

***REVIEW OF RELATED
LITERATURE***

CHAPTER – II

REVIEW OF RELATED LITERATURE

2.1 Introduction:

The review of related literature is an important part of the scientific approach and is carried out in all areas of scientific research whether in the physical nature or social sciences. In the field such as History, the review of literature only gives the scholar an understanding of previous work that has been done, but the results of review actually provides the data used in his/her research.

The review of the literature in educational research provides us with the means of getting the frontier in our particular field of knowledge. Until we have learned what others have done and what remains still to be done in our area, we cannot develop a research project that will contribute further exposure in our field. Thus the literature in any field forms the foundation upon which all future work must be built.

Therefore the purpose of the reviewing of literature is to build up the context and background as well as provide a basis for formulation of hypothesis/research questions since a good research is based upon the relevant evidences that are known in the area of research for comprehensiveness. It is essential that the new work will be based and built on what has already been accomplished.

The review of research literature helps the researcher to delimit and define his/her problem avoiding duplicating well-established findings. It gives the investigator an insight into the problem and research methodology.

2.2 Related Studies:

The researcher gone through a number of research studies and found that very less studies were done on change of medium of instruction. However, some studies were conducted to find out relationship between medium of

instruction and achievement of students. And therefore an attempt is made to compile the researches related to medium of instruction mother-tongue and achievement in Mathematics at doctoral and institutional level in the country.

1. **Srivastava, A.K., and Ramaswamy.**

“A Study on the Effect of Medium of Instruction, Socio-economic Status and sex on Achievement, Intelligence and Creativity.”

Objective:

To study the influence of the bilingual education of having a language other than one’s mother-tongue (MT) as the medium of instruction (MI), socio-economic status (SES) and sex on personality development, achievement intelligence and verbal creativity.

Sample and Tools:

A sample consisted of 1912 students studying in classes VIII and IX.

The tools used were Kuppuswamy’s SES Scale (1981 revision), Raven’s Progressive Matrices, Baqer Mehdi’s Verbal Test of Creative Thinking (adopted to Tamil and Malayalam students) the self-concept Inventory (SCI) developed by U.P. Singh, and a personal data sheet with questions pertaining to background information for collection of data.

Major Findings:

- 1) All the main effects except that of sex on the achievement in Mathematics and social studies were significant.
- 2) All the interaction effect on academic achievement were not significant except for-
 - i) sex X MI for second language
 - ii) SES X MT for first language
 - iii) SES X MT for science
- 3) MT-MI different non-cognate media group on the whole had scored higher than the other two groups.

- 4) The middle SES group and girls had achieved higher than the low SES group and boys respectively.
- 5) As regards, the criterion variable, namely, self-concept, the main effects of MI and sex were not significant. No interaction effect was significant.
- 6) The main effects of MI, SES and sex were significant on non-verbal intelligence, whereas their interaction effect was not significant.
- 7) As regards creativity, the main effects of MI, SES, and sex on fluency, flexibility and originality were significant.
- 8) The mean scores on non-verbal intelligence were in descending order with respect to the non-cognate, the same and the cognate group respectively.
- 9) The middle SES group had scored higher than the low SES group except in the case of low SES girls in the cognate medium group.
- 10) The same medium group had scored higher on all the three dimensions of verbal creativity than the other two groups except in the case of low SES boys in the non-cognate medium on all the three dimensions and middle SES girls in the non-Cognate medium on flexibility.
- 11) Boys had scored higher on all the three dimensions than girls except in the case of low SES girls in the same medium group and middle SES girls in the non-cognate group on flexibility and the low SES girls in the same medium group and middle SES girls in the cognate group on originality.
- 12) The same medium group had scored higher on self-concept than the other two groups; and the cognate had scored higher than the non-cognate medium group.
- 13) The middle SES group had scored higher than the low SES group and boys had scored higher than girls on self-concept.

- 14) The non-cognate group had scored higher than the cognate group except in the case of low SES girls in the cognate group on fluency and originality.

2. Narasimhan, G. and Pillai, Swaminatha S.

“A Study of the Relationship Between Medium of Instruction and Achievement of Students.” (1988).

Objectives:

- 1) To find out the mean achievement of students in the Secondary school and final Diploma in Commercial and Computer Practice (DCCP) examination.
- 2) To identify the degree of relationship between their secondary school and Polytechnic achievements.

Sample and Tools:

A total of 128 students – 64 each and who passed the DCCP Course in two different years from the central institute of commerce, Secanderabad. 61- from Telugu medium and 67- English medium.

Major Findings:

- 1) Both in the school final and Polytechnic Diploma Examination the English medium students performed better as compare to their Telugu medium counterparts.
- 2) The correlation coefficient between their scores in school final and Diploma examinations were significant.
- 3) The obtained value of correlation coefficient for Telugu medium students of the two different batches was significant.
- 4) For the second batch it was not significant.

3. Thomas Lucy.

“Effect of Bilingualism on the Development of Personality with special reference to intelligence.” (1998).

Objectives:

- 1) To study the effect of bilingualism on personality traits.
- 2) To study the effect of socio-economic differences on the personality traits of bilinguals and monolinguals.
- 3) To study the effect of sex on the personality traits of bilinguals and monolinguals.

Sample and Tools:

The sample consisted of 530 students of both sexes studying in different schools of Agra city.

The tools used for data collection are- personality Questionnaire, Test of intelligence of P.N. Mehrotra and S.P. Kulshrestha SES Scale (Form A).

Major Findings:

- 1) The personality traits of bilinguals were significantly different than the personality traits of monolinguals.
- 2) The personality traits of high bilinguals were not significantly different from the personality traits of balanced bilinguals.
- 3) The personality traits of high bilinguals were significantly different from the personality traits of monolinguals.
- 4) The personality traits of balanced bilinguals were significantly different from personality traits of monolinguals.
- 5) Personality factors of bilinguals of high socio-economic status were not significantly different from the personality factors of monolinguals of average socio-economic status.
- 6) Personality traits of bilingual boys and girls of high intelligence were not significantly different from the personality traits of bilingual boys and girls of average intelligence.

- 7) Personality factors of bilingual boys and girls of average intelligence were significantly different from the personality factors of monolingual boys and girls of average intelligence.

4. **Meera, K.P.**

“Language Aptitude, Select Attitudinal and Motivational Variables as Correlates of Achievement in English of Secondary School Students.”
(2000) (Ph.D.)

Objectives:

- 1) To find out the main effect and interaction effect of select independent variables on achievement in English – Vocabulary, grammar and comprehension.
- 2) To estimate the extent of relationship between achievement in English and each of the independent variables selected for the study for total samples based on gender, locale and type of management of schools.
- 3) To find out the best predictors of achievement in English from the select independent variables and to determine the relative weight of each predictor variable contributes to achievement in English of secondary school students.

Sample and Tools:

A sample consisted of 750 students selected on the basis of gender, locale of school, type of management and instructional efficiency through stratified sampling.

Major Findings:

- 1) Language aptitude and attitude towards education were the best correlates of achievement in English.
- 2) Attitude towards English teachers and teaching had significant relationship with achievement in English and achievement motivation did not show any significant relation with achievement in English.

- 3) High mean achievement in English scores was found to be associated with high language aptitude group and favourable attitude towards education group.

5. Mohanty, Atasi.

“The problems of teaching Oriya as a second language in Telugu medium classes.” (2000).

Objectives:

- 1) To find out the major problems encountered by the language teachers while teaching Oriya as a second language in Telugu medium classes and the probable causes behind these problems.
- 2) To sort out what are the practical problems of the Telugu speaking students face while learning Oriya language.
- 3) To ascertain from which standard/ class Oriya should be taught and what should be the proper method/ devices of teaching it as a second language.

Sample and Tools:

A sample consisted of 26 language teachers teaching Oriya and 200 Telugu speaking high school students reading Oriya as a second language from Ganjam district of Orissa.

Questionnaire, Achievement Scores and class-test Answer Script were used for data collection.

Major Findings:

- 1) The language teachers were not properly trained to teach Oriya as a second language.
- 2) The curriculum of Oriya as second language was given low priority.
- 3) Method of teaching was defective and textbooks did not match with the age of the students.
- 4) Inadequate library facilities and insufficient co-curricular activities were provided to teach the language to linguistic minority.

- 5) The Telugu speaking students were being introduced to Oriya language in class VIII only, without having any background knowledge in Oriya.

6. Patra, Swati.

“Role of Language of Instruction in the multi-lingual school system of India.” (2001) (Ph. D.)

Objectives:

- 1) To examine the role of language/ medium of instruction in children’s performance in reading, writing and science achievement.
- 2) To examine the impact of introduction of the second language English at different grade levels on children’s performance in reading, writing and meta-language, mathematics and science achievement.

Sample and Tools:

The sample consisted of 120 children, 60 each from Oriya medium and English medium schools of classes VI and VIII.

Questionnaire, SES Scale, Reading, Decoding test by Dash (1982), Word identification test by Woodcock (1987) and Passage Comprehension test by Das (1995) in Oriya and by Woodcock (1987) in English were used in the study for data collection.

Major Findings:

- 1) Oriya medium children performed better than English medium children in planned composition and meta-language in definition task and also in language task.
- 2) Reading performance of Oriya medium children was better only in class VI for decoding in comprehension, but not in class VIII.
- 3) In Mathematics achievement, no significant difference was reported between Oriya and English medium children in class VIII.
- 4) Oriya medium children of class VI performed better in comprehension and application components of Mathematics task.

- 5) In science achievement, English medium children performed better in decoding comprehension and planned composition but not in meta-language.
- 6) There was no significant difference reported in reading, decoding and meta-language.
- 7) Children who studied second language (L2) at later class performed better in planned composition as compared to children studying L2 at a later class. Such children also performed better in reading comprehension at class VI.

Mathematics Achievements:

Achievement in Mathematics has been studied in relation to a number of variables, both cognitive and affective. Studies in the past decade have confirmed that intelligence and socio-economic background are major contributors to mathematics achievement. Language mastery was an important factor in the acquisition of concepts in Mathematics.

1. Vyas, C.S.

“Development of Symbol Picture Logic Programme and to Study its Effect on Mathematics Achievement – A System Approach.”

(Ph.D.) (1983)

Objectives:

- 1) To develop a symbol picture logic programme (SPLP) on the basis of the fundamentals of symbolic logic.
- 2) To study the effectiveness of the SPLP on the achievement in Mathematics.
- 3) To identify the effect of the SPLP in the context of variables like intelligence and syllogistic reasoning ability.
- 4) To find the effectiveness of the SPLP in the context of other variables like parent education, sex and the choice of Mathematics course at the S.S.C. level.

Sample and Tools:

The sample of 320 students was selected for study. 160 students in each of the experimental and control group were included.

The symbol picture logic programme was developed keeping in mind the basic element of logic to be included, the concept of Linda Jestrom of the Centre for Research in Thinking and Language of Catholic University was kept in mind. Group intelligence test by K.G. Desai was also used for data collection.

Four schools were selected at random from 16 schools of Bayad taluka.

Major Findings:

- 1) The students of the experimental group who were given a treatment of the SPLP showed better achievement in Mathematics than the control group students.
- 2) The students with high intelligence benefited more by the SPLP by better achievement in Mathematics than those who possessed low intelligence.
- 3) The student possessing high reasoning ability benefited more by the SPLP by better achievement in Mathematics than those who possessed low reasoning ability.
- 4) There was no interaction between the programme (treatment) and intelligence.
- 5) There was no interaction between the programme and syllogistic reasoning ability.
- 6) There was no interaction effect of intelligence and syllogistic reasoning ability of the students.
- 7) There was no interaction among the programme, intelligence and syllogistic reasoning ability. This shows that achievement in Mathematics was independent of these three variables.
- 8) The students of control group possessing low general ability and low syllogistic reasoning were inferior to the students of the rest of the group.

- 9) The students of the experimental group possessing high intelligence and high reasoning did better in achievement in Mathematics than the student of control group possessing low intelligence and low reasoning ability.
- 10) There was no significant mean difference in achievement in Mathematics of students whose parents' education was high and those whose parents' education was low.
- 11) There was no interaction effect between the programme and parents' education.
- 12) The students choosing higher Mathematics achievement after taking the SPLP than the students who chose commercial arithmetic.
- 13) There was no interaction between the programme and the choice of course.
- 14) There was no significant difference between the means of achievement in Mathematics of boys and girls taking the SPLP, and also there was no significant difference between the means of achievement in Mathematics of boys and girls who did not take the SPLP.

2. Rangappa, K.T.

“The relationship Between Self-concept, Reading Ability and Achievement in Mathematics.” (1992).

Objectives:

- 1) To study self-concept and reading ability in relation to achievement in Mathematics of students of standard VII.
- 2) To identify the gender and local difference in the achievement in Mathematics of study.

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Sample and Tools:

A sample of 1000 students of Std. VII drawn from 25 schools of Bangalore rural and urban districts using stratified random sampling of these 600 were from urban schools.

A self-concept inventory developed by the researcher, a standardized reading test by Deve Gowda and Shivananda and Achievement test in Mathematics these tools were used for data collection.

Major Findings:

- 1) There was no significant difference in the achievement of students having different levels of self-concept.
- 2) There was significant difference in the achievement in mathematics of students having different levels of reading ability.
- 3) There was a significant difference in the performance of the students of std. VII in Mathematics studying in rural and urban schools.
- 4) There was no significant difference between boys and girls of std. VII in their achievement in Mathematics.
- 5) There was a significant interaction of self-concept and reading ability on achievement of students.

3. Singh, R.D. and Verma, S.C.

“Study the attitude towards Mathematics as a function of intelligence.”
(1992).

Objectives:

- 1) To study the attitude towards Mathematics as a function of intelligence.
- 2) To study the attitude towards Mathematics as a function of sex and age.
- 3) To study the attitude towards Mathematics as a function of age.

Sample and Tools:

A sample of 220 students studying mathematics in class IX of different higher secondary schools of the education department of Bhilai were included in the study.

Rating Scale, the General Intelligence test of S.M. Mohsin and Attitude Scale towards Mathematics by Suydam were used for data collection.

Major Findings:

- 1) The students of high intelligence had a more favourable attitude towards Mathematics than the students of low intelligence.
- 2) Attitude towards Mathematics was independent of sex.
- 3) Students of the age 13+ showed a more favourable attitude towards Mathematics in comparison to students of the 14+ and 15+ age.

4. Panchalingappa, Shahpur Nagapapa

“An Investigation Into the Causes of Underachievement in Secondary School Mathematics.” (Ph.D.) (1995)

Objectives:

- 1) To identify the causes of underachievement in secondary school mathematics.
- 2) To offer suggestions for the improvement of achievement of underachievers in Mathematics in the light of identified causes of underachievers.

Sample and Tools:

A sample of 501 students studying in Class IX split up by using stratified random sampling technique in two groups of 300 and 201 as normal and underachievers of Kannada medium secondary school students of Mysore city were included in study.

Raven’s Standard Progressive Matrices, Numerical Reasoning test, Numerical Ability Test and Achievement Test in Mathematics constructed by the investigator were employed for data collection.

Major Findings:

- 1) It is found that poor attitude towards mathematics is the cause of underachievement in Mathematics Higher general anxiety and examination anxiety is the cause of underachievement in Mathematics.
- 2) Lack of educational adjustment, poor study habits and low achievement motivation are also contributed to underachievement in Mathematics.

5. Chakrabarti, Bhupal Prasad.

“A Study of Performances of Students in Mathematics Through the use of ‘Comprehension Type Test’ (CTT)”

Objectives:

- 1) To examine the impact of Comprehension Type Test (CTT) in gradual improvement of Mathematical performances of the students in different classes.
- 2) To examine whether the ‘CTT’ helps the students in answering the traditional questions.

Sample and Tools:

A sample of 800 students (400 rural and 400 urban) from classes IV and V was selected for study.

Comprehension Test of Achievement-Cum-Diagnostic Test in Mathematics (ADTM) (IV-V,1999) was used for the collection of data.

Major Findings:

- 1) It was found that the comprehension ability increases with the age.
- 2) The students of both the genders and grades scored high in traditional test as compared to CTT, because of their acquaintance with the nature of traditional test.
- 3) It was revealed that the frequent use of CTT in Mathematics could foster the ability of comprehension in Mathematics.

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