CHAPTER – III
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REVIEW OF RELATED
LITERATURE AND HYPOTHESES

Survey of related studies is a crucial aspect in the planning of a new study. It helps to eliminate the duplication of what has been done and provides useful hypotheses and helpful suggestions for significant investigation. Best (1959) 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.

a) To define the limits of his field, it helps the researcher to delimit and define his problem.
b) To avoid unfruitful and useless problem areas.
c) To know about the tools and instruments which proved to be useful and promising in the previous studies.
d) To know about the recommendations of previous researchers for further research.
e) To make aware of the status of the problem.
f) To formulate an appropriate research design.
Review of literature related to the present study is presented below:

3.1 STUDIES ON ATTITUDE IN GENERAL

Solomon (1967) investigated the personality factors and attitude of teachers trainees in relation to success in training course. Results indicated that extrovert personality type had radical attitudes towards education.

Quraishi (1972) studied the relationship between teachers’ personality variables and their classroom behaviour. The study revealed that teachers’ verbal behaviour in classroom was rated in a small measure to their personality and attitude towards teaching.

Kala (1988) 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 teacher’s attitude towards teaching in model as well as in traditional school samples.

Pandey (1991) on the study of teacher’s 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 and 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.

Gakhar et al (1992) in their study investigated 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.

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

In one of the study Shah and Jacob (1996) 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 unskilled group. Purposive sampling method in consideration with the variables was used for the study. Results revealed that nearly 50% 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 as compared to their Muslim counterparts towards women reservation in Panchayati Raj institutions. Higher percentage of unskilled males and females had unfavourable attitude in comparison to their skilled counterparts.

Rajasekar and Shaji (2001) in their study found that gender and the subjects (Arts and Science) of the students do not influence their attitude towards yoga.

Babu and Punithambal (2003) in their study found that the higher secondary students have favourable attitude towards the study of commerce.
and their achievement is high. There is significant and positive relationship
between the student’s attitude towards the study of commerce and their
achievement in it.

Al-Furaihi (2003) in his study found no significant difference
between male and female students in tenth grade in a combination of student’s
attitudes towards learning mathematics. No significant correlation was found
between attitude towards learning mathematics and mathematics achievement.

3.2 STUDIES ON PERSONALITY

A study of Shrivastava and Shrivastava (1980) on a sample of
250 science and 94 arts students found that eight factors out of fourteen factors
of personality questionnaire show contribution towards academic
achievement. These factors are $A^+, B^+, C^+, D^+, H^+, I, O'$, AND $Q_2^-$. On the
other hand personality connections with academic achievement discovered
with factors $E, G, I, Q_3$ and $Q_4$ of this study are just reverse to that of the
results obtained in western countries.

Gupta (1988) found that science teachers were significantly more
intelligent than art teachers it was found that effective science teachers had
significantly mere n-ach, n-abasement, n-endurance and n-aggression than
effective art teachers.

Khatoon (1988) found that high achievers obtained a higher
mean value on personality factor $H$ and lower mean value on factor $I$ than the
low achievers on Cattell’s 14PF inventory (Indian adaptation) by Kapoor and
Mehrotra interaction of achievement, sex and locality did not have any
significant effect on any personality factor. High academic achievers were
adventurous, active, impulsive, socially bold and tough - minded whereas low
academic achievers were more shy, timid, threat sensitive and tender-minded.
Sood, R. (1988) found that personality factors of shrewdness, social awareness (N) and high intelligence (B) contributed positively but group adherence (Q₁), praxarnia, practical (M) and conservatism of temperament (Q₁) contributed negatively to academic achievement in the engineering course. It was also found that personality factors of high ergic tension (Q₄), stronger super-ego strength (Q₄), radicalism (Q₁), tenderminded pretension (hard to fool) (L) and high intelligence (B) contributed positively but personality factors of untroubled adequacy (O) and artlessness (N) contribute negatively to academic achievement of medical students.

Sharma, M. (1990) found that there was effect of type of school and sex on attitude towards science. However, there was no significant difference between students and teachers on personality factors.

Namrata (1992) found that high achievers tended to be outgoing, intellectually superior, emotionally stable, enthusiastic and unfrustrated whereas low achievers tended to be reserved, intellectually inferior, emotionally less stable, assertive, tense and frustrated.

Kundu (1994) in his study found that extraversion was positively and significantly related to scientific knowledge and aptitude, whereas neuroticism was negatively and significantly related scientific knowledge and aptitude.

Verma (1994) found that gender had no significant effect on cognitive style. Extraversion was found to have significant effect on cognitive style. Gender and extraversion did not influence significantly the cognitive style of students.

Verma and Sheikh (1996) found that field independence/dependence dimensions of cognitive style was found...
significantly and positively related with personality traits ‘B’ (less intelligent vs. more intelligent) and ‘G’ (weaker super ego vs stronger ego).

Rao et al (1997) in their study on 68 prospective science teachers concluded that their scientific attitudes are low, they are tending more towards personality traits of assertive and independent.

Robinson (2003) in his study provided evidence that self-esteem, locus of control, need to achieve, need for cognition are associated with intrinsic and extrinsic motivation. The findings revealed that need for cognition was the single predictor of extrinsic motivation. Also gender difference on extrinsic and intrinsic motivation favoured women.

3.3 STUDIES ON SCIENTIFIC ATTITUDE AND ITS RELATIONSHIP WITH INTELLIGENCE AND ACADEMIC ACHIEVEMENT

- The studies of Shulf and Green (1953) and that of Jackson and Lahaderne (1967) show no significant association between scientific attitude and achievement. But Holtzman and Brown (1968) obtained significant correlations between attitudinal factors and achievement areas.

- 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) in his study on the scientific attitude and its measurement found that amount of scientific impact made on scientific attitude was positive and that scientific knowledge helped in the formation of scientific attitude.

Shinde (1982) concluded 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.

In a similar study Sarah et al. (1983) explored the relationship between pupil’s attitude towards science education and science achievement. The co-efficient 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 co-efficient of correlation between their attitude towards science and their achievement was found to be 0.07 and it was not significant.

Tanglieber (1983) established that attitude towards science was significantly associated with science achievement scores.

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.

Sbia (1989) found a significant relationship between verbal intelligence and achievement in science.

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.

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.
Kumar (1991) showed that the development of scientific attitudes depend upon their perception of science teaching and nature of learning experiences.

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.

Paulose (1995) while taking a sample of pre-degree classes found that those with higher scientific attitude will achieve higher in science and the potential for higher science achievement will be carried to all form of science achievement, including science achievement in terms of process outcomes.

Bhattacharya (1997) found that there was a significant relationship between each of the three domains of scientific attitude i.e. cognitive, affective and psychomotor and academic achievement. All the three domains of the variable of scientific attitude contributed 67.50% of variance toward academic achievement, which may be considered as a high contribution.

Objective of Padmanbhan’s study (1997) 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 revealed that there is definite trend towards the development of scientific attitude in science teachers.

In a recent study conducted by Kaur (2002) on a sample of 740 students of IXth class selected from eight districts of Punjab State, it was revealed that variable of intelligence and scientific attitude were positively and
significantly related with each other at 0.01 level of significance. Thus this study clearly depicted that intellectual ability and scientific attitude of the students go together in the same direction. However, in the same study, it was concluded that science achievement and scientific attitude were independent of each other.

Rani (2003) in her study found significant positive correlation between intelligence and achievement in political science.

3.4 STUDIES ON SCIENTIFIC ATTITUDE AND ITS RELATIONSHIP WITH ACHIEVEMENT MOTIVATION

Mandila (1988) examined attitudes of secondary stage students towards their own science curriculum and its relationship with achievement motivation and concluded that all students from urban and rural areas possessed favourable attitude towards the science curriculum. Effective academic programmes and high level of achievement motivation according to him also develop favourable attitude towards science curriculum.

Ghosh (1986) found that scientific aptitude was significantly related to scientific attitude and academic motivation. However, no significant differences were observed with respect to sex, socio economic conditions or place of habitation.

Mukhopadhyaya (1991) found that scientific aptitude could be predicted to a considerable extent from academic motivation and scientific attitude, both of which showed a highly significant positive relationship with it.

Minnalkodi (1997) in one of the research study concluded that there was significant difference between boys and girls on achievement scores in the subject of Zoology and achievement motivation. It was further revealed
that there was a significant relationship among achievement scores, achievement motivation and self-concept scores.

In one of the research study Haseen (1997) found that sex did not have any significant effect on the achievement motivation of boys and girls. She further revealed that English medium students were found to be better than the Kannada medium students in their achievement motivation.

Ingram (2003) in her study showed that contextual learning instruction positively influenced student motivation, interest and achievement in science.

Parkash (2004) found that internal control factor like superiority in game skill was significantly related to achievement motivation of national boxers.

3.5 STUDIES ON SCIENTIFIC ATTITUDE AND ITS RELATIONSHIP WITH INTEREST IN SCIENCE SUBJECTS

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

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

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 interest of the higher secondary school students.
Further, variable of science interest was found to be significantly and positively correlated with the criterion measure of scientific attitude at 0.01 level in a research conducted by Kaur (2002) on IXth class students selected from senior secondary schools of Punjab state.

Onwumere (2003) found that students interest in science is not a sufficient predictor of students achievement in science. However, for the male middle school students perception of science teachers appeared to be an influential factor in their achievement in science.

Jain (2004) in her study found that tuitions effects the educational interests of the adolescents.

3.6 STUDIES ON SCIENTIFIC ATTITUDE AND ITS RELATIONSHIP WITH ATTITUDE TOWARDS EDUCATION AND PARENT CHILD RELATIONSHIP

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

Godson (1976), in his study on, “A study of the effect of the thirteen college curriculum programme physical science course on the scientific attitude of college students” noticed that there was a significant difference in the emotional, intellectual and total scientific attitude of college male and female students.
Within gender differentiation, female demonstrated a high level of internality in locus of control and more positive attitude towards career and interest in science than did males (Woodson, 1988).

Padhi (1993) found that there was a significant correlation between academic self-concept and achievement in science and home environment with a special reference to control, protectiveness, social isolation.

Pillai (1994) in his study found that interaction effect of sex by family acceptance/rejection on achievement in physical science was not found to be significant. The pattern of relationship in accepted and rejected groups in relation to the mean score of achievement in physical science revealed that when the child was accepted in the family, there was not much difference in the achievement scores of boys and girls.

Kang et al. (1995) found that among the high as well as low achieving groups, girl shared a better relationship with their parents than boys. It was also found that significant sex-differences existed in parent-child relationships in three of the dimensions among high achievers namely encouragement-discouragement, democratic authoritative and tolerance-hostility and one dimension be acceptance-rejection among low achievers. High achieving girls were encouraged more than high achieving boys.

Haseen (1997) found that students with higher intelligence, high attitude towards education and high parent-child interaction had comparatively higher achievement related motivation than their counterparts.

Rani (1997) in her study found that male and female students were found to be homogeneous in their attitude towards science. The scientific attitude scores did not show any statistically significant difference in the case of students of different types and locales of school. Moreover, students who
participated in science club activities and science quiz competitions were found to possess favourable and positive attitude towards science.

Ingram (2003) in her science attitude survey indicated a control effect in 3 subscales, perception of guardian’s attitude, attitude towards success in science and perception of teacher’s attitude. No significant difference was found between males and females in their beliefs about science from the attitude survey.

3.7 STUDIES ON SCIENTIFIC ATTITUDE AND ITS RELATIONSHIP WITH BACKGROUND VARIABLES

Srivastava (1980) in his study found that scientific knowledge helped the formation of scientific attitude and impact of study of science on boys and girls varied. 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 attitude upon those of government school students. However Shinde (1982) concluded no difference in scientific attitude of boys and girls.

Ghosh (1989) showed that whereas scientific aptitude was related to scientific attitude, there was no such significant difference in respect of sex, socio-economic status and place of work among various groups of students.

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

Pareek (1990) compared the self-concept, personality traits and aspirations of adolescents in central schools, government schools and private schools in Rajasthan. The former two were reported to be more intelligent and imaginative and the latter more practical.
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 (1992) 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.

Sundararajan and Rajashekar (1993) in their study on a sample of 402 second year students selected from eight higher secondary school of Chidambaram (Tamil Nadu) concluded significant relation between perception of the students about biology and their achievement in biology. There was no significant difference between the achievement of boys and girls and students of govt. schools and private schools.

The sample of Jayashree (1998) comprised 446 students from 29 junior colleges. It was found that distribution of the trait socialization ability was not normal. The trait of scientific attitude was not distributed normally. There was association between socialization attitude and attitude towards science in sub-sample of boys and girls. The variables of sex, type of institution, medium of instruction were influencing scientific attitude.

Haseen (1999) in her study entitled, “Academic achievement as a function of social class, parent child interaction, depending behaviour and school management” concluded that all the four independent variables namely social class, parent child interaction, dependency behaviour and school management had significant effect on the academic achievement. Further sex-differences did not yield any significant effect on the academic achievement of the students.
Kaur (2002) in her study on a sample of 740 boys and girls studying in ninth class found insignificant difference in the scientific attitude of boys and girls at 0.05 level of significance although mean scores of scientific attitude in case of boys were slightly higher as compared to the girls. In the same study significant differences were obtained between the mean scientific attitude scores of students of government and private managed schools and mean scores of students of government schools were higher as compared to the students of private managed schools.

Since the results of above studies are inconclusive, therefore, further research is needed to arrive at meaningful generalization about the relationship of different variables.

3.8 HYPOTHESES

1. There will be a significant relationship between scientific attitude and personality traits E (humble vs. assertive), M (practical vs. imaginative) and Q1 (conservative vs. experimenting).

2. a) Variable of intelligence correlates significantly with the scientific attitude of the students.
   b) Variable of achievement in science correlates significantly with the scientific attitude of the students.
   c) Variable of achievement-motivation correlates significantly with the scientific attitude of the students.

3. a) Variable of interest in science correlates significantly with the scientific attitude of the students.
b) Variable of attitude towards education correlates significantly with the scientific attitude of the students.

c) Variable of parent child relationship correlates significantly with the scientific attitude of the students.

4.

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

b) There will be no significant difference in the scientific attitude of students on the basis of medium of instruction i.e. Punjabi, English and Hindi.

c) There will be no significant difference in the scientific attitude of students studying in the government, government-aided, private schools and navodaya vidyalayas.