Chapter - 3
CHAPTER III
REVIEW OF PAST RESEARCHES

3.1 Introduction

3.2 Researches Done in Foreign Countries

3.2.1 Mary B. Cox: Relationship between Conservation and Reading Readiness

3.2.2 M.A. Crutchfield: Conservation Training: Posited Effects on Reading Readiness

3.2.3 Marilyn J. Hurta: The Relationship between Conservation ability on selected Piagetian Tasks and Reading Abilities

3.2.4 Anita H. Kent: Relationships of Reading Comprehension, Conservation Ability, Auditory Discrimination and Visual/Motor Development of Third-Grade Pupils

3.2.5 W.E. Tunmer, M.L. Herriman, A.R. Nesdale: Metalinguistic abilities and beginning reading

3.2.6 J. Lloyd Eldredge, Bill Quinn, D.D. Butterfield: Causal relationship between phonics, reading comprehension, and vocabulary achievement in the second grade
3.3 M.R. Patel: An Investigation into Conservation ability and reading readiness of children in relation to certain psycho-social variables.

3.4 Conclusion

References
CHAPTER III

REVIEW OF PAST RESEARCHES

3.1 Introduction

Review of the past researches gives the researcher a clear understanding of the previous work that has already been done in the field of the study. It provides him for intensive study and critical analysis of the researches done in the recent past. Many a time it also helps in avoiding the risk of duplication of work. The review provides theories, explanations and hypotheses in formulating the problem; suggests approaches, methods, tools and techniques, appropriate to the problem. It also gives the research design so that the reviewer decides for himself the merits and demerits of the past researches. Looking to these advantages of the review of the past studies, the present investigator isolated some studies which bear resemblance to the nature of variables, she had contemplated in her problem. The following review is divided into two parts viz., researches done in foreign countries and in India.

3.2 Researches Done in Foreign Countries

Since Piaget's publication of books on cognitive development, American and European scientists, psychologists
and reading clinicians devoted their time and energy on cognition, conservation and on reading and its related area. The present investigator has decided to rivet her attention on those researches describing relationships of conservation and initial reading.

3.2.1 Mary B. Cox: Relationship between Conservation and Reading Readiness1 (1976)

The problem arose when Cox noted children who were having difficulty in reading were also having difficulty with the property of conservation.

She formulated the hypothesis that some children of 5 to 7 years have trouble reading because they were pre-operational in their intellectual development and the characteristic of the pre-operational stage interfere with their ability to read.

Standard Piagetian conservation tasks of number, area, weight, mass, volume and length were administered to forty matched pairs of children from ages 5 to 12. One group of 40 children, reading at least one year below grade level, was chosen from the public school and matched with 40 children reading at grade level or above. They were matched by age, sex, IQ and SES.
A significant difference existed between the two groups in their ability to succeed in conservation tasks: those reading at grade level were superior in conservation.

The ability to conserve was unrelated to IQ for the two groups.

There was a significant correlation between age and conservation ability for both groups.

These results support the theory that ability to conserve is not unitary and that certain tasks are dependent on increasing maturation during the concrete period.

3.2.2 M.A. Crutchfield: Conservation Training: Posited Effects on Reading Readiness (1970)

Crutchfield conducted a study to determine the effectiveness of a programme of training for the development of conservation in kindergarten pupils and she also considered the relationship of training to reading and readiness.

Her main hypothesis was that conservation training would increase reading readiness.
The results showed highly significant positive correlations between conservation ability and reading readiness. The F-ratio for treatment was significant at the .001 level.

The research conclusions of Crutchfield are diagrammatically opposed to those of Piaget and his associates who stated that conservation was not a trainable aspect but spontaneous.

3.2.3 Marilyn J. Hurta: The Relationship between Conservation ability on selected Piagetian Tasks and Reading Abilities. (1973)

She reported on a study of two groups of 25 children ages 7.0 to 8.5.

One group consisted of reading disabled children who read at a level six months or more below their anticipated level. The other group read at a level of six months or more above their anticipated level.

Hurtas results showed a significant difference between disabled and non-disabled readers in the level of functioning on the Piagetian tasks measuring conservation of length.
She also found a difference which was not significant at the expected level of confidence on Piagetian tasks measuring conservation of substance and weight, and on the total scores of all conservation tasks administered.

She also found a statistically significant relationship between reading grade levels on certain sub tests of Reading Tests of Durrell and level of functioning on certain tasks of conservation.


Kent investigated the relationships and differences of reading comprehension, conservation ability, auditory discrimination and visual/motor development of the third-grade pupils.

She found significant differences in the number of pupils categorized by sex, and the reading comprehension on two classifications of conservation ability, auditory discrimination and visual/motor development.

Kent's overall findings indicated a relationship between reading ability and conservation ability for all subjects.
A two-year longitudinal study was conducted to examine the role of metalinguistic abilities in the initial stages of learning to read. At the beginning of the first grade, 118 students were administered three tests of metalinguistic abilities, three pre-reading tests developed by Clay (1970), a test of verbal intelligence, and a measure of concrete operational thought, or operativity.

At the end of first grade, the students were readministered the metalinguistic and Clay tests, and three tests of reading achievement; the latter were readministered at the end of the second grade.

The statistical techniques used were intercorrelations, predictive correlation, crosslag correlations, t-tests and path analysis.

The following findings were reported:

1. The metalinguistic measures were significantly intercorrelated, but only moderately so, with an average correlation of .46.
Operativity was significantly correlated with each measure of metalinguistic skill, and was more strongly correlated with each of these measures than was the PPVT, a finding consistent with the cognitive capacity view of metalinguistic development.

At both the beginning and end of first grade, the children tended to perform better on the pragmatic awareness test than on the syntactic awareness test, and better on the syntactic awareness test than on the phonological awareness test.

The standardized beta weights for the regression equations showed that although operativity made a significant independent contribution to the variability of each criterion variable, verbal intelligence consistently failed to make a significant independent contribution. This results suggest that operativity plays a more important role in the development of metalinguistic skills than does verbal intelligence. Operativity and metalinguistic tasks require higher-level metacognitive operations such as decentering and control processing.

At the end of first grade, the r between phonological awareness and decoding was .44 which was highly significant. This shows that phonological awareness is essential for reading progress.
Children's ability to acquire low-level metalinguistic skills depends, in part, on their level of concrete operativity. Consistent with this claim, operativity was more strongly correlated with the combined metalinguistic score at the beginning ($r = .60, p < .001$) and end ($r = .47, p < .001$) of first grade than was any other prereading variable. Operativity was also the only prereading variable to make a significant independent contribution to overall metalinguistic ability at the end of the first grade ($p < .01$).

The analysis and interpretations of the data of this research were classic in its own right. This was the first systematic and comprehensive research on metalinguistic skills, operativity and initial reading achievement.

3.2.6 J. Lloyd, Bill Quinn, D.D. Butterfield: Causal relationship between phonics, reading comprehension, and vocabulary achievement in the second grade. (1990)

This study examined the causal relationships between three measures of reading achievement: phonics, reading comprehension, and vocabulary.
Measures were obtained from 504 second-grade students at the beginning and end of the school year. A causal relationship was indicated if changed in one of the three variables measured at the beginning of the year tended to precede change in the other variables measured at the end of the year.

A cross-lagged penal analysis was used to test for such a pattern between the three variables.

The findings indicate that phonics knowledge has a causal impact on both reading comprehension and vocabulary gains; reading comprehension has a causal effect on vocabulary gains.

Further analysis of the data, using a path analysis model, verified these causal relationships. A second set of data obtained from 1,585 second grade students at the beginning and end of another school year were used to examine these causal relationships once more.

Path analysis findings again verified the relationships found in the first set of data.

The authors concluded that phonological skills instruction designed to help students recognize the consistent graphophonetic patterns in the language should be emphasized in early elementary-grade reading instruction.
Research findings also suggest that good readers are both graphophonically and contextually oriented when reading, whereas inadequate phonological recording seems to be a hallmark of poor readers. This study suggests that growth in reading comprehension and word knowledge is influenced by a student's graphophonic knowledge—at least at the second grade level.

One of the limitations of this study may be the use of an author-developed phonics instrument that is relatively unknown.


This was the only research found in India pertaining to operativity and reading readiness found in first grade.

The research was phased into three parts:

The first phase was concerned with the conservation ability as measured by Piagetian tasks.

The second phase examined the relationship between the conservation ability and reading readiness in the context of two other variables of parents' educational levels and child's age.
The third phase was concerned with the training of conservation of children who were completely nonconservers. It was also concerned with the issue of whether induced conservation had any effect on reading ability of the children. The reading ability was measured by the word reading test prepared by the author.

The sample was selected from the schools of Kheda district. In all, 1137 children were examined.

In all the three phases, factorial designs were invoked, so that interactions could be studied.

Findings of the first phase were:

1. There was no significant difference in mean conservation scores between the children of high and low SES levels.

2. There was significant difference in mean conservation scores between the children of high and low levels of parents' education. Children of highly educated parents had high conservation ability.

3. As age increased, conservation also increased.

4. Parents' education and Age interaction was found significant. Also child's age and sex interaction
was found to be significant. Analysis of component variance showed that age contributed to 34.28 percent while parents' education to 31.32 percent. Sex contributed to 23.91 percent of the total variances.

Findings of the second phase which was concerned with reading readiness of the children were as under:

1. The strongest predictor of the reading readiness of the children was parent's educational level. Those children whose parent's education level was high did get better reading readiness scores than those whose parent's educational level was low. The component of variance was 24.50 per cent.

2. The second predictor in the hierarchical order was child's age. Children in the highest age range were the best in getting reading readiness scores. The trend line was linear rising from 5 to 5.11 to 7 to 7.11. Thus at the lowest age, children were poor in reading readiness. The component of variance was 23.61 per cent.

3. Unexpectedly, conservation ability of the children remained at third rank but it was in favour of high
conservation level. Those children having high conservation showed better results at reading readiness than those having low conservation ability. The component of variance was 20.58 per cent.

(4) There appeared a significant interaction between parent's education and conservation ability and parent's education. Thus, the main effect of conservation was compensated here. The component of variance was 17.93.

(5) There was also three factor interaction which was significant at .01 level. All the three independent variables interacted to produce reading readiness. The component of variance was 13.38.

The findings of the third phase which was concerned with training of conservation and to see if nonconservers attained reading ability have been given below:

(1) The findings suggested that the conservation ability could be trained. The conclusion is debatable. It can be argued that the practice got at the time of training might have produced conservation. The investigator also saw such limitation before planning the experiment, but the result on reading ability was dismal in such induced conservation ability.
The nonconservers did not get significantly more scores than their counterparts in control groups.

(2) From the results it could also be concluded that induced conservation cannot match with spontaneous conservation. In this regard, Piaget was right when he said that conservation ability could generate cognitive performance only when it grows spontaneously.

3.4 Conclusion

This review gave the investigator the following cues:

(1) The researches reviewed in this chapter throw light on subject and technique of conservation testing, on selection of tasks on conservation and metalinguistic ability.

(2) Statistical techniques of ANOVA, t-test, correlation and even chi-squared technique and Fisher Probability Test can also be used to locate significance. Causal relationships can be studied by crosslag correlation.

(3) Because of time consumed in testing conservation and metalinguistic ability due to individual administration of the task and because of the egocentric
tendency of the pre-operational child, the prominent researchers made their sample limited to only eight children.

(4) Most of the researchers followed Piaget's method of administration of conservation task.

The above cues would be put into practice for the present research.
References:


