature helps to allow the researcher to acquaint himself with current knowledge in the field or area in which he is going to conduct his research. It serves the following specific purposes.

i) The review of related literature enables the researcher to define the limits of his field.
ii) It gives the researcher an understanding of the research methodology which refers to the way the study is to be conducted.

iii) By reviewing the related literature the researcher can avoid unfruitful and useless problem area. and

iv) Through the review of related literature, the researcher can avoid unintentional duplication of well established findings. (Lokesh Koul, 1988).

The investigator reviewed the studies pertaining to the objectives of the present study. The studies were arranged in the chronological order from 1970-2005.

Issac (1970) conducted a study on "A content analysis of the textbook in social studies in standard VII".

Important objective of the study was to examine how far the text book was written in conformity with the syllabus of social studies in standard VII.

The normative survey method was employed to get opinions about the text book. Random sampling technique is used in this study. The investigator had used a questionnaire as tool.

The major findings of the study were;

i) The illustration should be printed distinctly and clearly. They should be accurate and appealing to the pupils.
ii) The cover of the textbook should be made thicker, durable and attractive with useful pictures. The print should be bolder and the quality of the paper has to be improved and

iii) The preparation of the textbook should be entrusted to an expert committee consisting of experienced professors and experienced teachers.

Walavalkar (1971) conducted a study on "A critical evaluation of mathematics textbooks for standards II, III and IV".

The important objectives of the study were;

i) to find out errors, if any, in the mathematics textbooks, prescribed for students, II, III and IV, and

ii) to examine the suitability of these textbooks for the level of understanding of the pupils.

The mathematics textbooks prescribed for standards II, III and IV in Maharashtra were carefully read and the contents were analysed in detail. Data were collected from 65 schools, including schools located in urban and rural areas. The tools used were a questionnaire for teachers, a questionnaire for parents and a set of achievement tests for pupils of standards III and IV. The achievements tests were administered to 324 pupils of standard III and to 300 pupils of standard IV.
The major findings and conclusions of the study were;
i) The text books were, in general, suited to the capacity of the pupils.

ii) The text material was related to the day-to-day life of the pupils

iii) The text material was appropriate for creating pupils interest in mathematics.

iv) There were a number of minor faults in the text books which needed to be rectified.

v) There was need to resequence some of the topics in the text books for standard II and standard III.

vi) It was necessary to provide an answer key for all the exercises given in the textbooks.

Ponkshe (1972) conducted a study on "A critical evaluation of geography textbooks of standard VI".

The main objectives of the study were

i) to analyse the text book in relation to the objectives of the geography syllabus for standard VI.

ii) to study the text book in relation to the level of understanding of pupils in standard VI,

iii) to find out if it was necessary to make any changes in the objectives of the syllabus and

iv) to make recommendation for improving both the syllabus and the text book.
A stratified random sample of sixty schools in Dhulia district was selected. Of these sixty schools, 28 were urban and 32 rural, 49 were primary and eleven secondary. All the 150 geography teachers from these schools were the respondents. A questionnaire was sent to the teachers in order to elicit their opinions, however, responses were received from only 60 teachers. Opinions of 25 parents and 20 experts were also collected through questionnaires. Pupils reactions were gathered by conducting group interviews of fifty four pupils from eight schools.

The major findings of the investigation were

i) The textbook was written according to the syllabus.

ii) The textbook was greatly helpful in achieving the various objectives of the syllabus except for recognition of cause and effect relationship, stimulation of the power of observation and encouragement of the use of the maps.

iii) The language was easy and well within the understanding of the pupils.

iv) Pictures, maps and figures were adequate in number.

v) Exercises presented at the end of lessons contained 35 essay type questions, 84 short answer questions, twenty two very short answer questions and 32 objective type questions. The proportion of objective type questions was very small.

vi) Some portion of physical geography from standard V should be transferred to standard VI syllabus and
vii) The Textbook should contain a large colour map showing natural regions.

Kher (1972) conducted a study on "A critical evaluation of history textbook for standard VI".

The important and objectives of the study were;

i) to analyse the textbook with a view to find out how far it helped in achieving the objectives of teaching history as mentioned in the prescribed syllabus,

ii) to find out whether the textbook was suited to the level of the understanding of the pupils of standard VI and

iii) to find out the extent to which the textbook was helpful in creating an awareness of difference in values of the past and of the present.

The survey method was used for the study. The tools used were questionnaires for teachers, parents, experts, and pupils. The sample selected for the study consisted of 150 teachers from 150 schools in Dhulia district, the parents of forty pupils randomly selected from among those studying in standard VI in these schools, twenty five subject experts and all standard VI pupils of three of the 150 schools selected randomly. Interviews were held with all the standard VI pupils from the three selected schools.
The main findings of the study were,

i) The textbook was helpful in creating among the pupils awareness of their social heritage and developing patriotism and emotional integration but was not helpful in creating international understanding and in interpreting the present in the light of the past history.

ii) All the topics in the syllabus were appropriately represented in the textbook.

iii) There were several mistakes in the text, several of them factual, errors of omission also appeared.

iv) The text material was easy to read and the biographical style of presentation was suited to the age of the pupils.

v) The book was attractive and rich in visual aids as it contained a number of pictures, figures and maps and

vi) There was need for greater variety in the exercises so that all objectives of history teaching could receive due weight age.

Joshi (1972) conducted a study on "Content analysis of general science textbook for standard IV".

The objectives of the investigation were,

i) to examine whether the content of the textbook was suitable to the age and the understanding level of the pupils.

ii) to study the suitability of the explanations and illustrations provided in the textbook and
iii) to ascertain whether the language and vocabulary used in the textbook were appropriate.

The study was carried out adopting the technique of content analysis. The investigator used an information unit as the basic unit for content analysis. An information unit was defined as an independent piece of information which was meaningful even when separated from its context. The content of each lesson was analysed into information units by paying special attention towards denoting pre and post context. Each information unit was then cut out from the textbook and pasted on a card and the central statement of the information unit, its placement, its supported ness (or) unsupported ness, nature of the support etc. were specified.

A set of cards was prepared for each of the twenty lessons, the total number of information units being 493. They were analysed again after further scrutiny raising the number of information units from 493-733. The implied objective of science teaching for each information unit was noted in terms of knowledge, understanding, application, skill and appreciation. The frequency of occurrence of these objectives in the textbook as a whole was calculated, and the relative weightage given to each objective was examined.

The supports that accompanied the various central statements were categorized into six types, namely, experiments, visual illustrations,
verbal illustrations, reasoning, statistics and reinforcements on the basis of which the frequency of occurrence of each category of support in the whole textbook was calculated.

The major findings of the investigation were,

i) The contents of the textbook except in the case of one lesson were suitable to the age of the pupils,
ii) The sequence of presentation of information units was quite proper.
iii) There were a few grammatical errors but the content was free from factual errors.
iv) Weightages given to the objectives of developing scientific skills and appreciation of science needed to be increased and weightage for the knowledge objective reduced proportionately.
v) There was a need for more use to be made of statistics in tabular form in supporting the central statements of information units and
vi) There was need to increase colour pictures in the text book.

Karandikar (1973) conducted "A study on Mathematical concepts mentioned in the syllabus for standards II to VII".

The main objectives of the study were;

i) to examine whether the mathematical concepts mentioned in the syllabus for standards II to VII were in consonance with the intellectual maturity of the students and
ii) to analyse the corresponding textbooks to ascertain whether the presentation of various concepts was appropriate to the students intellectual maturity.

The study essentially involved a detailed analysis of the prescribed syllabi and textbooks. The investigator's findings were supplemented by teacher's opinions obtained through a questionnaire. For analyzing the prescribed syllabus, the investigator evolved a set of criteria based on the Piagetian stages of cognitive development. The textbooks were analysed with respect to fifteen criteria representing three important characteristics of mathematical concepts. These data were then supplemented by the data obtained through the teacher's questionnaire which was administered to thirty mathematics teachers teaching at the primary and the secondary levels.

The major conclusions of the study were;

i) All mathematical concepts in the syllabi for standards II to VII except those of time and space, were in consonance with the intellectual maturity of the pupils.

ii) According to teachers, out of forty concepts in the mathematics syllabus for standards II to VII, twenty were easy and twenty were difficult to teach.

iii) The presentation of concepts in the textbooks was logical rather than psychological.
iv) According to teachers textbooks were deficient in pictures, figures and examples conducive to the development of mathematical concepts and

v) In the syllabus, it was necessary to indicate the relationship between specific concepts and the objectives of teaching mathematics.

Rajput, Gupta and Vaidya (1978) conducted a study on "Survey of science laboratories in the western region".

The objective of the survey was to study the role of laboratories in the basic education of science as perceived by science teachers. It intended to analyse;

i) the main objectives of laboratory work in the opinion of science teachers.

ii) the area of the laboratory.

iii) the total time allotted for laboratory work in each subject.

iv) the problems faced in conducting the laboratory classes.

v) the procedures adopted for making purchases for the laboratory.

vi) the total grant available for the laboratory and

vii) the assistance in the conduct of laboratory work by trained attendants and helpers.

The study was conducted on 94 science teachers who attended the correspondence cum contact programme at the Regional College of Education, Bhopal. A questionnaire was developed to collect data. The
responses received through open-ended questions were coded classified and used for qualitative interpretations.

The major findings of the survey were,

i) The objectives of laboratory work outlined by the teachers were, to verify facts taught in theory classes, to develop the habit of doing independent work by the students, to create interest in science, to prepare students for higher studies and ultimately to prepare good scientists for the country, to develop skills of handling the apparatus, equipments, to observe and critically think about the results, to develop the habit of reasoning, to avoid memorizing the subject, to create interest for research and to develop habit of doing systematic work,

ii) The major unwritten goal of laboratory work was, however, to prepare students for practical examinations held externally,

iii) In M.P. 68.7% schools did not have any arrangement for water supply in the laboratories, 91.43 per cent schools had no gas supply, 28.57 per cent schools did not have electric fittings, 77.14 per cent schools did not have any botanical garden, and 88.57 per cent schools did not have any workshop for undertaking minor repairs.

iv) As many as half the schools included in the sample won prizes and certificates for distinctive work in science.

v) Surprisingly, 10 per cent schools did not have any laboratory.
vi) In M.P. 15 per cent schools did have any experimental tables.

vii) Practical work was not attempted in class IX in about 55 per cent schools in M.P. and

viii) The main problems faced by the teachers were lack of free time for them to arrange for practical work, laboratory assistant being busy elsewhere, the poor quality of equipment and chemicals supplied by firms offering lowest quotations and disciplinary problems of students.

Muddu (1978) conducted "A study of prevalent status of instructional procedures in biology in high schools".

The important objectives of the study were;

i) to evaluate the facilities provided to teachers, such as laboratories, audio visual etc.,

ii) to find out the type of instruction adopted in teaching biology in accordance with the concepts envisaged in the syllabi and

iii) to find out the extent to which the instructional procedures met the demands of biology syllabi in the process of reorganizing the scheme of secondary education.

The study was designed as a quantitative empirical study. The sample consisted of teachers of 120 high schools teaching biology in classes VIII, IX and X of the twin cities of Hyderabad and Secunderabad. The variables involved in the investigation were -
a) the present status of instructional procedures followed by teachers in biology teaching  
b) the adequacy of classroom instruction to effect behavioural changes in students and  
c) adequacy of the laboratories, reading materials, extra-curricular activities, etc., in secondary schools. A questionnaire was prepared and administered to the selected teachers.

The major findings of the study were

i) Fifty nine per cent of the teachers stated that they did not have adequate class rooms to teach biology. For 85 per cent of the instructional procedures followed by them were not according to the aims and objectives of biology teaching. This was due to non-availability of adequate teaching aids.

ii) Most teachers preferred only the lecture demonstration method.

iii) Facilities of reference books, informative pamphlets, magazines and general books on biology were not adequately available in school libraries.

iv) In 70 per cent schools there were no separate laboratories for biological sciences and in 30 per cent schools there were improvised laboratory facilities for biological instruments. Only 35 per cent students maintained good practical notebooks.

v) Teachers expressed their difficulty in conducting demonstrations and practical in biology, because of the absence of adequately equipped laboratories, lack of leisure periods and over-crowded class rooms and
Tools such as demonstration tables, bulletin board etc. were in poor conditions and were rarely used in biology instruction, availability of aids like filmstrips, projectors, microscopes etc., were very inadequate.

Bhattacharya (1979) conducted a study on "A critical study of science education in Assam and Meghalaya schools".

The objectives of the study were to determine the position as to where Assam and Meghalaya stood in science education and also to find how they could go forward more effectively and more vigourously.

The study was of a descriptive survey type. Ten different categories of sample were drawn.

i) school science teachers of Assam

ii) school science teachers of Meghalaya

iii) heads of schools of both Assam and Meghalaya

iv) educational officers, scientists, teacher educators and retired persons

v) trained teachers, teacher trainees and untrained teachers.

vi) schools for field study

vii) college teachers of Meghalaya

viii) Meghalaya colleges teaching science

ix) examination results in arts and science subjects and

x) tribal and non-tribal college students in Meghalaya

Questionnaires, interview schedule, rating scale, check list, observation schedule, Flander's Interaction Analysis Category System
(FIACS), Kuppuswamy's Socio-Economic Status (SES) scale (Urban) etc. were used. A field study was also carried out.

The major findings of the study were:

i) Assam and Meghalaya respectively had 70.65% and 86.85% of teachers eligible to teach science in secondary classes.

ii) All the science teachers qualified to teach science taught other subject as well and

iii) Science was more popular among the non-tribals in pre-university courses. The wastage of tribals and non-tribals in science education differed significantly.

SCERT (1981) conducted a study on "Evaluation of UNICEF Aided Science and Mathematics Pilot Project Scheme for Classes VI and VII".

The important objectives of the study were:

i) to evaluate the text books prescribed for science and mathematics for students of classes VI and VII

ii) to examine the views of teachers about handling of the subject matter through questioning technique in the class and

iii) to examine the views of parents, teachers and students about the text books of science and mathematics.
The sample for the study consisted of ten principals, ten inspectors, 40 teachers, 100 pupils and 100 parents of pupils studying in the experimental schools.

The data were collected with the help of four questionnaires.

i) questionnaire I was for principals and inspectors for their evaluation of the text books.

ii) Questionnaire II was for teachers to know their reactions about handling of the subject through questions in the class

iii) Questionnaire III was to know from pupils their opinion about the text books and

iv) questionnaire IV was for parents of pupils to know their opinion about the text books.

The major findings of the study were:

i) All teachers, parents and pupils were of the opinion that there was continuity in the development of content in Mathematics text books

ii) In the case of physics text books, all teachers agreed that the syllabus was based on modern concepts in physics was catering to the needs and interest of the pupils, and was in conformity with the principles of syllabus construction.

iii) In the case of biology text books, teachers, parents and pupils felt that modern concepts had been included in the text books and they were in conformity with the principles of syllabus construction and

iv) the parents were of the view that mathematics text books had a continuity but were confusing the students.
Karim (1982) conducted a study on "An Analysis of the contents of the History Text Books following in Kerala Schools with a view to developing models and materials for National Integration".

The important objective of the study was to analyse the history text books prescribed for standards VIII, IX and X in Kerala to assess the extent to which they promoted national integration.

The text books were analysed to identify instances which would hinder promotion of national integration classified under obscurantism, communalism and regionalism and instances which would promote national integration.

The major conclusion of the study was while instances of obscurantism, communalism and regionalism were rare, the content of the text books was not consciously intended to promote national integration.

Mukhopadhyay (1983) conducted a study on "The Relationship between Comprehensibility of Language used in the Science Text Book and Science Achievement in terms of Learning Objectives at Primary Level in the state of Rajasthan."

The objectives of the study were;

i) to make a linguistic analysis of the text book prescribed for the subject of science for grade III

ii) to make a content analysis of the same text book.
iii) to compare the linguistic content of the text book with the spoken and written language of children of the particular grade

iv) to measure the comprehensibility of language used in the science text book.

v) to study the relationship between comprehensibility of language used in the text book of science and the science achievement and

vi) to study the relationship of different components of the comprehensibility of language and comprehension categories in science achievement.

The purposive sampling technique was used for selecting the sample. For try-out of texts of a sample of 250 students from ten schools, reading grade III (125 from Urban and 125 from Rural areas) was taken. The final tests were administered on 400 children reading in 16 primary schools in the district of Jaipur. The sample covered eight urban schools and 8 rural schools. 25 students both boys and girls, reading in grade III were taken randomly from each school.

The tools were used in the study were;

i) the comprehensibility of language test was developed on the basis of the linguistic analysis of the science text book and

ii) the science achievement test was developed on the basis of the content analysis of the science text book
The data collected were processed with Chi-square test, product movement correlation, multiple correlation and analysis of variance.

The important findings of the study were:

i) Comprehensibility of language used in the science text book was significantly related to different levels of science achievement. These levels were recall, recognition, translation, interpretation and extrapolation and

ii) There was a significant difference in science achievement in terms of learning objectives between rural and urban children. Urban children were superior to rural children with respect to science achievement

Menon (1986) conducted a study on "The Study of a System of Science Education in the Prespective of the Process of Science Inquiry".

The objectives of the study were:

i) to study the overall impact of the curriculum system on the development of the process skills of scientific inquiry.

ii) to examine the science text books for standard VIII to XII for their suitability to develop skills of scientific inquiry and

iii) to examine the instruction and evaluation practices in relation to scientific inquiry.
A multi cross sectional survey was conducted among a sample of 1448 students of standards VIII to XII belonging to the English medium schools in the city of Baroda. Data were collected with the help of the Test of the Process of Scientific Inquiry (TOPSI) which was constructed and validated by the investigator.

To study the overall impact of the curriculum system on the development of the process skills of scientific inquiry, a similar multi-cross sectional survey was conducted using TOPSI among a sample of 238 students of standard VIII to XII studying in English medium schools of Baroda affiliated to the CBSE. The respondents for this purpose were students and teachers. The obtained data were subjected to content analysis. A sample of practical lessons in the laboratory were also observed and 220 questions asked in the classroom tests were content analysed.

The major findings of the study were:

i) Text books were the only curricular materials through which the curriculum guidelines percolated up to practicing schools and questions mostly tested the product aspects and not the process aspects.
Bajracharya (1986) conducted a study on "Study of Science Education in the Secondary Schools of Nepal with a View to Evolving of Functional model for Improving the Science Education".

The objectives of the study were in three phases;

i) The first phase was conducted with a view to knowing the conditions of the existing secondary science education programme.

ii) The second phase was concerned with formulation of a model. The model included formulation of curricular objectives, formulation of curricular content, identification of methods and materials for effective teaching-learning process, formulation of evaluation procedure and formulation of criteria for entering behaviour and

iii) The third phase covered evolution of developed models and formulation of a functional model.

In the first phase a sample of 75 secondary science teachers and ten science teacher educators was selected. They were administered the following tools;

i) a survey questionnaire for science teachers,

ii) a survey questionnaire for science teacher educators,

iii) a class observation sheet and

iv) a documentary analysis of relevant materials.

The data so collected were processed with descriptive analysis first and then the rank correlation coefficient was found out.

The major findings of the study were,
i) The existing curricular objectives (general as well as specific) of the secondary science curriculum were unsystematic and insufficient. These objectives were not achieved as there was no practical work in the curriculum for the pupils.

ii) The existing curricular content of grades IX and X was theory-oriented and far from the pupils daily lives. Some topics in the content were below and some were above the grade level.

iii) The techniques of teaching science which were practised in most of the schools were traditional. The only teaching aid used in the classroom was the blackboard and chalk.

iv) Some methods such as discovery and free choice activity were not known to many teachers.

v) Most of the secondary schools (except residential schools) did not have a science room or laboratory, adequate materials and science teachers. Some schools had certain materials most of which were irrelevant to the course content. Aids such as aquarium, microscopes, films, slides, tapes, etc. were absent.

vi) In most of the schools there was no provision for replacement of expendable materials in science.

vii) Teacher's guides and manuals were not available in most of the schools.

viii) The prescribed text book contained inappropriate topics and diagrams.
It reflected only reading skill and did not provide for practical skill and concept development.

ix) Teaching time per day for one class was 40-45 minutes. All science teachers had expressed that this was not enough for demonstration and other activities in the class. There was a need for more time per day.

x) In most of the schools (except residential schools) co-curricular activities were non-existent and

xi) The existing evaluation procedure was inappropriate and needed to be changed.

Desai, Shanta Devi (1986) conducted a study on "A Critical Study of Science Teaching Programme at Middle School Level in Karnataka State."

The objectives of the study were:

i) to investigate the aspects of science teaching touching the sufficiency of science teacher's qualification, understanding of the course content, effect of teacher's work load, practical work competence, methods and aids of teaching, evaluation procedures, co-curriculum activities, teacher reaction to the syllabus and its efficiency, sufficiency of laboratory and library facilities, effect of hand book, problems of syllabus implementation, and suggestions for improving science teaching.

The study used two specially constructed questionnaire -
addressed to headmasters and assistant teachers as tool in the collection of data mainly in the form of opinions.

The sample consisted of 348 Headmasters and 667 assistant teachers belonging to 460 higher primary schools from the four educational divisions of Karnataka viz., Belgaum, Bangalore, Gulbarga and Mysore.

The major findings of the study were;
i) Teachers had the practice of writing lesson plans.
ii) Schools did not have science clubs.
iii) Schools had no laboratory
iv) Experiments performed by teachers were helpful in learning
v) There was no help from higher authorities to improve the laboratory.
vi) Scientific knowledge in the science text was suitable in day-to-day life.
vii) Teachers were not specialized to teach science subjects and
viii) The science text book was attractive.

Sujatha (1986) conducted a study on "An analysis of the content of history text book in standard IX".

The important objectives of the study were
i) To analysis the content, exercises and illustration of the standard IX history text book and
ii) To analysis the physical aspects of textbook.

In that study the investigator had adopted normative survey
method and used the random sampling technique. The investigator used a questionnaire as tool for the collection of data.

The major findings of the study were

i) The treatment of the subject matter was not sufficient to achieve all the objectives of teaching history and

ii) The subject matters are arranged from easy to difficult way and come to the following conclusions.

a) The illustrations are not properly explained.

b) No topic from outside the syllabus was included in the textbook and

c) The exercises given in the text book are not enough for effective evaluations.

Lambhate (1987) conducted a study on "Development of Instructional Material for Teachers Teaching Science to Class VI in Rural Areas of Madhya Pradesh".

The objectives of the study were;

i) to analyse the content of the science text book prescribed for class VI.

ii) to identify the relevant village based material activities and situations for the teaching of science in the classroom and

iii) to develop a science teaching competence scale to find out the effectiveness of the developed instructional material in terms of teachers' science teaching competence.

The hypothesis of the study was there should be no significant
difference between the mean scores on the science teaching competence scale of the experimental group and the control group. A random sample of 12 middle schools was selected out of all the middle schools of Jepalpur Tahsil. Again, it was randomly assigned to the experimental and control groups. The teachers teaching science to class VI in one group of six middle schools formed the experimental group while teachers teaching science in the other six middle schools formed the control group. In each school, two teachers taught science to class VI pupils. Thus in all 24 teachers were in the sample. Pre test / post test control group design was used.

The science teaching competence scale was developed on the pattern of the Baroda General Teaching Competence scale (Passi, 1976). There were 25 components in the scale which were grouped under categories like planning, presentation, closing, evaluation, and classroom management. The data were analysed with the help of ANOVA.

The major findings of the study were;

1) The teachers of the experimental group performed better than those of the control group on
   i) Selection and organization of contents
   ii) use of proper scientific terminology, teaching aids and experimentation and
   iii) maintaining the classroom discipline by sustaining the attention
of students with the help of instructional material.

2) The experimental instructional material could not equip teachers to enable their pupils to think critically and

3) The effectiveness of the environment based material in the teaching of science to grade VI pupils in rural schools was demonstrated.

_Tensy (1987)_ conducted a study on "A content analysis of social science text book in standard IV.

The major objectives of the study were;

i) To analysis the content, exercises and illustrations of the standard V and

ii) To analysis the physical aspects of the standard V social science text book.

The normative survey method had been adopted for the study. Random sampling technique was used in this study. An opinionnaire constructed by the investigator was used as tool.

The important finding of the study were

i) All the chapters in the text book are not treated with equal importance.

ii) The treatment of the subject matter was not sufficient to achieve all the objectives of teaching social science.

_Malaimarean (1995)_ conducted a study on "A critical analysis
of the matriculation science textbook prescribed for standard IX".

The important objectives of the study were

i) To find out from the science teachers handling science for standard IX in matriculation schools, which of the characteristics of a good science text book listed in the opinionnaire are fully accepted which of them are to some extent accepted and which of them are not at all accepted.

ii) To find out with regard to which aspect the matriculation science text book prescribed for standard IX is deficient.

iii) To arrive at the suitability of the matriculation science text book prescribed for standard IX and

iv) To arrive at suggestions for the improvement of matriculation science text book prescribed for standard IX.

The investigator has adopted the normative survey method and used an opinionnaire as fool. Random sampling technique was used in that study.

The important findings of the study were;

1. It was found that the contents of the text book are not arranged in a psychological order.

2. The contents of the text book are not suitable to the environment in which pupils live.

3. The colour pictures are not printed in the science text book.
4. The cost of the textbook was not that much low and

5. In general the matriculation IX standard science textbook need a considerable amount of improvements in its all aspects namely:
   i) Objectives, ii) Pictures and illustrations, and Finally iii) Printing.

   **Prasanna Kumar, (2004) conducted a study on 'Analysis of Higher secondary chemistry question papers.**

   The important objectives of the study were
   i) To analyse the question papers of public examinations for the subject chemistry of standard XII with the following aspects a) type of questions b) instructional objectives and c) content.
   ii) To identify the difficulty level in the question papers and
   iii) To compare the different question papers with one another.

   Question papers were analysed in respect to following aspects.
   i) Pattern of the question paper
   ii) Content coverage
   iii) Coverage of instructional objectives and
   iv) Forms of question.

   Tamil Nadu higher secondary board chemistry five years question papers are used for the study.

   The study was to analyse the chemistry questions papers set for the standard XII. The question paper of the chemistry subject higher secondary level had four parts namely part I, part II, part III
and part IV. The following types of questions are included in the question papers in the above mentioned parts, i) objective type  ii) very short answer, iii) short answer and essay type questions.

The major findings of the study were

i) The selected question papers covered all aspects of a question paper.

ii) The appropriate weightage and importance had been given to objective type of questions in all the question papers selected for the setting and

iii) There is no relationship between the aspects of question papers.

Amutha's (2005) study "An analysis of Botany textbook prescribed for standard XI" had the following objectives.

i) To find out the extent which the content materials of the text book cover the syllabus prescribed by government of Tamil Nadu.

ii) To find out the nature of the illustration, diagrams, practicals and assignment given in botany textbook and

iii) To determine the physical feature of the textbook.

The normative survey method was adopted for the study. Random sampling technique was used in this study. An opinionnaire constructed by the investigator was used as tool thirty five questions were selected for the present study by applying chi-square test.

The main findings of the study were
i) The textbook was useful to the student

ii) The parts in the diagrams given in the textbook were completely labeled.

iii) The language used in the diagrams in the Botany textbook were so given that they can easily be drawn by the students.

iv) Spelling mistakes were found in the textbook and

v) The Botany textbook was attractive. Without any one's help they can understand the subject matter given in the Botany textbook.

Jasheela (2005) conducted a study on "A critical study of kerala state IX standard social studies Textbook".

The important objectives of the study were

i) To analysis the content, exercises and illustrations of the IX standard social studies Textbook and

ii) To analysis the physical aspects of the IX standard social studies Textbook.

The description normative survey method had been adopted for the study. The investigator used the random sampling method for selecting high school social studies teachers and high school social studies students for the study. The investigator used three tools-two questionnaires, one for teachers and one for students and a checklist for teachers. The statistical techniques used for this study was the percentages.
The major findings of the study were

i) In the planning of the book the materials were arranged sequentially and spirally.

ii) In the selection of content, the age level and maturity level have been taken into consideration.

iii) As regards organization and presentation of the subject matter it deals with scientific and psychological principles.

iv) Teaching learning aids recommended were attractive. Learning aids provided was according to the level and suited for the situation in context.

v) As regards the physical features of the book was concerned it was attractive, more convenient to handle and

vi) Most of the students did not like the size of the book.

The students general approach towards the textbook was that they need the following:

a. More coloured pictures.

b. Explanation box

c. Activities oriented review exercises and

d. Project, group activity.

The book contained all major concepts and principles in accordance with the syllabus and the different topics were adequate and these were not prejudicial to the national interest and against the sentiments of a particular community, mainly it was students centered
one. Private teachers were comparatively more satisfied than the govt., high school teachers.

The majority of the teachers were satisfied with the organization and they liked the way the topics were introduced, developed, and culminated. The textbook reflected integrated approach to teaching. The authors followed the investigatory approach and emphasis was on the development of the historic concepts.

Regarding the teaching learning aids majority of the private high school teachers reacted positively then the government teachers.

Regarding the physical features of the book; most of private teachers responded positively than the government high school teachers.

ANALOGY

1. STUDIES ON SYLLABUS ANALYSIS

There were 6 reviews cited on syllabus analysis. Among the 5 reviews cited one was about Mathematics syllabus analysis, in II and III standards, two were on social studies in IV and VII standards, one was about general science in standard IV, and the rest were on History in IX standard.

From the reviews on syllabus analysis it could be understood that syllabus analysis at the XI and XII standard levels were limited.
2. STUDIES ON TEXT BOOK ANALYSIS

There were 6 studies cited on text book analysis. Among the 6 reviews cited, one was about Geographic text book analysis in VI standard, one dealt with analysis of science text books, one was about general History text book analysis in VI standard, one dealt with analysis of social studies in IX standard, one was botany text book analysis, II, III and IV standards and rest of them were analysis of both science and Maths text books, in VI and VII standards.

From the reviews on text book analysis it could be read that text books analysis at the XI and XII standard level were at a minimum. One study on XI std botany and other studies are XI std biology and other studies are in high school level.

3. STUDIES ON TECHNIQUES OF TEACHING

There were 8 studies reviewed on techniques of teaching. Among the 8 reviews, two were on method of teaching biology in school, and the rest of them were on study of science in schools. The studies on techniques of teaching were conducted in different states of our country other then Tamil Nadu.

From the reviews it could be read that the techniques of teaching in XI and XII standards level were few. Most of the studies were at high school level.
4. STUDIES ON AVAILABILITY OF FACILITIES IN LABORATORY

There was only one study on survey of science laboratory in western region. From the review it could be inferred that studies on availabilities of facilities in zoology laboratories at higher secondary level were limited.

5. STUDIES ON ANALYSIS OF QUESTION PAPERS

There was one study on analysis of higher secondary chemistry question papers. There was no studies on analysis of XI and XII standard zoology question papers.

ANALOGY OF RELATED STUDIES

The reviews referred in this chapter painted a clear picture of the analysis of syllabus, text books, techniques of teaching, availabilities of facilities and the analysis of question papers in different states of India and quite a few studies had been carried out in Tamil Nadu, have limitations as follows.

1. Most of the studies on text book analysis were conducted in primary, and high school levels. But few studies were conducted on analysis of text book at higher secondary level.

2. Majority of the studies on analysis of the syllabus were in social science, general science, history and biology and only one in B.Ed. But the studies on eleventh and twelfth standard zoology syllabus were neglected.
3. Most of the studies reviewed on analysis of techniques of teaching were conducted on general science, and biology. But the techniques of teaching zoology at higher secondary level were neglected.

4. Studies on availabilities of facilities in laboratory were very limited. Only one study was available on science laboratory. But reviews on zoology laboratory at higher secondary level were neglected and regarding

5. Studies on analysis of question paper only one study was carried out on analysis of chemistry question paper at higher secondary schools. But the study on zoology question paper at higher secondary level has been neglected.

A close analogy of the reviews revealed that majority of the studies were conducted in different states in India. Few studies were conducted in Tamil Nadu. Most of the studies are on general science, maths, history, geography, social science and biology. But studies on zoology at higher secondary level were not conducted.

The present study goes further on layout of zoology laboratories in higher secondary schools in Tamil Nadu. The present study fills in the gap left by other studies by analysing the teaching of zoology on the basis of number of variables. Such as sex, location of school, educational qualification, years of experience, medium of instruction, types of school, types of management of school and strength of the students in eleventh and twelfth standard zoology. This investigation
makes an attempt to analysis the process of teaching zoology in higher secondary schools in Kanyakumari, Tirunelveli and Thoothukudi districts of Tamil Nadu.

Hence an attempt to probe into the process of teaching zoology in higher secondary schools in southern districts of Tamil Nadu had been made in this investigation.

The ensuing chapter deals with the plan and procedure of the present investigation.