CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

A CRITICAL ANALYSIS OF PIAGET'S COGNITIVE DEVELOPMENT THEORY AS IT RELATES TO THE BEGINNING READING PROCESS

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in Education, Elementary

by

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DEDICATION

The author would like to dedicate this graduate thesis to Dr. E.B. Hone who so generously gives her time and support to educators of young children. The author is fortunate to have had her guidance and encouragement as a student at California State University, Northridge, and to have had her continued friendship. She is an inspiration and is deeply treasured.
ABSTRACT

A CRITICAL ANALYSIS OF PIAGET'S COGNITIVE DEVELOPMENT THEORY AS IT RELATES TO THE BEGINNING READING PROCESS

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The purpose of this study is to gain an insight into the implications of Piaget's theory of cognitive development for instructional methodology, materials and technology in the beginning reading process. Knowledge of Piaget's theory should make the teacher of reading more skillful in matching a child's level of thinking with appropriate instructional methodology, materials and technology for reading competency. Instructional methodology refers to the basic theory underlying a reading program. Instructional materials are the basic materials appropriate for the chosen method and from which the reading experiences evolve.
technology includes all support materials and activities that enhance the basic reading program. In reviewing theories of cognitive development and reading emphasis is given to the relationship between Piaget's theory and the beginning reading process.

Cognitive theories of development explain growth as the structural reorganization resulting from the child's interaction with his environment. Structural reorganization occurs when a state of equilibrium is reached to balance the behavioral structures of the child and structures of the environment. Piaget stresses the adaptive processes of assimilation and accommodation and the sequential stages of growth.

Reading is defined as the process whereby the reader gets meaning from written or printed material. There are many different approaches to reading which vary according to techniques of instruction, selection of materials and organization of skills. Reading definitions and theories are discussed.

Reading with comprehension appears to be correlated with the attainment of Piaget's concrete operational stage of development. A reading program may be more effective if a child's level of cognitive development is identified and instructional methodology, materials and technology reflect a child's level of growth. Also presented are conclusions and recommendations based on the findings of
this study.
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CHAPTER 1

INTRODUCTION

Statement of the Problem

This study is a critical analysis of the literature relating Piagetian theory of child development to the beginning reading process. The writer's purpose for this study is to gain an insight as to the implications of the Piagetian theory for instructional methodology, materials and technology in the beginning reading process.

Importance of the Study

Recently Charles Silberman (1970) and other critics of education began to view the learning process from the standpoint of child development rather than as an accumulation of curriculum facts. If the implication is made that reading is part of the learning process, it is important for a teacher of reading instruction to become more knowledgeable concerning theories of child development.
and how they relate to reading.

Jean Piaget, noted Swiss psychologist, has developed a very comprehensive theory of child development in which the child is viewed as an active learner. While Piaget does not speak directly to reading instruction, inferences can be made from his theory when reading is accepted as part of the learning process.

Knowledge of Piaget's theory of development should make a teacher of reading more skillful in matching the child's level of thinking with appropriate instructional methodology, materials and technology for reading competency.

Definition of Terms

The definition of reading as used by the author in this study is the process of discovering meaning in written language. (Calif. State Dept. of Ed. 1973) To reconstruct a message from written language, the reader uses his store of experiences, developed concepts and learned responses. The beginning reading process is the way in which a child begins to use his experiences and knowledge of language to gain meaning from written passages.

Instructional methodology includes strategies that are employed in the use of reading materials. The basic theory underlying each reading program determines the manner in which reading skills are presented, the sequence in which they are presented and the ways in which they are re-
enforced. For example, a visual or "look-say" program presents most commonly used words by a whole word recognition method followed by whole word techniques of re-enforcement.

The term instructional materials is defined by the author to be the basic content of a reading program. These materials form the basic core or backbone from which the reading experiences evolve. In the majority of reading programs, the instructional materials consist of readiness materials, basal readers, worksheets and workbooks. The context of instructional materials is dependent upon the basic theory of reading on which a program is based.

The term instructional technology is used by the author to mean support materials or activities that enhance the basic reading program. Support materials include films, filmstrips and tapes, learning centers and games. Enrichment activities include classroom visits by resource people, class excursions and projects.

Procedure of the Study

This study was made by reviewing and analyzing the literature and research studies on the Piagetian theory of cognitive development and the beginning reading process. A review was made of cognitive theories. The literature on Piaget's theory was analyzed in terms of growth processes and stages. In surveying the literature on reading emphasis was given to reading definitions, goals and
programs. The literature relating Piagetian theory to the beginning reading process was reviewed stressing implications for instructional methodology, materials and technology.

Organization of the Thesis

Chapter 2 contains a review of the literature on cognitive development. Included are six postulates developed in a discussion of cognitive theories.

Chapter 3 includes an overview of Piaget's theory of cognitive development, growth stages and the associated underlying processes.

A review of literature on reading instruction is covered in Chapter 4. Definitions, goals, approaches and an historical perspective for reading are discussed.

Chapter 5 reviews the literature relating Piagetian theory to reading. Emphasis is placed on the literature that suggest methodology, materials and technology for beginning reading.

A summary of the findings is presented in Chapter 6, with conclusions and recommendations in Chapter 7.
CHAPTER 2

REVIEW OF LITERATURE ON COGNITIVE DEVELOPMENT

Overview

In an attempt to study and explain the growth and development of children, three broad thought systems emerge. The first system of thought, represented by contemporary followers of Freud and Gesell, holds that what is most important in child development is that which comes from within the child. This psychoanalytic or maturationist theory views development as the unfolding of maturational stages that are innately "wired into" the organism. In contrast to the maturationist theory, the environmental associationistic system assumes that the basic structure of complex responses results from the structure of the child's environment. This environmental associationistic system has its roots in the stimulus-response theory of Skinner. (Lefrancios 1977) (Kohlberg 1968) (Stendler 1972)

The third system of thought, the cognitive developmental or interactional view, assumes that cognitive and affective structures are natural emergents from the interaction of child and environment. Supported by Piaget and Bruner, this third system of thought contrasts to the two previous systems. The basic mental structure is considered to be the result of an interaction between certain
organismic structuring tendencies and the structure of the outside world rather than directly reflecting innate patterns or patterns of environmental structures. (Kohlberg 1968)

**Cognitive Theories**

Cognitive development theories explain growth as the change in the cognitive and affective structures resulting from interaction between child and environment. In experiencing new situations, a child using the knowledge from previous experiences explores and discovers the new event. The new relationships perceived are internalized into the existing structures and result in structural changes. Bruner (1966) describes the nature of intellectual growth as follows:

Growth is characterized by increasing independence of response from the immediate nature of the stimulus. Growth depends upon internalizing events into a "storage system" that corresponds to the environment. Intellectual growth involves an increasing capacity to say to oneself and others, by means of words or symbols, what one has done or what one will do. Intellectual development depends on a systematic and contingent interaction between a tutor and a learner. Teaching is vastly facilitated by the medium of language, which ends by being not only the medium for exchange but the instrument that the learner can then
use himself in bringing order into the environment. Intellectual development is marked by increasing capacity to deal with several sequences during the same period of time and to allocate time and attention in a manner appropriate to these multiple demands. (p. 5)

The cognitive theorists are concerned with knowing, perceiving, problem solving, decision making, awareness and related intellectual activities. In his discussion of "cognitive-developmental" or "interactional" theories, Kohlberg (1968) outlines six basic postulates of this approach.

1. The term "cognition" refers to adaptive actions upon objects whereby an equilibrium state is reached between the action and the object. A child encounters a new object, explores the object and discovers aspects of the object that he internalizes into his mental structures. Bruner refers to the excitement of discovery in which discovering new relationships result in a sense of confidence in one's abilities. The new information is put in a "storage system" for the child to use in making predictions and extrapolations on future actions. (Bruner, 1966) For example, when a child first encounters an apple, he manipulates and explores it. He discovers that it
is colored, round, and can be eaten. Although it is not the same as an orange he has previously discovered, it does have similarities. This apple experience used previous knowledge of an orange and can be used in future experiences with other apples, round objects or fruits.

2. Cognition proceeds through stages of structural reorganization. Stages of structural reorganization are referred to by Chomsky, Werner, Bruner and Piaget. Chomsky (1972) found in her study of language development that there was an order in which a child acquired the structures of his native language. Werner (1972) implies stages of growth when he states the principle of development that "whenever development occurs it proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation, articulation, and hierarchic integration." (p. 47) Bruner (1966) suggests stages of structural reorganization in his definition of growth. A most thorough outline of growth stages has been developed by Piaget. Piaget's stages are characterized by qualitative differences in children's modes of thought, an invariant sequence of development, "structured whole" thought processes and hierarchical integrations of in-
creasingly differentiated and integrated structures. (Kohlberg 1968) In referring to the child's discovery of the apple, at one stage he may just perceive it as a round green thing, at another stage he may be able to relate it to other apples, other things to be eaten or other round objects. At a later stage, he may be able to classify the apple as a fruit or as a seed bearing plant.

3. Structural reorganization of cognitive structures is a result of interaction between the organism and the environment. Bruner describes cultural instrumentalism and individual instrumentalism as being inseparable. The language and rules used by an individual reflect his mode of coping with constraints imposed by his culture. (Bruner, Oliver & Greenfield 1966) Werner (1972) describes development as the process whereby the child becomes less dominated by the immediate concrete situation, less stimulus bound and less impelled by his own affective state to a state in which he can manipulate the environment. In the "apple experience," the child who lives in an environment where apple growing is abundant will be able to develop a more complex concept of apple than a child who only encounters one type of apple in a
market situation.

4. Structural organization entails a balance of discrepancy and match between the behavior structures of the child and the structure of his environment. Bruner, Oliver & Greenfield (1966) refer to this discrepancy as "errors of growth." When a situation presents a bad fit to the nature of one's representations, the act of learning involves acquisition of new information, the transformation of the knowledge to make it fit the new tasks and an evaluation to see if this information has been adequately manipulated for the task. Inner growth for Piaget is propelled by disequilibrium. (Bruner 1960) Accommodative and assimilative processes help the child cope with his models of the environment and newly learned complexities. (Bruner, Oliver & Greenfield 1966) In a return to the apple, when the child who had only experienced a green apple, encounters a red apple, he explores it, uses his previous green apple knowledge to relate to the new apple and tests out his assumptions by eating the new apple.

5. Inherent motives for cognitive activities are present from birth and these motives undergo structural changes in development. The infant enters the world as a helpless being and begins to
curiously explore his environment. Through re-enforcing activities, he continues to gain competence in his environment. From new experiences, there is a gain in new knowledge and this new knowledge is used in creating new incentives for future experiences. Bruner states that the intrinsic motives for learning are curiosity, drive to achieve competence, identification and reciprocity. This "push" for growth which is referred to as the "will to learn" by Bruner, "competence motive" by R.W. White, and "intrinsic motivation" by Hunt, is suggested as coming from external stimulation. Piaget, on the other hand, views this "push" as a disequilibrium with an inner and outer stimulation. (Bruner, Oliver & Greenfield 1966) (Bruner 1966) The child curiously explores a new apple with the desire to competently relate it to his previous knowledge. Once a comfortable relationship has been made, the child feels success which will encourage future explorations of new situations.

6. Both "cognitive" and "affective" functions parallel in structural transformations during development. If cognitive refers to the mental structures, then affective is assumed to mean the emotional structures. While Piaget places little emphasis
on the emotions, he repeatedly states that no act of intelligence is complete without emotions. It is his belief that the emotional state provides the motivation in learning. (LeFrancois 1977)

Vygotsky and Werner also suggest that while rate and level of development are determined by intelligence, all aspects of personality development have a basic cognitive structural component. (Kohlberg and Zigler 1972) Kohlberg goes further in developing affective structures and identifies six sequential stages on moral development. With cognitive factors dominating in Kohlberg's model, the child moves away from the cognitive innocence of early childhood as he participates in more social groups, and as a result, he changes his views about authority and authority relations. (Stendler 1972) In each encounter with a new apple or similar object, the child gains more confidence in himself as he successfully relates the experience to previous knowledge. The successful relationship leads to the further development of the cognitive structures as well as to the further development of the affective structures.

In the review of cognitive development theories presented in this chapter, cognitive development was defined as the reorganization of mental and affective structures.
that occur as a result of an interaction between the child and his environment. Kohlberg's six postulates of cognitive development theories were discussed. While all of the postulates are common to all writers in the cognitive developmental tradition, Jean Piaget has most aptly applied these assumptions to children's behavior in logically precise and empirically specified form. In the next chapter, his theories will be developed.
CHAPTER 3

REVIEW OF LITERATURE ON PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

Jean Piaget, Swiss psychologist, has combined his earlier studies of biology and epistemology, the science of knowledge, to develop a comprehensive theory of cognitive development. The biological focus resulted in definitions of intelligence in general terms of growth stages, adaptation, equilibrium and similar factors; whereas the epistemological concern resulted in the empirical investigation of the child's understanding of space, time, causality and similar notions. (Ginsburg and Opper 1969) (Flavell 1962) Piaget's methods are more concerned with the child's explanation of his thoughts rather than with incorrect or correct answers. (Ginsburg and Opper 1969) Children think differently than adults in that their thoughts are derived from actions, not from language. (Piaget 1972)

Underlying Processes

The development of knowledge is a spontaneous process which involves the total structures of knowledge. The learning of structures is subordinate to development. Operational structures form the basis of knowledge. Hence, the central problem of development is understanding the formation, elaboration, organization and functioning of these structures. The operation is the action of
modification and transformation which is performed upon an object. This operation, which is interiorized and reversible, is always linked to other operations and, thus, is always a part of a total structure. (Piaget 1972) For example, a number exists in a series of numbers which constitute a structure.

The development from one set of structures to another is explained by neurological maturation, experience, social transmission and, primarily, by equilibration. Neurological maturation provides the constant ordering of growth stages. Experience accounts for the effect that the physical environment has on the structures of intelligence and social transmission explains the linguistic or educational influences in development. Equilibration is the adaptive process that occurs when a child organizes his knowledge to take in new experiences. When faced with a new experience or external disturbance, the child reacts in order to compensate for the disturbance. Such adaptive action leads toward an equilibrium. (Piaget 1972) The processes of assimilation and accommodation assist the child in his adaptation to the environment. (Ginsburg and Opper 1969) Assimilation is the process whereby the child incorporates features of the environment into his existing psychological structures. Accommodation, on the other hand, is when a child must modify his psychological structures to conform to different properties of the
environment. (Lefrancois 1977) (Ginsburg and Opper 1969)
For example, when a child first encounters a rattle, he
assimilates or takes this experience into his well formed
structure of grasping. He must accommodate his visual
structures to perceive the rattle correctly, his movements
to the distance and shape of the rattle, and his muscular
exertion to its weight. Thus, the child's behavioral
structures are modified to suit the environmental demands.
(Ginsburg and Opper 1969)

Stages of Development

Sets of structures in development occur in growth
stages. Criteria for the stages are defined by Inhelder
(1962) as follows:

1. Each stage involves a period of formation (genesis)
and a period of attainment. Attainment is
characterized by the progressive organization of a
composite structure of mental operations.

2. Each structure constitutes at the same time the
attainment of one stage and the starting point of
the next stage, of a new evolutionary process.

3. The order of succession of the stages is constant.
Ages of attainment can vary within certain limits
as a function of factors of motivation, exercise,
cultural milieu, and so forth.

4. The transition from an earlier to a later stage
follows a law of implication analogous to the
process of integration, preceding structures becoming a part of later structures. (p. 21)

Piaget distinguishes four main stages of development.

A. The sensori-motor or preverbal stage is where practical knowledge develops to constitute the substructures of later representational knowledge. (Piaget 1972) This stage occupies approximately the first eighteen months. The characteristics of this stage are outlined by Arnolt (1975) as follows:

1. reflexive behavior gives way to sensori-motor responses and budding concepts of time, space and causality.
2. object permanence occurs.
3. begins to look at things heard, grasp things seen, manipulate things felt.
4. language not necessary for thought concepts.
5. object invariance develops object concept.
6. learns rudiments for causality. (p. 261)

B. In the second stage occurs pre-operational representation - the beginnings of language, of symbolic function, and therefore the beginnings of thought or representation occur. Representational thought depends on a reconstruction of all that was developed on the sensori-motor level. (Piaget 1972) This stage covers approximately the
years from two to seven in age. In order to distinguish the pre-school child from the kindergarten/first grade child, Arnolt (1975) has subdivided this stage into a preoperational stage and an intuitive operational stage.

1. The **pre-operational stage** is characterized by the following:

   a. concepts dominated by perceptions.

   b. does not conserve.

   c. attends to only one property of experience at a time, categorizes objects on the basis of one characteristic (transductive reasoning).

   d. multiple classifications are beyond the child's combinatorial thought.

   e. moves from egocentric speech (no communication) to socialized speech (communication as listening to and talking with another).

   f. egocentric, cannot see another's point of view, is unaware that he is egocentric and doesn't see the need to become different. Social interaction is the primary factor that acts to dissolve cognitive egocentrism.

   g. unable to follow transformation, doesn't
follow action through it's sequential stages. This inhibits logic in thought. The child is not aware of logical relationships.

h. unable to decenter, tends to center on perceptual aspects of observation and disregards logical reasoning.

i. unable to reverse operations, cannot follow a sequence back to the original, cannot maintain equivalence of quantity in the face of perceptual change.

j. uses trial and error problem solving strategies.

k. believes only literal translations, difficulty in following double meanings of jokes, idiomatic phrases and metaphors.

(p. 261)

2. The intuitive operational stage, occurring in approximately the five to seven year age span, is characterized by:

a. less egocentric.

b. focuses on separate characteristics but disjointly.

c. tied to concrete thinking.

d. sees whole of parts but doesn't coordinate them.
e. categorizes according to one criteria only.
f. begins trial and error seriation.
g. reverses thought if illustrated with slow and obvious changes.
h. follows a transformation forward only.
i. cannot coordinate following the transformation and reversing thought. (p. 261)

C. Piaget's third stage of development is referred to as the concrete operational stage. At this stage, operations occur on objects but not yet on verbally expressed hypotheses. Operations of classification, ordering, number, spatial and temporal, and functional logic of classes and relations emerge in this stage. (Piaget 1972) In order to separate the early primary child from the middle primary child, Arnolt (1975) has divided this stage into a concrete operational stage and a concrete transitional operational stage.

1. The concrete operational stage covers approximately the years in age of seven through nine. This stage is characterized by the following behaviors:
   a. begins to decenter perceptual awareness, can "think" of two or more common characteristics of concrete objects.
   b. becomes less egocentric, emphasizes and
mentally compares his ideas and feelings with others.

c. begins transitivity, arranges objects in a "less than" or "more than" category. Seriation begins to become efficient and logical.

d. class inclusion develops, whole and part can be thought about independently, multiple classification is possible.

e. reversibility begins to develop. In the conservation concept, the child is able to follow the operation from its conclusion to its beginning and vice versa without changing the materials.

f. develops causal relationships, the recognition that there are different ways of combining parts.

g. capable of

1. logical seriation

2. class inclusion (multiple classification)

3. recognition of equivalence

4. exercising reversibility, and

5. conservation

h. must have the reality of materials to mentally operate on relationships. (p. 262)
2. Characteristic behaviors of the concrete transitional operational stage occurring between approximately nine to eleven year age span are:

a. hypothesizes but does not exhaust all possibilities.
b. recognizes identity verbally.
c. follows reciprocity verbally.
d. matches fine discriminations.
e. classifies pictures according to paragraphs read.
f. does double seriation.
g. hypothesizes about transformations.

(p. 262)

D. At the final stage, the formal operational stage, the child reaches the level of formal hypothetic-deductive operations. He can reason with hypotheses, construct new operations of propositional logic and attains new combinatorial and more complex structures. (Piaget 1972) Arnolt (1972) characterizes the behaviors of this stage covering approximately eleven to sixteen years as:

1. combines thoughts in rules or variables to solve problems.
2. analysis is possible with synthesizing new solutions to problems.
3. symbolizes plans of action prior to dealing with a problem.

4. follows syllogisms involving a major premise, a minor premise and a conclusion.

5. typically has new qualitative power to envision alternatives to the way things are done, e.g., child-rearing, education, government. The young formal operational thinker behaves somewhat like an egocentric adult and is critical of reality because he believes he can hypothetically cure societal ills, e.g., eradicate prejudice by people becoming accepting of all people. (p. 262)

Implications for Education

Piaget feels that the processes and stages of development should form the basis of education. He states:

The principle goal of education is to create men who are capable of doing new things, not simply of repeating what other generations have done - men who are creative, inventive, and discoverers. The second goal of education is to form minds which can be critical, can verify, and not accept everything which they are offered. The great danger today is of slogans, collective opinions and ready-made trends of thought. We have to be able to resist individually, to criticize, to distinguish between what is proven and what is not.
So we need pupils who are active, who learn early to find out by themselves, partly by their own spontaneous activity and partly through material we set up for them; who learn early to tell what is verifiable and what is simply the first idea to come to them. (Arnolt 1972)

In applying his theory of development to the process of education, Piaget discusses the active school where children are allowed to develop in their thought processes as they actively inquire, explore and manipulate problems and materials. (Piaget 1970)

Play is one form of behavior that is valued in the active school. In its sensori-motor origin, play is nothing more than a pure assimilation of reality into the self. At a higher level, play provides a symbolic representation of all the realities the child has so far experienced but has not yet assimilated. Play is a function that is necessary to a child in order for him to assimilate intellectual realities which would otherwise remain outside the infantile experience. Because complete adaptation requires a progressive synthesis of assimilation with accommodation, play in its own development, is gradually transformed into adapted constructions which require an increasing amount of what is in effect work, to such an extent that every kind of spontaneous transition may be observed between play and work. (Piaget 1970)
In active school, intelligence is viewed as an authentic activity, not merely the faculty of knowing. The mental structures which vary with growth must be considered in determining suitable methods and environment for a child to achieve coherence and objectivity on the intellectual plane. Before any kind of language or conceptual thought, there develops a sensori-motor or practical intelligence that is able to succeed even at an early age in organizing a whole coherent universe on the level of action. After a child actively manipulates objects in his environment, he acquires knowledge that is subsequently assimilated into the consciousness of already familiar schemata of action. New methods of education that have the most durable success allow room for both internal structural maturation and for influences of experience and of the social and physical environment. (Piaget 1970)

The active school allots an essential place to the social life that develops between children themselves. Social development proceeds from egocentrism toward reciprocity, from assimilation into a self still not conscious of itself to mutual comprehension leading to the constitution of personality. It proceeds from chaotic non-differentiation within the group to a differentiation based upon disciplined organization. Two social processes in the new school consist of the constraint exercised by the adult and the cooperation of the children with each
other. Cooperation among the children is most apt to encourage a real exchange of thought and discussion and to result in a real exercise of the principle of behavior, not solely in a submission to the adult constraint. (Piaget 1970)

Piaget's comprehensive theory of development was reviewed in this chapter. The basic structures of a child's intellect change in his development through the processes of organization and adaptation to the environment. Stages of growth are established which unfold in an invariant sequence, primarily as a result of disequilibrium between existing structures and new experiences. The goal of education is to create men who are capable of doing new things. The educational environment should allow children to be active in exploration and discovery, provide materials in accordance with levels of growth and encourage social interaction with peers.
CHAPTER 4

REVIEW OF LITERATURE ON READING INSTRUCTION

Definition of Reading

In its original form the verb "read" derived from the Teutonic work raedan means the interpretation of something obscure. (Wolf 1977) While current definitions of reading vary slightly according to the different theories on the reading process, all definitions agree that reading is the process whereby the reader gets meaning from written or printed material.

In the Framework in Reading for California Public Schools, the meaning that is discovered in the reading act is viewed as a result of an interaction of the reader's experiential background and language abilities with the printed message of the author. While the complex process of reading begins with the decoding of written language, it is influenced by the reader's language experience, attitude and motivation, sensory perception and comprehensive abilities. (Calif. State Dept. of Ed. 1973)

In his definition of reading, Wardlaugh (1969) states that a reader attempts to discover meaning through the use of visual clues of spelling, his knowledge of probabilities of occurrence, his contextual-pragmatic knowledge, and his syntactic and semantic competence. Reading is an active
process. The reader must make an active contribution by drawing upon and concurrently using various abilities that he has acquired. Harris (1962) states that "reading is the meaningful interpretation of printed or written verbal symbols." (p. 4) The act of reading involves sensing visually, perceiving words as meaningful symbols, achieving meaning from a series of perceptions, and reacting with thoughts or feelings. Through the reading process learning takes place.

In his Substrata-Factor Theory of reading, Holmes (1967) views the reading process as an audio-visual verbal-processing skill of symbolic reasoning. The ability to reason about what is being read depends upon information that is stored in the brain, memory traces that react in a certain sequence upon the stimulus and the meaningfulness of the information received.

Considering the many aspects of reading, Strang states that

Reading, broadly speaking, includes several interrelated components. Reading is the visual task of obtaining a clear, unblurred image of the printed words. This visual image must be instantly associated with meaning if a basic sight vocabulary is to be built. Getting the meaning of unfamiliar words requires word-recognition skills, one of which is phonics. Reading for meaning, however, goes far
beyond this word-calling stage. Comprehension on several levels requires three abilities: the ability to read the lines and merely repeat what the author says; the ability to read between the lines to interpret and appraise what the author says; and the ability to read beyond the lines to reflect on what the author says, to arrange his ideas into a new pattern, to draw inferences and conclusions. Comprehension is usually accompanied by a feeling response-satisfaction of annoyance, hope or despair, approval or disapproval. The broad view of reading includes recognition of its influence on the reader's point of view on his attitudes and behavior, and, through these, on his personality and character. (Witty 1966, p. 88)

Carroll (1976) maintains that the essential skill in reading is getting meaning from a printed or written message. He breaks the process of learning to read into the following eight components:

1. The child must know the language that he is going to read.
2. The child must learn to dissect spoken words into component sounds.
3. The child must learn to recognize and discriminate the letters of the alphabet in their various forms (capitals, lower case letters, printed, and cursive).
4. The child must learn the left-to-right principle by which words are spelled and put in order in continuous text.

5. The child must learn that there are patterns of highly probable correspondence between letters and sounds, and he must learn those patterns of correspondence that will help him recognize words that he already knows in his spoken language or that will help him determine the pronunciation of unfamiliar words.

6. The child must learn to recognize printed words from whatever cues he can use—their total configuration, the letters composing them, the sounds represented by those letters, and/or the meaning suggested by the context.

7. The child must learn that printed words are signals for spoken words and that they have meanings analogous to those of spoken words. While decoding a printed message into its spoken equivalent, the child must be able to apprehend the meaning of the total message in the same way that he would apprehend the meaning of the corresponding spoken message.

8. The child must learn to reason and think about what he reads, within the limits of his talent and experience. (p. 13)
Goals of Reading

The long range goal of reading instruction is to produce active citizens who increase their knowledge through written material. The authors of the Framework in Reading for California Public Schools feel that the purpose of reading instruction is "to release the power of literature to change the life of the reader through involvement." (p. iii) Reading provides the bridge between the child and the world of ideas. (Calif. State Dept. of Ed. 1973)

More specifically the stated goals for students in reading instruction in California Public Schools include:

1. Ability to decode and comprehend written material at a level that will enable them to function as productive members of society

2. Reading abilities, tastes, and interests that will enable them to discover personal satisfaction in reading and to gain a better understanding of themselves and others

3. An imagination that through literature is broadened beyond the confines of the students' world

4. Ability to question, to reason, and then to act creatively as individuals and as members of groups

5. An understanding of how to use reading as a means of learning in a variety of human endeavors and
how to integrate reading with other means of learning

6. A positive attitude and commitment to lifelong learning. (Calif. State Dept. of Ed. 1973, p. 6)

Harris (1962) feels that there are three broad goals for the reading program. First is the ability to read which involves developmental reading or the continuous improvement of the skills in reading mechanics and comprehension. The second purpose is to assist children in the use of reading as an efficient tool of learning. This functional reading includes the uses of reading in which information is gained or understandings are developed. Recreational reading is the third purpose. This part of the reading program is concerned with the enjoyment of reading, the development of interest in reading and with the improvement and refinement of reading interests.

Reading Approaches

There are many approaches to reading instruction and no single approach or set of materials can be equally appropriate for all students. Some approaches are based primarily on techniques of instruction; others on types of materials used; and others, on the organization of instruction. Many times different approaches are combined for classroom use. (Calif. State Dept. of Ed. 1973) Chall (1967) states that since about 1930, most textbooks and
reading programs include the following principles:

1. The process of reading includes word recognition, comprehension and interpretation, appreciation, and application of what is read.
2. The child should start with meaningful reading of whole words, sentences and stories.
3. After a sight vocabulary of about fifty or so words is developed, the child should begin to learn the sound-letter relationships.
4. Instruction in phonics and other means for identifying words should continue for the six years of elementary school.
5. Phonics should be integrated with meaningful reading experiences.
6. Vocabulary words for the first three years of instruction are high frequency words and are repeated often in the reading materials.
7. Instruction begins in a slow and easy manner with a readiness period.
8. Children should be instructed in small groups selected on the basis of reading achievement.

(p. 13)

The different approaches to reading instruction are outlined and grouped in many different ways. The Framework in Reading for California Public Schools describes the different approaches as follows:
1. **Basal reader approaches.** These approaches include a set of reading textbooks which progress in levels of difficulty, workbook materials and a teacher's manual. Word identification and comprehension are provided in a sequential program. Programs vary in emphasis on beginning word identification, comprehension, methods of teaching word identification skills and application of reading skills.

2. **Individualized reading approaches.** A variety of reading materials are offered in these approaches. Students are guided in selection of materials and independent work activities through individual student-teacher conferences for diagnosis, skill instruction and program planning. Other features are student and teacher record keeping and flexible grouping for skill instruction.

3. **Language experience approaches.** In these approaches students dictate or write their own stories for reading. By using their personal language, children discover that what is thought can be spoken, what is spoken can be written and what is written can be read. Instruction in word identification and comprehension skills are based on the student made materials. Children progress from their own materials to other types of
printed materials.

4. **Linguistic approaches.** Many of these approaches stress the importance of learning consistent sound and letter relationships in the beginning stages of the program. Words are organized in regular spelling patterns. Other approaches vary in that they stress the syntax of sentences.

5. **Literature approaches.** In these approaches, a variety of literary materials are used to capture student interest. The five steps of listening, speaking, seeing, writing and reading are included in literature approaches. (Aukerman 1971) Folktales or other repetitive stories are presented so that children connect the familiar spoken language with the printed symbols. The literature selections may be used as models for students to use in writing their own stories. These student made materials are read and shared with classmates.

6. **Phonics approaches.** These approaches emphasize the mastery of sound-symbol relationships. The application of phonetic skills in identifying words and in reading words in context is an essential part of all phonics approaches. These approaches may vary in the rate and sequence of letter introduction, letter patterns and sounds,
degree of vocabulary development, and emphasis of methods used to develop sound-symbol relationships.

7. Theme approaches. Areas of interest are the concern of these approaches. A variety of materials are included such as graded reading textbooks, texts from content areas, library books and audiovisual materials. (Calif. State Dept. of Ed. 1973)

Historical Perspective of Reading

Although most research on reading has appeared in the past half century, a concern for reading instruction has existed for many ages. Before 5,000 B.C., Manu a Code Giver in Mauritius talked about literates, retainers or recollecters, thinkers who understand, interpret and judge, and users who learn. (McCullough 1976)

Methods for reading instruction have been discovered and rediscovered in the areas of alphabet reforms, word methods, sentence methods, experience methods and phonics methods. (Chall 1967) Research that is conducted and methods that are put into practice are responsive to the demands of the time. For example, the publication of Flesch's Why Johnny Can't Read in 1955 renewed the concern for phonics instruction that Wingo expressed in 1948. (Aukerman 1971)

In spite of the volumes of reading research, it is difficult to name even a few trustworthy generalizations or
research based guides for reading instruction. After a survey of reading research since 1916, Fries states, "I have not been able to find evidence to justify the assertion that the published findings of recent educational research have provided the basis of most of the modern reforms in reading instruction." (Levin 1976, p. 315)

Reading research is incomplete. Before better methods and materials for teaching reading are produced, there is a need to integrate old and new knowledge on reading and to coordinate theories that deal with different aspects of the reading process. (Chall 1967) (Smith, Goodman and Meredith 1970)
CHAPTER 5

REVIEW OF LITERATURE RELATING PIAGETIAN THEORY TO THE BEGINNING READING PROCESS

Background of Relationship

Although the complex process of reading has been studied for years, no one has yet discovered exactly how children learn to read and how they comprehend what is read. (DeMao 1976) In recent years, researchers have reached the realization that in order to fully understand the fundamental nature of the reading act, they must gain an understanding of a child's perceptual and cognitive development. (Raven and Salzer 1971) Research, therefore, is currently being conducted relating Piaget's findings on cognitive development to different aspects of the reading act.

Comparing reading competency and cognitive thinking, research indicates that efficient reading with comprehension is correlated with the "concrete stage" of cognitive growth. The assumption is made that in order to comprehend written English, a higher level of development must be reached other than association, recognition, recall and perceptual awareness. Another assumption is that a child must acquire certain cognitive processes in order to successfully comprehend the reading process. (DeMao 1976)
High correlations have been found between the concrete ability to conserve and success in the various reading abilities of readiness, achievement, vocabulary development, and comprehension. (Brekke and Williams 1975) (Cox 1976) (Crutchfield 1974) (Dimitrovsky and Almy 1975) (Ellis 1977) (Kretschmer 1975) Abilities to reverse actions and to decenter which contribute to the development of conservation appear to have substantial significance for beginning reading instruction. (Raven and Salzer 1971) (Brekke and Williams 1975) In ascertaining a high correlation between conservation ability and beginning reading achievement, Almy states that the child who has not attained reversibility may not have reached the stability of perception necessary for formal reading instruction. (Almy, Chittenden and Miller 1966)

Research on perceptual development also indicates the importance of attaining the concrete level of operations before learning to read English in a formal reading program. (Elkind, Medvene and Rockway 1970) (Elkind and Weiss 1967) (Briggs and Elkind 1973) Prior to the concrete operational stage, children are unable to coordinate wholes and parts in such a way that both retain their unique traits without losing their interdependence; nor are they able to act upon a given pattern to produce a new organization without modifying the stimulus. The implica-
tion is that the preoperational child is unaware of both the independence of individual letters and of the whole word while still being aware of their interdependence. (Elkind 1966)

The ability to classify, characteristic of the concrete operational stage, is highly correlated with reading level. (Ellis 1975) (Ellis 1977) The suggestion is made that a child unable to classify will be unable to engage in rule-learning and application. (Raven and Salzer 1971) Gallager further suggests that a child without the higher levels of classification will have gaps in reading comprehension. (DeMao 1976)

The egocentric thinking of the preoperational child hinders reading comprehension. With thoughts centered around himself, the child is unable to perceive the thoughts of others. (DeMao 1976) (Ellis 1977)

As DeMao (1976) states:

The preoperational child is bound by certain inefficient cognitive abilities in relation to reading. The child who has not attained concrete stage thinking is hindered by egocentrism, by an inability to follow transformations, by centration and by irreversibility of thinking. Each of these prelogical processes affect the child's ability to use the reasoning of logical classification, seriation and conservation or critical thinking and problem solving
Methodology in the Reading Process

Instructional methodology includes the strategies employed in the use of reading materials. The theory underlying a reading program determines the sequence of skill presentation, the way in which skills are presented and the manner of reinforcement. Research suggests a relationship between reading achievement and cognitive development; therefore, the implication is that the methods employed in a reading program should be appropriate to a child's level of cognitive development. An assessment on cognitive development would indicate the level at which a child functions and knowledge of the levels of development would suggest methods that are appropriate for the assessed level. (Winkeljohann 1974)

In the sensori-motor stage where the child begins to look, grasp and manipulate objects, there is little reason to believe that any precisely described set of experiences is necessary for the development of cognitive growth. Exploration and manipulation of a large variety of objects during this stage appear most important for the development of images which will later facilitate reading comprehension. (Raven and Salzer 1971)

The preoperational child is beginning to develop language and symbolic representation. Since preoperational thought develops through sensori-motor activities, and
language evolves from these motor experiences, the child should be given continued opportunities to explore and manipulate his environment. (Raven and Salzer 1971) For the preoperational child at nursery school age, Weikart, Rogers, Adcock and McClelland (1974) suggest the development of a three-sided curriculum that includes levels of content, representation and operation. In the levels of content, the child develops skills in classification, seriation, spatial relations and temporal relations. A child develops logical ways of seeing himself and his environment in the levels of representation through the following sequence:

1. dealing with real objects and events
2. dealing with cues which refer to real objects and events
3. dealing with constructions which stand for object and events.

In the levels of operation, a child learns to deal with his environment first through motor or physical involvement and then through verbal responses about a task.

To further the development of language and symbolic representation, some authors suggest that a child should experience reading as part of a total language arts program which allows the child time to

1. internalize representations of his world through imitation, symbolic play, drawings and language
2. express himself through art, music, dance, mime, drama and language

3. interact in small group discussions where the teacher listens, elaborates, extends and clarifies his ideas

4. build associations between his speech and printed language through child prepared charts, graphs, murals and books

5. adapt his actions to oral directions. (Smart 1971) (Almay, Chittenden and Miller 1966)

As the child progresses into pictorial and abstract representations, the Language Experience Approach to reading appears to be the most appropriate at the pre-operational stage. In this method, reading becomes an extension of a child's language and experience. (DeMao 1976) (Ellis 1977) (Smart 1971)

From extended exposure to the Language Experience Approach, the abstract symbols of letters and words that stand for experiences take on meaning for the child. The child may then be placed in a formal reading program where he progresses into the reading of books. An individualized, self-selected reading program ideally allows the child a pressure-free environment in which to learn. (Cannon 1973) (DeMao 1976) Rosenberg (1977) suggests a diagnostic-prescriptive reading program that includes a diagnosis of development level, systematic behavioral objectives for the
identified levels, learning centers that meet identified needs, a prescriptive reading procedure and teacher-learner verbal interaction. The prescriptive reading procedure includes:

1. at least two methods to introduce and review vocabulary
2. work on several word attack skills
3. work on the several comprehension skills
4. equal time on instruction in literal and inferential comprehension skills
5. evaluative and emphatic reading skills work
6. creative reading skills work
7. methodical follow-up of initial lessons
8. growth through semester in each prescriptive skill
9. learners grouped according to the several diagnostic evaluation needs and cognitive or affective strengths
10. inter-group learner to learner teaching
11. learner enrichment station for manipulation instruction activities
12. learner enrichment station for listening or viewing instruction and activities. (p. 303)

In the concrete operations stage, the child reaches the ability to reason about direct experiences and to study various aspects of language, including reading. He can rearrange words, phrases and sentences and determine
whether or not different modifications of word order or substitutions have changed the meaning. At this level, a reading program organized along Piagetian lines would provide increased emphasis on the development of logical operations through combining sentence and word elements, associating elements in different ways, establishing correspondence or identity among elements and encourage the transformation in the order of elements. (Raven and Salzer 1971) As the child's thoughts become less egocentric, he is better able to consider the viewpoint of others. Research suggests that the visual look-say and the phonics approaches to reading are appropriate at this level of development. (Elkind 1966) (Raven and Salzer 1971)

A reading program at the formal operational period should involve the sequencing of materials to provide a correspondence between logical operations in the content and the reader's manner of structuring knowledge. In dealing with new situations the child processes information in the following sequence:

1. classification and seriation
2. correspondence
3. logical multiplication
4. tautologies
5. implications
6. ratio and proportional thinking. (Raven and Salzer 1971)
Materials in the Reading Process

Since research indicates that reading success is related to a child's stage of cognitive development, the implication is made that the basic content of a reading program include an assessment of cognitive growth. The assessment should indicate at which level the child is functioning and, therefore, what materials are appropriate. (Winkeljohann 1974) (Weikart, Rogers, Adcock and McClelland 1974)

In the sensori-motor age there are no specific materials suggested. The most meaningful experiences evolve from exploration and manipulation of the objects in a child's environment.

Since the preoperational child is probably not cognitively ready for a formal reading program, the instructional materials suggested for this stage foster the development of the levels of content, representation and operation. The materials suggested include:

1. art materials
   a. a variety of paper
   b. paints
   c. clay
   d. chalk
   e. pencils
   f. markers
   g. scissors
2. a variety of play materials
   a. play house equipment
   b. dress-up clothes

3. large motor materials
   a. building blocks
   b. stairs
   c. balance beams
   d. sand tables
   e. house gym
   f. balls
   g. rubber representations of people and animals
   h. play vehicles

4. quiet materials
   a. peg boards
   b. beads for stringing
   c. puzzles
   d. lotto games
   e. color and shape games
   f. books
   g. records. (Weikart, Rogers, Adcock and Mc-Clelland 1974, p. 42)

The materials for the Language Experience Approach to reading include paper, pencil and a variety of art materials for illustrations of child written stories. (Smart 1971)

While this author does not suggest a specific list of materials for the concrete operational child, the
implication is made that a child's reading skills should be diagnosed as follows:

1. sensori-motor and perception skills
2. comprehension achievement
3. personality and ethical judgment
   a. audiometer test
   b. telebinocular test
   c. graphic design perception test
   d. auditory discrimination test
   e. visual discrimination test
   f. auditory memory test
   g. visual memory test
   h. verbal and performance intelligence scale
   i. listening and sight vocabulary test
   j. spelling test
   k. numerical concepts test
   l. oral and silent reading test
   m. sentence completion record
   n. draw a family or person record (Rosenberg 1977, p. 303)

The assessment should indicate the skill level of a child and the appropriate materials for development. Since research indicates that the skills developed in the majority of reading programs are appropriate at this level, the assumption is made that basic readers, worksheets and workbooks are appropriate. (Elkind 1966) (Raven and
Salzer 1971) DeMao (1971) suggests that a self-selected, individualized or personalized reading program is ideal.

Instructional materials for the formal operational stage should be sequenced according to logical operations. Content should be structured in a manner that enables the child to participate actively in the process of determining the effects of variables and the relationships among the variables and effects. (Raven and Salzer 1971)

Technology in the Reading Process

The implication is made that the appropriate instructional support materials or activities that enhance the reading program should be related to a child's level of cognitive development. Active manipulation and exploration of all materials in a child's environment are appropriate for the sensori-motor child. (Raven and Salzer 1971)

Materials defined as technological are suggested as basic materials in a reading program for the preoperational child. The support activities that are suggested for this stage are field trips, learning centers, games and different groupings. Field trips should acquaint the child with parts of the environment that cannot be brought to the classroom while extending concepts taught in the classroom. Learning centers should be established to reenforce concepts that are being developed. Centers are suggested for art, quiet activities, role playing, motor development and language development. Musical instruments, tape
recorders and language masters are recommended for use in learning centers. (Weikart, Rogers, Adcock and McClelland 1974) (Smart 1973) To further the child's thinking ability, games are suggested for general and discriminative movement, visual, auditory, hand, graphic logic and social thinking. (Furth and Wachs 1974) Ungraded and heterogenous groupings allow children the opportunity to share and learn from each other. Within a classroom small groups encourage more student interaction. Children should be given opportunities to choose activities and groupings in classroom programs. (Almy, Chittenden and Miller 1966)

At the concrete level learning centers, games, field trips and reading interest and appreciation activities are suggested to supplement a basic reading program. The learning centers may include assessment and progress charts, skill packages, library books and graded reading materials. Games should extend the child's high level thinking abilities. Community field trips broaden the experience patterns of a child. Interest and appreciation activities should include parent, teacher and child interaction and sharing. Listening activities and supplemental reading materials should be provided for different ability levels. Reading opportunities involving student interaction, shared reading experiences, group projects requiring reading, reading to younger learners, role playing and student written stories enhance child interest and appreciation in
reading. Teacher praise and teacher/child evaluation of the reading process will encourage a low anxiety and rewarding reading experience. (Rosenberg 1977) (Furth and Wachs 1974) (Elkind 1974)

Many of the technological materials for the concrete stage are also appropriate for the formal operational stage. Materials selected for the child's level of development will extend his high level thinking skills and, therefore, enhance his reading comprehension. (Rosenberg 1977) (Raven and Salzer 1971)
CHAPTER 6

SUMMARY

This study presents a critical analysis of the literature relating Piaget's theory of child development to the beginning reading process. The author's purpose was to gain an insight into the implications of Piagetian theory for instructional methodology, materials and technology in the beginning reading process. If reading is considered as part of the learning process, it is important for a teacher of reading to be knowledgeable about the relationship between child development and reading. An understanding of Piaget's theory of cognitive development should assist the reading teacher in selecting instructional methodology, materials and technology that are appropriate for a child's level of thinking.

In defining terms, reading is used in this study to mean the process of discovering meaning from a written passage. Instructional methodology refers to the basic theory underlying a reading program. It is the theory that determines the manner, sequence and reinforcement of skill presentation. Instructional materials are the basic materials appropriate for the chosen method and from which the reading experience evolves. Instructional technology includes all support materials and activities that enhance
the basic reading program.

This study reviews the literature on theories of cognitive development and reading instruction. Emphasis is given to the relationship between Piaget's theory of cognitive development and reading instruction. In reviewing literature that relates Piaget's theory to beginning reading instruction, implications for instructional methodology, materials and technology are stressed. This summary chapter contains findings that the author found most significant for an effective beginning reading program.

**Summary of the Findings in the Literature on Cognitive Development**

In contrast to Freud's maturationistic theory and the environmental-associationistic theory of Skinner, the cognitive development theory views growth as a result of the interaction between the child and his environment. Cognitive and affective structures change when new experiences are internalized into the existing structures.

The cognitive development theories of Bruner, Piaget, Werner, White, Chomsky and Hunt all contain the following six postulates as outlined by Kohlberg:

1. Cognition refers to adaptive actions upon objects whereby an equilibrium state is reached between the action and object.
2. Cognition proceeds through sequential stages of
structural reorganization.

3. Structural reorganization of structures results from the interaction of the organism and environment.

4. Structural organization involves a balance of discrepancy and match between behavior structures of the child and structures of his environment.

5. Inherent motives for cognitive activities are present from birth and undergo structural changes in development.

6. The cognitive and affective functions parallel in structural transformations during development.

Summary of the Findings in the Literature on the Piagetian Theory of Cognitive Development

Piaget combines the science of knowledge with the science of biology to describe development. Development occurs as the internal structures of knowledge change through experience. In a new experience a child acts upon an object. This action is internalized and related to other existing structures. Thus, the continuous formation, elaboration and organization of these structures form the basis of development.

The development from one set of structures to another occurs primarily through adaptive actions which form a state of equilibrium. When encountering a new experience an external disturbance occurs. In compensating for this
disturbance, a child adapts through assimilation where he takes the features of his environment into his existing structures and through accommodation where he modifies his existing structures to conform to the environmental properties. The processes of assimilation and accommodation bring about the state of equilibrium and a change in the psychological structures.

Stages of development

Piaget identifies sets of structures with growth stages. Each stage involves a period of formation and a period of attainment, contains an overlap in transition, is constant in a sequential order and combines previous structures in forming new structures.

The four main stages of development are as follows:

1. sensori-motor
2. pre-operational
3. concrete operational
4. formal operational

As growth occurs through these stages, a child develops the ability to use language and symbolic representation, to conserve, classify, decenter, serialize, perform class inclusion, reverse actions, reason with hypotheses and to be socially reciprocal.

Implications for Education

Piaget supports a school program that allows children to be active in developing their thought processes through
exploration, manipulation and inquiry. An active school would include time for play experiences, methods and environment suitable for the level of growth, adult constraint and peer interaction. The goal of education is to create men who are capable of doing new things.

Summary of the Findings in the Literature on Reading Instruction

While a concern for reading has existed for many years, methods of reading instruction continue to be discovered and rediscovered. Reading is responsive to the demands of the time and reading research remains incomplete. There exists the need to integrate old and new knowledge and to coordinate theories on different aspects of the reading process.

Definition. In spite of slight variations of definition, the authorities on reading agree that reading is the process whereby the reader gets meaning from written or printed material. Wardlaugh, Harris, Holmes and Carroll discuss perceptual skills as an important part of the reading process. The decoding skills are stressed in definitions by Carroll, Holmes and the Framework in Reading for California Public Schools. Strang emphasizes comprehension on three ability levels: to read the lines, to read between the lines and to read beyond the lines.

Goals of reading. The goal of reading instruction is to provide children with the ability to gain knowledge through
written material. Reading skills, interests and attitudes should be developed through instruction. Harris refers to developmental, functional and recreational reading as the three broad goals for reading programs.

Reading approaches. There are many different approaches to reading and many variations of similar approaches. The approaches vary according to techniques of instruction, types of materials used and organization of instruction. According to Chall, most reading programs include a readiness period, small group instruction, phonics and whole-word recognition instruction. They also include word repetition, integrated reading experiences and development of comprehension, interpretation, appreciation and application skills. The Framework in Reading for California Public Schools outlines the various reading approaches as follows:

1. basal approaches
2. individualized approaches
3. language experience approaches
4. linguistic approaches
5. literature approaches
6. phonics approaches
7. theme approaches.

Variations or combinations of these approaches may also be found.
Summary of the Findings in the Literature Relating Piagetian Theory to the Beginning Reading Process

In order to more fully understand the reading process, current research relates Piaget's theory of cognitive development to the different phases of the reading act. The research indicates that efficient reading with comprehension is correlated with the "concrete stage" of development.

Research indicates that the concrete levels of conservation, perceptual development, classification and reciprocity are necessary for success in English formal reading programs. Almy, Brekke, Williams, Raven and Salzer imply that the conservation abilities to reverse actions and to decenter are necessary to stabilize perceptions for reading. Research by Elkind suggests that prior to the concrete stage of development, a child is unable to perceive the independence of individual letters and of the whole word and still see their interdependence. According to Raven and Salzer, the ability to classify appears necessary for rule-learning and rule application while Gallager suggests that classification is necessary for reading comprehension. DeMao and Ellis imply that the egocentric thoughts prior to the concrete stage prevent a child from comprehending the thoughts of others. At the concrete level a child becomes socially reciprocal and is then able to read and comprehend the thoughts of others.
Methodology in the reading process. Since research suggested a relationship between reading achievement and cognitive development, the implication is made that strategies employed in a reading program should be appropriate to a child's level of development. The level of development can be identified through a cognitive assessment.

Raven and Salzer suggest that the exploration and manipulation of a large variety of materials is appropriate for the sensori-motor level. Experiences in this stage will provide the basis for development of images which will be of value later in reading comprehension.

Continued experiences in exploration and manipulation are recommended for the preoperational child who is developing language and symbolic representation. Weikart, Rogers, Adcock and McClelland suggest a program for the preoperational child that includes experience in the areas of content, representation and operation. Through these experiences a child will develop skills in classification, seriation, spatial and temporal relations, symbolic representations and language usage. Smart and Almy advise a language arts program that allows for play activities, self-expression through different media, small group interactions and child writing experiences. The Language Experience Approach to reading appears to be appropriate at this stage. Once the abstract symbols of letters and words become meaningful, Cannon and DeMao suggest an
individualized self-selected reading program. Rosenberg recommends a diagnostic-prescriptive reading program that includes learning centers, behavioral objectives and a variety of skill development activities that are appropriate for the diagnosed level of development.

A reading program oriented to Piagetian theory for the concrete level child should emphasize combinations, associations, correspondences and transformations of different sentence and word elements. Elkind, Raven and Salzer state that the visual and phonic approaches are appropriate at this level. An individualized self-selected or diagnostic-prescriptive reading program also appears appropriate.

A reading program suggested for the formal operational period should sequence materials according to logical operations in the content and the child's manner of structuring knowledge. Higher level thinking skills will enhance reading comprehension. No additional reading methods are suggested.

Materials in the reading program. Research indicates that the instructional materials provided should be appropriate for the level of development. In order to provide appropriate materials, the implication is made that an assessment is necessary to identify the level of cognitive growth. At the sensori-motor level no specific materials are suggested other than what is found in a child's
environment.

Instructional materials suggested for the preoperational child are intended to foster the development of levels of content, representation and operation. Weikart, Rogers, Adcock and McClelland recommend a variety of materials for art, play activities, large motor development and quiet activities. Smart suggests story writing materials for the child to express his thoughts in writing.

At the concrete stage, while no specific instructional reading materials are suggested, Rosenberg implies that a child's reading skills be carefully diagnosed. Since research indicates that skills developed in the majority of reading programs are appropriate at this level, the assumption is made that the basic readers, worksheets and workbooks are appropriate at this level. No specific materials are suggested for the formal operational level.

Technology in the Reading process. It is implied that the instructional support materials or activities that enhance a reading program are appropriate to a child's level of cognitive development. All materials in a child's environment are appropriate for the sensori-motor child.

Technological materials and instructional materials suggested for the preoperational child are identical. Support activities recommended for this stage are learning centers, field trips, games and different groupings of children. These activities extend and reinforce class-
room concepts, thinking skills and encourage student interaction.

At the concrete stage, support materials include progress charts, skill packages, library books and supplemental reading materials for different ability levels. Suggested activities include learning centers, games, field trips and reading interest and appreciation experiences. The materials and activities extend the child's high level thinking abilities, encourage student interaction, and make reading a rewarding experience. For the formal operational stage, no additional support materials or activities are suggested.
CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

This chapter contains conclusions and recommendations made by the author concerning the relationship of Piaget's theory of cognitive development to the beginning reading process. The conclusions are based on findings from the literature reviewed.

Conclusions related to cognitive theories:

1. Cognitive theories offer one interpretation of the growth process.

2. Cognitive development is the structural reorganization which results as the child interacts with his environment.

3. Structural reorganization occurs when a state of equilibrium is reached to balance the behavioral structures of the child and structures of the environment.


Conclusions related to Piaget's theory of cognitive development:

1. Development is the continuous formation, elabora-
tion and reorganization of the internal structures of knowledge brought about as the child interacts with his environment.

2. Assimilation and accommodation are the adaptive processes which produce the state of equilibrium as the child develops from one set of structures to another.

3. Sets of structures are identified with sequential growth stages which build on each other.

4. The four main growth stages are:
   a. sensori-motor
   b. pre-operational
   c. concrete operational
   d. formal operational

5. As growth occurs, a child develops abilities in the following areas:
   a. language and symbolic representation
   b. conservation
   c. classification
   d. decentralization
   e. seriation
   f. class inclusion
   g. reversibility
   h. reasoning with hypotheses
   i. social reciprocity

6. Educational programs fostering cognitive develop-
ment allow children to be active participants as their thought processes develop.

Conclusions related to the theory of beginning reading instruction:

1. Research on the reading process remains incomplete.
2. There is need to combine and coordinate reading theories.
3. Reading is defined as the process whereby the reader gets meaning from written or printed material.
4. Reading skills, interests and attitudes should be developed in a reading program.
5. There are many different approaches to reading varying according to techniques of instruction, selection of materials and organization of skills.

Conclusions related to Piaget's theory and beginning reading instruction:

1. Piaget's theory of cognitive development is currently related to the reading process as a contingency in providing more effective reading programs.
2. Successful reading with comprehension appears to be correlated with the attainment of concrete operational abilities in the following areas of development:
   a. conservation abilities of reversibility and
decentralization
b. perception
c. classification
d. reciprocity

3. Still unexplained is the exact relationship between different cognitive abilities and the skills of the reading process.

4. A reading program may be more effective if instructional methodology, materials and technology reflect a child's level of cognitive development.

5. To select methodologies, materials and technologies that are appropriate for a child's level of cognitive growth, levels of cognitive development need to be identified.

6. At the sensori-motor level, active exploration and manipulation of objects in a child's environment appear to foster cognitive skills which may later influence reading comprehension.

7. At the pre-operational level, a language arts program appears most effective where instructional methodology, materials and technology develop:
a. self-expression
b. small group interactions
c. continuous exploration and manipulation
d. concepts through play activities
8. A classroom program for the pre-operational child should be systematic in providing for development. It is not a "free wheeling" classroom.

9. While many materials and activities are suggested for the pre-operational classroom, there are very few models from which a teacher may select.

10. The language experience approach to reading appears appropriate for the pre-operational child in allowing him to discover meaning in letters and words as he writes his own thoughts to be read.

11. The language experience approach to reading depends on teacher direction and organization.

12. As reading skills are developed, they should be assessed in order to identify needs for further instruction and reenforcement.

13. Formal reading programs are seemingly inappropriate until a child has reached the concrete operational level. There is no consensus as to which formal approach is best for a child once he has attained concrete abilities.

14. The materials that accompany a formal reading program are assumed to be appropriate for the concrete and formal operational child.

15. Instructional technology for the concrete and formal operational child should relate reading to concept development in other areas of study.
16. Individualized or self-selective programs of reading allow children at the concrete and formal stages to develop their own interests and at their own rates.

Recommendations

As a result of making a study of the relationship of Piagetian theory to beginning reading instruction, the author proposes the following:

1. Further research on cognitive development:
   a. to substantiate the development of cognitive abilities in terms of outcome in cognitive thinking
   b. to validate the sequential development of cognitive abilities as they progress from stage to stage
   c. to develop a cognitive assessment which can be used in a classroom setting to identify a child's level of growth
   d. to establish a curriculum that fosters the development of the different cognitive abilities in sequential order.

2. A need for further research on the reading process to:
   a. validate the claims for the language experience approach to reading
   b. develop a procedure to determine when the
abstract symbols of letters and words become meaningful to a child

c. combine and coordinate the different reading approaches in terms of skills that are taught
d. develop inclusive reading assessments that identify a child's strengths and weaknesses in skill development
e. determine which instructional methodologies, materials and technologies are best for the identified strengths and weaknesses of individual children.

3. Further research is needed on the relationship of Piaget's theory of cognitive development to beginning reading instruction to explore:

a. the specific relationship between different reading skills and different cognitive abilities

b. the claims that the language experience approach to reading is appropriate for the "pre-operational" child

c. the claims that successful reading with comprehension is correlated with the "concrete" abilities

d. the development of a curriculum that coordinates the cognitive activities with the read-
ing activities in methodology, materials and technology through all stages of development.

4. In providing reading instruction, teachers should:
   a. have as a goal the production of readers who can gain knowledge from their reading experiences
   b. develop behavioral objectives for their reading programs that relate to cognitive abilities and stages
   c. select methodologies, materials and technologies that support the selected behavioral objectives
   d. continuously assess their children in cognitive and reading growth
   e. provide many opportunities for children to be active in exploration and discovery experiences, to express themselves and to interact socially
   f. be systematic in their classroom planning, organization and environment
   g. inquire into, evaluate and select materials according to cost, appropriateness to cognitive and reading objectives and effectiveness to curriculum
   h. inquire into the different approaches to reading and select the one which is best
suited to their own class and purposes.

5. Teacher-training institutions and in-service education for teachers of reading should provide more specific training in:

a. cognitive development
b. the different reading approaches
c. reading and cognitive assessments
d. the selection of methodologies, materials and technologies that are appropriate for the different stages of growth
e. the development of behavioral objectives that meet the needs of individual students and provide for a coordinated curriculum.
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