CHAPTER – I

INTRODUCTION

MEDIUM OF INSTRUCTION

India is a country of many languages, religions, castes and sub-castes. A very difficult problem is that, which medium should accept as medium of instructions. Many commissions have discussed about this problem. When Indian states originated on the basis of languages during that time the opinion was that, the first four or five years primary education should be in mothertongue, secondary education should be in mothertongue or regional languages and higher education should be in national language or in a mother tongue. But due to British rule in India English become an essential medium of higher education.

Dr. Radhakrishnan Commission suggests that Education should be in a mothertongue/ regional language at higher level.

Kothari Commission has also realized the importance of mothertongue as medium of instruction.

After independence, the problem of medium of instruction become serious. Due to origin of states on the basis of languages medium of instruction of primary education and

secondary education imparted through mothertongue/ regional languages.

COGNITIVE DEVELOPMENT

The term cognitive development scarcely appeared in the psychological or educational field until the early 1960's. By 1970 it had become one of the principal ways of Psychologists, particularly developmental psychologists.

The term refers to the changes in the act of knowing that occur throughout the human lifespan.

Changing Conceptions of Cognition

Cognition is the act of knowing and the analysis of the act and its components has become the core of psychologists and educators' to understand the mind. The term cognition narrowly defined it as 'awareness' and broadly it includes all higher mental processes (perception, thinking, attention, language, reasoning, creativity, intelligence etc.).

Throughout its relatively short history as an experimental science, psychology, which had no theoretical model of its own for the mind. Psychology, borrowed major concepts and models from other disciplines.

The work of Piaget, largely ignored in the United States until the 1960s. From the first World War until 1960, United States psychology was dominated by a behaviouristic approach, which focused on learning, and held that a science of mind was not possible except in so far as it was a science of behaviour. When the post-sputnik curriculum reforms were being designed and applied in 1960s, many psychologists and educators turned away from then current learning theories, which emphasized the reinforced associations between stimuli and responses, and turned towards the study of cognition, which was emerging as a new approach to the study of the higher mental processes.

Models of Human Development

The most primitive kind of scientific law merely states how a behaviour varies with time. Until quite recently the field of cognitive development consisted of such laws and relationships. In these, such cognitive variables as the number of words the child knows or the number of digits he or she could recall or the child's susceptibility to visual illusions of his or her knowledge of some subject matter domain (ethics, physics, arithmetic) or his or her reasoning competence and so forth were plotted as a function of children's ages, yielding age norms for every conceivable mental ability and achievement.

Apart from readily conceded doubts about the reliability and generalizability of such norms, there was the realization that time is never a cause of anything and that only the causative factors which operated in time were the true objects of study. It was clear that, theories of development were needed- if only to tell researchers what cognitive variables were worth measuring and counting.

Types of Causes or Determiners

Aristotle identified four types of causes or determiners and his analysis provides a useful way to distinguish the two principal models of human developments. To understand an event or object completely one model (so-called mechanistic model) requires the specification of the first two causes while the other model (so called organismic model) requires the specifications of the third and fourth causes. The four causes have been labeled :

a. The material cause

b. The efficient cause

c. The formal cause

d. The final cause

Cognitive development is one of the most important characteristics in human beings. Cognitive development incorporates perception, memory, reasoning etc. in the field of cognitive development various theories have been developed. Among these the most systematic, and comprehensive is the theory of Jean Piaget, the world's most eminent child psychologists.

Piaget's Theory of Cognitive Development

Piaget asserts that, learning is a function of development. For Piaget cognitive development, intellectual development and development of intelligence are more or less synonymous. Intelligence is regarding as a way of behaving. Behaving is reflected in an individual's adaptation to the environment. Adaptation, takes place through the interaction of 'assimilation' and 'accommodation'. An intelligence behaviour requires a balance between assimilation and accommodation. This balance is called 'equilibrium'.

Assimilation implies incorporation of something from environment. New ideas, concepts and stimuli are taken in and incorporated into one's existing set of scheme.

Accommodation involves modification or change in some elements of an old scheme or learning a new scheme which is more appropriate for the new object. A baby who has already got a scheme of sucking mother's breast accommodates to the object placed in the mouth finger, nipple, pencil, a toy- depending on its shape, form and the size. The baby develops a new scheme or a modified scheme. This is called 'accommodation'.

Stages of Development

Education is nothing but the all round development of the individual. However, education in schools today caters mostly to the intellectual/ cognitive development of the individual. According to Jean Piaget, human development is a process of continuous interaction between environment and organism. He has the stages in the intellectual development of the children. The stages abilities in a fixed orders. The child will not reach the stage of formal operations unless he has the experience of the earlier stages. According to Piaget's theory, for the development of cognition not only maturity but also the experiences provided through education with the world of objects is essential or goes a long way.

Piaget has proposed several well-defined stages in the intellectual development of children. Each stage sees the elaboration of new mental abilities which set the limits of what can be learned at each stage. From educational point of view the first stage deals more with physical maturity for the development of cognition and it is in the later three stages that the education can play a constructive role to enhance cognition.

The stages and the functions/ operations that occur in the stages are given in brief ahead.

I. Sensory-Motor Stage (0 to 2 Years)

In this stage the child performs motor actions through trial and error, the child modifies his actions throughout this period, the child's action are tied to immediate situation. Mental operations are not bound during this stage. The development of this is very important for future life.

The intellectual development at this age is marked by four fundamental characteristics :

a. Object concept formation,

b. Co-ordinated space,

c. Objectified causality and

d. Objectification of time

The objects exist in the psychological world of an adult irrespective of their physical presence before the adult but in the world of the child they only exist when they are physically present and child looks at them, grass them, and acts with them. In the first year of life, the child develops the concept of permanence of objects.

The second characteristic of coordinated space in integrated with the formation of object concepts. The concept causality depends on the activity of the child. Any action of the child which brings about an effect is taken on the cause of that events. The child, by a number of activities, develops the concept of causality by the end of two years of age.

II. Pre-operational Stage (2 to 7 Years)

In the stage object gradually take on symbolic signs. The child cannot reverse the process in his mind and perceive unchanging quantity. The imitation of others and symbolic imitation are mostly spontaneous processes in children of this ages. The reasoning used by him is neither inductive nor deductive but transductive.

III. Concrete-operational Stage (7 to 11 years)

During this stage child performs true operations. Conservation, seriation and classification abilities develop

during this stage. The third stage of cognitive development is significant because the thinking her comes closes to mature, adult thought. Here true operations are present but are confined only to concrete situation.

Piaget invokes a concept "subjective centering" as a process which moves the child along in the concrete operational stage of development. The child is characterised on functioning intellectually on the basis of figurative knowledge, that is in terms of concrete, descriptive aspects of his world. Piaget states that the changing perspective accounts in great measure, for childs move towards formal operational thinking.

IV. Formal Operational Stage (11 to 15 years)

In this stage the child acquires a capacity for abstract thought and he can how solve the problems mentally. The ability to state and test hypotheses are the two very important schemes of thought that occurs only during the formal operational stage.

The children are now able to handle calculus of proposition and logical reasoning both inductively and deductively in which they employ propositions.

By the age of 14 years in an ideal situation the children are expected to reach the formal operational stage. However,

researches undertaken in various countries revealed that only a fraction of the students operate of the formal level and the researches on college students (graduates) have also indicated that all do not operate at the formal level.

STUDENT-TEACHERS

Student- teachers means B.Ed. students, who constitute a very important component in the educational process. They are the future teachers who will be required to teach the adolescents in the schools who are in the age group of 12+ years, who if trained to think properly, can become formal operational thinkers as envisaged in the Piagetian cognitive theory.

Two important schemes of thought stating of hypothesis and testing of hypothesis of the formal operational stage of student-teachers was probed in this study.

STATEMENT OF THE POROBLEM

"EFFECT OF MEDIUM OF INSTRUCTION ON THE DEVELOOPMENT OF FORMAL REASONING ABILITY AMONG STUDENT-TEACHERS - A STUDY"

DEFINITIONS OF TERMS USED IN THE STUDY

Effect of –

Influence of

Medium of instruction → next page

The language through which the education is imparted to the student-teachers.

Development of -

Progress of the students

OPERATIONAL DEFINITIONS

Formal reasoning ability –

Two schemes of formal operational thought

1. Ability to state hypotheses
2. Ability to test hypotheses

As measured by the stating of hypothesis questionnaire in English (Dr. M.S. Padmini)

Testing of hypothesis questionnaire (English version) (Dr. M.S. Padmini).

For Kannada medium students the stating of hypothesis and testing of hypothesis questionnaire by Dr. M.S. Padmini was translated by the investigator.

STUDENT- TEACHERS

Students those who are studying in the colleges of education in the academic year 2000-2001 belonging to the Government College of Teacher Education and private non-aided colleges of education, of Belgaum district.

SIGNIFICANCE OF THE STUDY

1. No similar study has been conducted earlier in this geographical area of Belgaum district.
2. Finding of the study will be useful to educators and student-teachers.

MAJOR OBJECTIVES OF THE STUDY

1. To investigate formal reasoning ability of student-teachers from Piagetian perspective.
2. To compare the formal reasoning ability of the Kannada medium and English medium student-teachers.

MINOR OBJECTIVES OF THE STUDY

1. To compare the formal reasoning ability of student-teachers of Government College of Teacher Education and private non-aided college of education.
2. To find out the difference in the stating of hypothesis ability of student-teachers of the government college of teachers-education and private non-aided college of education.
3. To find out the differences in the testing of hypothesis ability of student-teachers of the government college of

teacher-education and private non-aided college of education.

4. To investigate the difference in stating of hypothesis of Kannada medium student-teachers and English medium student-teachers.

5. To investigate the difference in testing of hypotheses of Kannada medium and English medium student-teachers.

6. To determine the sex difference on the formal operational reasoning ability of Kannada medium and English medium student teachers.

NULL HYPOTHESIS

1. There is no significant difference in the formal operational reasoning ability of student teachers of Government college of teacher education and private non-aided college of education.

2. There is no significant difference in the stating of hypothesis ability of student-teachers of Government College of teacher education and private non-aided college of education.

3. There is no significant difference in the testing of hypothesis ability of student-teachers of Government

college of teacher education and private non-aided college of education.

4. There is no significant difference in the stating of hypothesis ability of Kannada medium and English medium student-teachers.

5. There is no significant difference in the testing of hypothesis ability of Kannada medium and English medium student-teachers.

6. There is no significant difference in the stating of hypothesis ability of Kannada medium and English medium student-teachers of Government college of teacher education.

7. There is no significant difference in the testing of hypothesis ability of Kannada medium and English medium student-teachers of Government college of teacher education.

8. There is no significant difference in the formal operational reasoning ability of Kannada medium and English medium student-teachers of Government college of teacher education.

9. There is no significant difference in the stating of hypothesis ability of Kannada medium and English medium student-teachers of private non-aided college of education.

10. There is no significant difference in the testing of hypothesis ability of Kannada medium and English medium student-teachers of private non-aided college of education.

11. There is no significant difference on the formal operational reasoning ability of Kannada medium and English medium student-teachers of private non-aided college of education.

12. There is no significant difference in the stating of hypothesis ability between the Kannada medium and English medium total male student-teachers.

13. There is no significant difference in the testing of hypothesis ability between the Kannada medium and English medium total male student-teachers.

14. There is no significant difference ion the formal operational reasoning ability of Kannada medium and English medium male student-teachers.

15. There is no significant difference in the stating of hypothesis ability of Kannada medium and English medium total female student-teachers.

16. There is no significant difference in the testing of hypothesis ability of Kannada medium and English medium total female student-teachers.

17. There is no significant difference in the formal operational reasoning ability of Kannada medium and English medium female student-teachers.

DELIMITATIONS OF THE STUDY

1. Only two schemes of formal operational thought was measured, i.e. stating of hypothesis and testing of hypothesis in this study.

2. The present study is restricted only to one year B.Ed. students of the 2000-2001 academic session belonging to the Government College of teacher education and private non-aided college of education (Chauson College of Education) in Belgaum district and are affiliated to Karnataka University, Dharwad.