CHAPTER III
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REVIEW OF RELATED LITERATURE AND HYPOTHESES

3.1 REVIEW OF RELATED LITERATURE

A review of related literature is an important pre-requisite to actual planning and the execution of any research work. Best (1962) says, “......a familiarity with the literature in any problem area helps the students to discover what is already known, what others have attempted to find out, what methods had been promising and what problems remained to be solved”. To make our research effective, adequate familiarity with all the works done upto the time in that field is very essential. The real purpose of the review of the related research is the fitness of a particular project into a broader scheme enabling one to see its importance and to relate it to many studies. The review of related literature helps the investigator:
- To define the limits of his field. It helps the researcher to delimit and define his problem.
- To avoid unfruitful and useless problem areas.
- To avoid unintentional duplication of well established findings.
- To know about the tools and instruments which proved to be useful and promising in the previous studies.
- To know about the recommendations of previous researchers for further research.
- In speculating useful hypotheses and provides helpful suggestions for significant investigation.
- To make aware of the status of the problem.
- To informulate an appropriate research design.
- To locate the sources of data and to collect the pertinent data useful in the interpretation of results.

The exiting researches that are directly or indirectly related to the present study are given below:

3.2 Studies on Attitudes in General

Kala (1988) in her study investigated the relationship of selected psychological variables with attitude
towards teaching of traditional and model school teachers. She found that measures of intelligence and adjustment were not correlated significantly with any measures of teachers’ attitude towards teaching in model as well as in traditional school samples.

Pandey (1991) in her study on the Teachers’ attitude towards distance education revealed that female teachers at both University and correspondence level are more willing to adapt themselves to new changes in the field of education whereas their degree college colleagues are more traditional, closed and rigid towards such changes. As far as male and female university and correspondence teachers are concerned, they express more or less similar attitudes towards distance education. The reason behind this may be that most of the correspondence teachers have either switched over to this institution from the University or they are university teachers working for the correspondence courses also. Thus, no wonder, they express similar attitudes as their university colleagues do.

Gakhar, Saini and Kala (1992) carried on an investigation to see the attitude of senior secondary students towards drug addiction in relation to intelligence, SES and sex differences. A sample of 50 senior secondary students was
taken from three senior secondary schools of Punjab State. It was found out that variable of intelligence correlates significantly with the attitude of students towards drug addiction. Also variable of socio-economic status depicted significantly positive correlation. Variables of sex–difference also accounts for significant differences on the students’ attitude towards drug addiction.

Chopra (1996) in her study on 200 students’ studying in private affiliated senior secondary schools of Haryana concluded that difference between mean scores of boys and girls in attitude scale towards computer education is not significant. This means there is no difference in the attitude of boys and girls. Similarly, the difference between mean scores of rural and urban students on attitude towards computer education is not significant.

Shah and Jacob (1996) in their study investigated the attitude of men and women towards women’s reservation in Panchayati Raj institutions. The sample consisted of 100 working men and women of the village. Among the sample, 50 men and women belonged to the skilled group and 50 men and women belonged to the unskilled group. Purposive sampling method in consideration with the variables
was used for the study. Results revealed that nearly fifty percent of the overall sample had unfavourable attitude. The percentage of respondents having unfavourable attitude was almost equal in both the sexes. It was further revealed that among the male groups, higher percentage of Hindi males had unfavourable attitude compared to their Muslim counterparts towards women’s reservation in Panchayati Raj Institutions. Higher percentage of unskilled males and females had unfavourable attitude in comparison to their skilled counterparts towards women’s reservation in Panchayati Raj institutions.

3.3 Scientific attitude and Intelligence, Academic Achievement

Chatterjee (1972) found that there was high degree of correlation between biographical factors and achievement in science and aptitude for the technical stream.

Sood (1974) studied the attitude towards science and scientists and found that the attitude towards science and achievement in science were positively related to each other.
Srivastava (1980) through his study of the scientific attitude and its measurement found that amount of scientific impact made on scientific attitude positively and that scientific knowledge helped in the formation of scientific attitude.

Shinde (1982) conducted a study on the scientific attitudes of secondary students. He found that students with high academic achievement had high scientific attitude, students with average academic achievement had average scientific attitude and the low achievers had a low scientific attitude.

Sarah, Shanta and Williams (1983) aimed to determine the relationship that existed, if any between pupil’s attitude towards science education and science with achievement. The coefficient of correlation between their attitude towards science education and achievement was found to be 0.40 and it was significant at 0.01 level. When the effects of pupil’s attitude towards science education and their socio-economic status were partialled out, the coefficient of correlation between their attitude towards science and their achievement was found to be 0.07 and it was not significant.
Chhikara (1985) in his study into the Relationship of Reasoning abilities with achievement of concepts in life sciences found that there is a definite positive relationship between conceptual achievement in life sciences and reasoning ability.

Saxena (1985) found that science students had a favourable attitude towards physics and this attitude towards physics was correlated with a cognitive preference style of recalling while it was negatively correlated with application style.

Mahal (1982) in his study on the superstition and the development of scientific temper among school students observed that since the ages, superstition has been in vogue in all societies and the school is a part of the society. During the courses of time, the school has built in its own culture of superstitions. To prevent the danger of passing superstitions attitude among school students, science education at best, can include in its programme, the inculcation of the scientific temper among students as well as teachers. For this first requirement is that of good and thorough observation. The second requirement is the search for patterns in observations.

Rao (1990) aimed at determining the relationship among scientific attitudes, science aptitude and achievement in biology which were finally found by them to be significantly related to each other. Kaur (1990) found a significant relationship between scientific attitude and science achievement. Kumar (1991) showed that the development of scientific attitudes depended upon their perception of science teaching and nature of learning experiences.

Alexander (1990) examined the influence of critical thinking, science aptitude and socio-economic status on achievement in science. He found that critical thinking and scientific aptitude contributed significantly to achievement in science.

Sibia (1989) and Kaur (1992) found a significant relationship between verbal intelligence and achievement in science. Intelligent students in Bala’s (1990)
study, experiences less problems in learning Economics than not intelligent and less intelligent students, perhaps the latter group is more problem-bound than the former.

Sood (1992) and his students at the Regional College of Education, Ajmer (Rajasthan) have studied attitude towards science and scientists among students and teachers for years. This study revealed significant relationship between understanding of science and attitudes towards science. Sharma (1990) studied scientific literacy, attitude towards science and personality traits of students and teachers. His findings too received support from the large study of Sood (1992).

Padmanbhan (1997) conducted her study with the objectives to find out whether the secondary school science teachers are critical in their observation, are broad-minded, are objectives in their approach and respect other's opinion. In nut shell objective was to investigate the scientific attitude of secondary science teachers. The study was delimited to science teachers of English medium secondary schools of Maharastra Board, located in Bhandeep, Mumbai. Findings reveal that there is definite trend towards the development of
scientific attitude in science teachers though they can not be said to have developed a fully scientific attitude.

3.4 Scientific attitude and Socio – Economic Status

Kennedy (1976) in “An analysis of the science students in high school of a southern Metropolitan school system” found that science students had parents with higher educational background than non – science students. The percentage of science students to attend college was higher than that of non – science students.

Sarah, Shanta and Williams (1983) examined if there were any differences among the different groups of students in respect to their achievement in science, attitude towards science and attitude towards science education. When the effect of pupil’s attitude towards science and their attitude towards science education were partialled out the coefficient of correlation between their achievement and socio – economic status was found to be 0.11 and it was significant at 0.01 level.

Bandyopadhyay (1984), conducted study on “Environmental influence, academic achievement and
scientific aptitude as determinant of adolescent’s attitude towards science stream”. The major findings of his study were – pupil having a positive attitude towards science and a negative attitude towards science were different with respect to the independent variables either in isolation or in interaction. Further he found that environment, attitudinal and socio-economic status had led to favourable attitude towards science. Teacher influence, peer influence, vocational value of science and further aim of life were other contributory factors.

Ghosh (1989) showed that whereas scientific attitude was related to scientific aptitude, there was no such significant difference in respect of socio-economic status.

Alexander (1990) found a significant contribution of socio-economic status on achievement in science.

Malviya (1991) studied attitude towards science and interest in science and found that profession and socio-economic status have no effect on attitude towards science.
3.5 Scientific Attitude and Interest in Science

Mitra (1978) found that scientific interest was highly related with probabilities of success in the higher secondary course.

Raveendranathan (1983) found that English medium schools has higher interest in science than Malayalam medium schools.

Although there is no evidence of any kind regarding the relationship between intelligence and scientific attitude yet studied by Sibia (1989) and Kaur (1992) found that there is significant relationship between verbal intelligence and achievement in science subjects.

Malviya (1991) examined attitude towards science and interest in science. The study showed that high scores on attitude towards science favour higher scientific interest. Nellaippam (1992) studied both attitude and interest within the context of the learning environment and showed that the various components of the learning environment are significantly related to both scientific attitude and interests.
3.6 Scientific Attitude and Home Environment

Environmental variables, both school and home related are studied for their association with achievement. Socio-economic status is the dominating variable in this cluster and the findings are in agreement with the already available empirical evidence (Nair, 1987; Trivedi, 1988; Singh, 1989; Ganguly, 1989; Devansan, 1990; Reddy, 1991; Indira, 1991; Garg, 1992; Harikrishnan, 1992; Muthumanickam, 1992 and Rani, 1992)

3.7 Scientific Attitude and Sex - Difference

Taylor (1961) conducted a research on the topic, “The development and analysis of a field project model curriculum and its impact on achievement and attitude towards science and the environment of eleventh and twelfth grade students”. In this three groups were randomly assigned. Findings indicated that group one and two were significantly different from group two. There was no difference between males and females as far as their attitude towards science are concerned.

Long (1975) conducted a research on the topic, “Determination and measurement of the elements and
safeguards of scientific thinking”. He found that boys made higher score than girls on thirteen of the fifteen test questions. Girls excelled in synthesis.

Godson (1976), “A study of the effect of the thirteen college curriculum programme physical science course on the scientific attitude of college students”. The results indicated that there was a significant difference in the emotional, intellectual and total scientific attitude of college male and female students and college male and female students combined.

Godson (1977) conducted a study on the scientific attitude of college students. The results indicated that there was a significant difference in the scientific attitude of college male and female students.

Srivastava (1980) in his study of ‘scientific attitude and its measurement’ found that the amount of scientific or general exposure to science courses made a positive impact on the scientific attitude. He found that scientific knowledge helped the formation of scientific attitude and impact of study of science on boys and girls varied. He found that there was no relationship between age and attitudes.
Boys according to him possess greater scientific attitude than girls. There was significant relationship between education and attitudes. He also found that children from privately managed schools possessed greater scientific attitudes than those of government schools.

Shinde (1982) found that scientific attitude of secondary school children was not related to involvement in non-formal activities. In this study the attitude of boys and girls did not differ while that of different regions differed.

Ghosh (1986), in “A critical study of scientific attitude and aptitudes and determination of some determinants of scientific aptitude” found that urban students did not show better performance in scientific aptitudes test than rural students – Boys did not possess more scientific aptitude than girls. He found positive relationship between scientific aptitude and scientific attitude. In addition he found that urban students belonging to high socio-economic status had more scientific aptitude than urban students belonging to low socio-economic status. He also found that rural students belonging to high socio-economic status did not show better scientific attitude than rural students belonging to low socio-economic status.
Woodson (1987) in his study on “The relationship of self — concept as a learner, locus of control and attitude towards science achievement of males and females in junior high school” found that majority of respondents demonstrated an average level of self concept, locus of control and positive attitude towards science. Within gender differentiation, female demonstrated a high level of internality in locus of control and more positive attitude towards carriers and interest in science than did males.

Phalachandra (1989) found sex difference favouring boys in concept based achievement.

Alexander (1990) studied the influence of critical thinking, science aptitude and socio-economic status on achievement in science. He found sex differences in achievement.

Malviya (1991) studied attitude towards science and interest in science and found, with minor differences here and there, age and sex have no effect on attitude towards science. Sood et al. (1992) found significant
sex differences in understanding of science and attitude towards science.

Dubey attempted to measure scientific temper and concluded that whereas all groups of students showed scientific temper, significant differences were observed between male and female science teachers.

Kaur (1997) found significant differences in the scientific attitude of boys and girls and differences were in favour of girls.

3.8 Scientific Attitude and Rural – Urban Differences

Mandila (1998) examined attitude of secondary stage students towards their own science curriculum. He concluded that all students from urban and rural areas possessed favourable attitudes towards the science curriculum.

Phalchandra (1989) found that parents’ qualification and place of birth (urban – rural areas) contribute substantially to achievement.
Nellaippam (1992) studied both attitude and interest within the context of the learning environment. He found no influence of sex and locality of the students on their scientific attitude and scientific interests.

Kaur (1997) in her study on the scientific attitude of adolescents of XI class revealed that there is significant difference in the scientific attitude of adolescents from rural and urban areas. Urban adolescents possess a higher level of scientific attitude than rural adolescents.

3.9 HYPOTHESES

1. Intelligence of the students correlates significantly with their scientific attitude.

2. Science achievement of the students correlates significantly with their scientific attitude.

3. Socio-economic status of the students correlates significantly with their scientific attitude.
4. Interest of the students in scientific activities correlates significantly with their scientific attitude.

5. Home environment of the students correlates significantly with their Scientific Attitude.

6. There will be no significant difference in the scientific attitude of girls and boys.

7. There will be no significant differences in scientific attitude of rural and urban students.

8. There will be no significant difference in the scientific attitude of the students studying in Government and Model schools.

9. There will be no significant difference in the scientific attitude of scheduled caste and non-scheduled caste students.

10. There will be no significant difference in the scientific attitude of students who view Discovery Channel, Quiz Competition and similar type of programmes on
Television and those who do not view such type of programmes.