Chapter - III

Statement of the Problem, Hypothesis and Variables
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STATEMENT OF THE PROBLEM, HYPOTHESES AND VARIABLES

3.1 NEED FOR THE STUDY:

The world is becoming more and more competitive. Quality of performance has become the key factor for personal progress. Parents desire that their children climb the ladder of performance to the high level possible. This desire for a high level of achievement puts a lot of pressure on students, teachers, schools and in general, the educational system itself. In fact it appears as if the whole system of education revolves round the academic achievement of students, though various other outcomes are also expected from the system. Thus a lot of time and effort of the school are used for helping students to achieve better in their scholastic endeavours.

The importance of scholastic or academic achievement has raised several important questions of educational researchers. What factors promote achievement in students? How far do the different factors contribute towards academic achievement? Many factors have been hypothesized and researched upon. The research therefore continues. Educational researches all over the world still seeking on break through in elucidating this phenomenon.
Today world is facing three major problems viz., population explosion, poverty and pollution. We believe, that science education can make a very significant contribution towards, the solution of these human problems. At the same time we believe that there can be no development without education. Indeed in order to develop, we need a scientific and technological base, and trained scientific and technological manpower is a pivotal element in this base (Pendaeli, 1992). Hence the research related to the area of academic achievement in science is an ever growing concern of the researchers, educationists and administrators.

It was also observed that many of the earlier studies have been conducted among college and senior high school students. The problem of underachievement were felt more serious at the primary and middle school stages. It was found that above 50 per cent of the wastage was noticed in Class I and it rose to 65 per cent in Class V to 78 per cent in Class VIII (Sharma and Sapra, 1969). The period between 5 and 14 years of age assumes the greatest importance from the point of view of physical, emotional and intellectual development of the child. Analysis of the different stages of education revealed that the most important period of the life of a man is when he is a child and education imparted to child is, therefore, important (Parthasarathy, 1974). This
was the reason which promoted the investigator to take up a study of this nature.

The central focus of all formal educational efforts is academic achievement on the part of the students. Even though, it is desirable to have allround development as the goal of educational process where academic achievement would be just one of the dimensions, in most educational institutions, academic achievement continues to be the exclusive concern narrowing down the very concept of educational process. Nevertheless, it is important to note that achievement in school subjects is not an independent phenomenon rather it is directly influenced by a number of factors, some of which are personal to the individual while many others are located in the environment in which the learning process takes place. Thus in order to fully understand the concept as well as the process of academic achievement it is imperative to identify and explore various factors related to academic achievement.

Researchers have studied a large number of personality characteristics of the learners exploring their possible relationships with academic achievement. Creativity, adjustment, attitudes, intelligence and values are other psychological characteristics that have been explored. In spite of the several existing studies in this
area, further research is required in view of the changing educational pattern and flexible courses of study from time to time.

There were a number of foreign studies which examined socio-psychological variables in relation to academic achievement. In India several studies were conducted to examine the relationship of academic achievement with either sociological or psychological variables independently. But very few studies were found which measured the relationship between academic achievement and a combination of socio-psychological variables. So the investigator has taken up the study to find out the factors that influence the academic achievement in science subject at secondary school level.

3.2 STATEMENT OF THE PROBLEM:

The present study is stated as follows: "A STUDY OF PUPILS' ACHIEVEMENT IN SCIENCE IN RELATION TO CERTAIN SOCIO-PSYCHOLOGICAL VARIABLES". It examines the relationship between the academic achievement in Science on one side and the personnel and demographic variables on the other.

It is also aimed at establishing possible relationships between role expectations and academic achievement in science, Scientific aptitude and Science
achievement and possible solution for the prediction of science achievement.

3.3 OBJECTIVES OF THE STUDY:

The study is outlined the following objectives.

1. To understand the present status of secondary school students with regard to their achievement in Science.

2. To study their role expectations as perceived by themselves.

3. To study the Scientific aptitude of secondary school students.

4. To identify some of the personal and situational variables influencing academic achievement, role expectations, and Scientific aptitude of secondary school children.

5. To study the influence of role expectations and Scientific aptitude on the Science achievement of school children.

6. To identify some of the socio-psychological variables that significantly predict the academic achievement.
3.4 HYPOTHESES:

On the basis of the above objectives the following major hypotheses were formulated for testing. The hypotheses are set up in null form as this form of hypotheses is akin to the legal principle that a man is innocent until he is proved guilty (Garrett, 1966 and Guilford and Eruchter, 1978).

1. There would be no significant influence between the personal and demographic variables on role expectations of the students (each variable will be considered independently).

2. There would be no significant influence between the personal and demographic variables and scientific aptitude of the students (each variable will be considered separately for analysis).

3. There would be no significant influence between the personal and demographic variables and the academic achievement of the students (each variable will be considered separately to study its influence on achievement).

4. The role expectations of students and their Scientific aptitude could not significantly influence their level of achievement in Science.

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5. It would not be possible to predict the achievement in science with the help of personal, social and psychological variables.

3.5 VARIABLES INCLUDED:

The review of literature in the field of academic achievement reveal the fact that the academic achievement of students has been influenced by a number of sociological and psychological variables collectively. Hence, the following personal, social and psychological variables are included in the study.

3.5.1 PERSONAL AND SOCIAL VARIABLES:

-- Gender
-- Caste
-- Age
-- Locality
-- Type of management
-- Type of residence
-- Type of Hobby
-- Size of the family
-- Birth order
-- Fathers education
-- Mothers education
-- Fathers occupation
Mothers occupation and Income of the family.

3.5.2 PSYCHOLOGICAL VARIABLES:

-- Pupils role expectations (as perceived by the students and
-- Scientific aptitude of the students.

3.5.3 DEPENDENT VARIABLE:

-- Achievement in Science.

3.6 A BRIEF DESCRIPTION OF THE VARIABLES:

a) GENDER: Students of both sexes (male and female) are included in the study to find out whether there is any significant difference between boys and girls in their role expectations, scientific aptitude, and academic achievement in science.

b) CASTE: The caste of the student is considered as one of the variables for the present study. Students belonging to Scheduled Castes/Scheduled Tribes (SC/ST), Backward castes (BC) and other forward communities (OC) are included in study to find the variations among them.

c) AGE: As there exists contradictory research results in establishing the relationship between age and academic
achievement, it is decided to include age as one of the variables in the present study. The chronological age reported by the subjects is considered for the purpose.

d) LOCALITY: According to the place of school, all the schools are divided into two groups viz., schools existing in rural areas i.e., in the villages with gram panchayats, and schools situated in the urban areas i.e., in the towns with municipalities. It is assumed that the students studying in rural and urban schools differ in their academic achievement due to variations in the facilities available in rural and urban schools.

e) TYPE OF MANAGEMENT: In the present set up of educational administration in Andhra Pradesh the high schools are managed by four different agencies like, (1) Government, 2) Zilla parishad, 3) Municipality and (4) Private organisations.

(1) Government Schools: Government schools are those managed and controlled directly by the State Government.

(2) Zilla Parishad Schools: Those schools which are managed by Zilla Parishads (District Panchayat Raj Administration) are called Zilla Parishad schools.
3) **Municipal Schools**: The schools under the control of Municipalities and Municipal Corporations are termed as Municipal Schools.

4) **Private Schools**: The private schools are those which are established and controlled by private bodies. Of course, such schools may be aided and unaided by the State Government. The sample is restricted to only aided and recognised schools.

The type of management under which the schools is being controlled may have a significant influence on the level of academic achievement of the students. Therefore students studying in different schools under all four types of managements are included in the present investigation.

f) **TYPE OF RESIDENCE**: The students living with their parents (day scholars) and students residing in the hostels are considered as a variable for the present study as this variation may affect their status in achievement.

g) **TYPE OF HOBBY**: The type of hobby of the students is considered as one of the variables in the present study. The hobbies of the students were divided in three categories viz., 1) Games and sports, 2) Art and
culture and 3) Others as such practices may influence the variables included in the study.

h) **SIZE OF THE FAMILY**: Family size of the students has been taken as another variable to see if it has any influence on the measured variables. It is believed that those who are from large families may, more frequently less successful in academic achievement. Hence the number of people in the family as reported by the respondent is considered as one of the variables in the study. The entire sample of subjects are categorised as small family 'viz., 1) those children whose family size is four and below and 2) large family viz., those children whose family size is five and above.

i) **BIRTH ORDER**: The order of birth of the student as reported by the respondent is considered as one of the variables viz., first born, second born and later born, as it is observed in the review of literature that the order of birth shows variations in the academic achievement of the students. To test the observations made by earlier researchers, this variable is considered in the study.

j) **PARENTS' EDUCATION**: It is observed in the review of past research that the relationship between parents education and academic achievement is complex and
contradictory. Hence, the educational level of the parents is considered as one of the variables in the study to see the effect of it on the dependent variable viz., academic achievement.

k) PARENTS' OCCUPATION: Students whose parents hold different occupations are found different in their academic achievement as it is observed from the review of literature. To test the observations made by earlier researchers, this variable is considered in the study.

l) INCOME OF THE FAMILY: The income of students parents is considered as one of the variables in the present study. On the basis of the family income as reported by the student, the subjects are divided into four categories namely (1) Poor, whose family annual income is below Rs.5,000/-, (2) Lower middle group whose family income is between Rs.5,001/- and Rs.15,000/-, (3) Middle group whose family income is between Rs.15,001/- and Rs.30,000/- and (4) Upper middle group whose family income is Rs.30,001/- and above. It is observed in the review of past research that the relationship between parents income and academic achievement was complex and contradictory. Hence the income of the family is considered as one of the variables in the study to see
the effect of it on the dependent variable viz., academic achievement.

m) **ACADEMIC ACHIEVEMENT**: According to the Dictionary of Education "Academic Achievement means the knowledge attained or skills developed in the school subjects usually designated by test scores or marks assigned by the teacher or both". Academic achievement in science was measured by the achievement test developed by the investigator.

n) **ROLE EXPECTATIONS**: Pfinner and Sherwood (1964) defined 'role' as a "set of behaviour which is expected of every one in a particular position, regardless of who he is". The present investigation confirmed with the above definition to measure pupil's role expectations as perceived by themselves.

o) **APTITUDE**: According to Good (1959) in the Dictionary of Education, aptitude is described as "a pronounced innate capacity for or ability in a given line of endeavour such as a particular art, school subject, or vocation". The meaning of aptitude is used in the above sense for the present study.