A STUDY OF THE LITERATURE DEALING WITH LANGUAGE DEVELOPMENT AND IMPLICATIONS FOR TEACHERS

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CHAPTER I
STATEMENT OF THE PROBLEM

Introduction

In the past ten years there have been many changes in the field of education. These include open area classrooms, the concept of open education, increased demands for the integration of exceptional children into regular classes, diagnostic and prescriptive programs for children identified as having learning disabilities, as well as changes in curriculum with respect to both specific content in existing subjects and the introduction of new subjects.

In order to cope with the resulting educational demands, classroom teachers at all levels have had to develop expertise in many areas which had not traditionally been required of them.

These new areas to be developed include, among others, communication skills, individualizing classroom instruction, and preparing specific objectives.

There have been many theories as to how these innovations can be implemented and how the teachers can acquire the necessary skills to cope. As well, a large variety of teaching aids and teaching techniques have been made available. It is, nonetheless, the responsibility of the individual teacher to develop the skills necessary for teaching and for coping with the related problems.

The one constant in the process of education remains the child, and what he brings with him to the learning experience. This was the central focus of this study - the child and his language.

Statement of the Problem

The purpose of this study was to determine, from a theoretical base how language is learned; and further, to determine the role of language in the teaching and learning process.

Delineation of the Problem

To understand fully all of the implications of language development for teaching and learning, it was necessary to trace the development of language study in the western hemisphere from 500 B.C. to the present with respect to:

1. theories and descriptions of language as a science;
2. theories relating language to thought;
3. research undertaken relative to the theories mentioned above.

Implications arising from the studies will be presented: (1) as they pertain in a general way to classroom teachers; and (2) as they relate to specific procedures used in teaching specific school subjects.

Delimitation of the Study

In order to permit concentration upon those aspects of language development which have inferences for educators, this study was limited to the English language as it is most commonly used and understood by the majority of people in North America. The exception to this is found in the study of grammar as carried out by the Ancient Greeks and Romans. It was further limited to verbal aspects of this language, and excluded consideration of nonverbal communication including paralanguage, proxemics, and kinesics.

Specifically excluded from this study were methodological approaches to teaching language to hearing impaired, brain-damaged, or mentally re-

tarded children. However, because of their importance to the total investigation, consideration was given to certain studies related to hearing impaired (Schmitt, 1968), mentally retarded (Newfield and Schlanger, 1968), and brain-damaged (Menyuk, 1964). References to the teaching of language to non-human beings was also excluded from this study. Although the writer accepted the importance of these studies to the field of science, including language, she found them not relevant.

Detailed consideration was given to those aspects of the history and literature which were directly related to, or which helped to clarify understanding of, contemporary theories.

The writer has based educational implications upon language theories developed in this century.

Exceptions to the Pattern of Delimitation

As the first grammatical rules and structures used in the English language were based on those used in the Latin and Greek grammar, this study included Latin and Greek language study in the historical background.

Value of the Study

A growing body of research on the role of language in conceptual thinking supports the view that language and thought must develop together if meanings are to be remembered and used in appropriate contexts, and if progressive complexity in thinking and understanding is to take place. Piaget (1938), Chomsky (1957) and Vygotsky (1962) provided the theoretical bases for research in language/cognitive development; this research holds important implications for teaching.

Veatch (1966), Britton (1970), Smith (et al, 1970) and Monroe (1971) are among a growing number of educators who have applied the research

data to education.

The statement that: ". . . subjects are languages. Biology is not plants and animals but a way of talking about them. History is not events; it is a language for describing or interpreting events" (Postman & Weingartner, 1973, p.127), would suggest that language is the key to learning. Language is used to distinguish essential features of objects, formulate aims, verbalize the necessary means of achieving stated aims, create, and sustain thinking (Robinson, 1965, p.169). Words are used to hold a concept in view; to prevent an idea from vanishing. Words permit the user to transcend the dimensions of time and space, and to communicate meaningfully with others. The elements of any learning are embodied in the uses of language stated above.

The importance of language to mental development, learning, and instruction must be understood by all teachers. The application of this knowledge to the instructional process would enhance learning.

Definition of Terms

The following terms were used. The definitions are those generally accepted.

Language. This refers to the words, to the pronunciation of words, and to methods of combining words so they may be used and understood by a considerable community to communicate ideas and feelings. In this study reference is made to the English language only.

Linguistics. This refers to the study of the analysis of language or languages.

Grammar. This is the science of the structure of a language and the rules and principles of its generally accepted use.

Speech. In this study speech is variously defined relative to its application, viz., the uttering of articulate sounds which do not include thought or meaning; or as a verbal expression of thoughts, and therefore a means of expressing language.

Concept. This is a collection of perceptual experiences or of ideas that are related by virtue of their possessing common properties. These concepts are usually represented with words.

Preparation of the Study

Data were collected to permit the description and interpretation of the development of the study of language in the western hemisphere. With respect to each scholar, the information particularly sought was that pertaining to:

a) The conditions giving rise to the awareness of need for a definition or theory of language;

b) Properties of language as described by the individual;

c) The development of the theory with special attention to

   i) significant features

   ii) factors influencing its survival or discontinuance

d) Comparison with the work of earlier and/or later theorists.

In order to be able to interpret the data in the light of present educational theory and practise, the writer reviewed current professional references related to educational theories and specific methodological techniques.

Presentation of the Study

The Body of the Study: This is presented in Chapter II to IV. Chapters II and III deal with historical aspects of language descriptions and theories relating to grammar, syntax, and mental ability. Chapter IV

presents a description of studies dealing with normal and aberrant language development.

Each chapter in this section is arranged on the following scheme:

1. An introductory section, designated an "overview". The overviews do not follow a regulated pattern, but change according to the nature of the chapters they preface.

   The overviews are intended to serve two purposes:

   (a) To provide background information relating to matters of terminology and history, and

   (b) to emphasize certain developments to be dealt with in the body of the chapter.

2. A main section. In this part of the chapter, the various theories, models and studies are investigated. Because of the number and diversity of the authors under discussion, this section is presented in an historical form, progressing from the earliest known models to the most recent views and studies. The original approach to the study of language was predicated on the scientific model, dealing with grammar and syntax. For this reason, therefore, Chapter II describes and evaluated the diverse procedures used in the systematic description of language as a science. Chapter III, which is concerned with the relationship between language and thinking, covers only the twentieth century, as there was no evidence prior to this period that a correlation existed. In Chapter IV, some of the important studies that have been published within the last twenty years based on the previously described models are investigated.

While the accounts of the various theories and investigations are discussed sequentially, they do not follow a set pattern, as

adherence to a rigid form of presentation could cause a perversion of appropriate emphasis. In the presentation of these reports, the writer attempts to stress significant points and to interpret the developments occuring.

3. A summary section. In this section, the significant achievements of the period and the characteristics indicative of probable future developments are given in outline form.

The Summation: Chapter V comprises the final section of the study. In this section, the writer endeavors:

(1) to provide an over-all summary of the theoretical developments of language and;

(2) to identify and to illustrate the possible effects these developments have on teaching strategies in general and in specific subject areas.

Some suggestions regarding areas and topics upon which further research might be undertaken, conclude the study.

CHAPTER II
HISTORICAL SURVEY
OVERVIEW

Rules of grammar and syntax laid down by the Greeks and Romans in 500 B.C. served to lay the general foundation for later more specific developments in language theories in the Western world. The account which follows will show the progression of language as a scientific study of sounds, word arrangements and rules. There are three distinct models of grammar and syntax covering the period from the eighteenth century to the present. The first part of this chapter will deal with the development of the traditional model of the eighteenth century. Included in this section will be a brief discussion of some of the fundamental ideas of the ancients as well as the medievals, upon which the traditional grammar was based. An account of some of the structural models of the late nineteenth to the early twentieth century will follow. The final section of the chapter will be devoted to the transformational model of Chomsky.

TRADITIONAL GRAMMAR

Introductory Statement

If the doctrine referred to as traditional grammar is to be viewed in proper perspective, consideration must be given to the basic terminology and fundamental ideas of language as used by the Greeks and Romans and which has been passed on through translation. The writer will attempt to follow the development of some of these fundamental ideas through the medieval period to the Modistae of the fourteenth century and finally to the prescriptive grammarians of the eighteenth century.

Reference will be made only to those who have significantly contributed to the development of language study.

Ancient Greek Descriptions

Dineen (1967, p. 400), in his historical study of language theory, states that the main purpose in studying language among the Ancient Greeks was for the development of logic. According to Dineen (1967, ch. 4), the Sophists in the fifth century B.C., in an attempt to become skilled logicians, analyzed the speeches of the masters in terms of numbers of units and arrangements of words. These served as the first linguistic models. To facilitate this analysis of speeches a technical vocabulary of rhetoric was developed. Much of this vocabulary, in translation, is still current. The Sophist Protagoras is credited with being the first to distinguish sentence types as narration, question, answer, command, report, prayer and invitation. Protagoras is also reputed to be the first to call attention to the distinctions between grammar and tense. Gorgias, a contemporary of Socrates, was one of the first to name and recommend the use of figures of speech such as "analogy", "apostrophe", "allegory", "similar endings", "repetition", "metaphor", "puns", and "rounded sentences". The Sophist Prodicus defined synonyms and his contemporary Hippius made a detailed study of sounds. These studies by Prodicus and Hippius gave rise to some fundamental questions about the acquisition of meaning in words. The philosopher Socrates, in about 400 B.C. attempted to determine the relationship between word and meaning. In so doing he classified the alphabet into vowels, consonants, and semi-vowels. As well, he defined onoma ("name" or "noun" or "subject") as the smallest part of logos ("phrase" or "clause" or "sentence"). About one hundred years later Aristotle

formulated a general theory about language, including meaning. He noted, accurately, that there were several levels on which language could be studied, such as forms and words of sentences, meaning of words in isolation and in constructions, and differences between the spoken and written styles of languages. Basic to the ancient and medieval treatment of language was Aristotle's work Categories. The ten categories can be considered as an apposition between two terms, "substance" and "accident"; that is, a substance is considered the essential nature of anything apart from its form or attributes; an accident is considered a predicable not essential to the definition of a class. The grammatical notions of noun, pronoun and subject all derived from the notion of "substance", and that of the verb, adjective, and predicate from the notion of "accident". These definitions had to do primarily with ways of describing or conceiving things. The traditional grammarians of the eighteenth century, in translating these definitions, substituted examples of substance to define "noun" instead of retaining the implicitly defined notion. Thus the traditional definition of a noun as the "name of a person, place, or thing" which persists today.

At about this same time the Greek analogists (similarity) and anomolists (irregularity) debated the issue of regularity or order in language (Falk, 1973, p. 6). The analogists stressed language as being basically systematic and regular; the anomolists emphasized the presence of irregularity, while allowing that some regularity exists. This dispute resulted in accurate cataloguing of regularities discovered in the forms of Greek language, including Greek nouns and verbs. The culmination of this controversy is to be found in the grammar of Dionysius Thrax in about 100 B.C. (Dineen, 1967, p. 95).

By the third and second century B.C. Greek scholars became interested in the literature of the past, and some scholars produced commentaries on the differences between the language of literature and the language spoken by the people. Vernacular was considered an inferior form of language. This emphasis on the older, written form of language as the more acceptable form influenced linguistic study for many centuries (Falk, 1973, p. 7).

Roman Models

In about 100 B.C. Marcus Varro, a Roman, wrote the first major work on the Latin language, which he modelled on contemporary Greek theory. By the sixth century A.D. Priscian, a Latin, offered "the most complete and authoritative description of the Latin language that has come down to us from antiquity" (Dineen, 1967, p. 114). According to Falk (1973, p. 7), this descriptive work about Latin did not describe the Latin used by contemporaries, but concentrated on the language of literature based explicitly on Greek models. This model stressed memorization of proper forms and rules for their correct combinations. All European scholars used this Latin model for approximately a thousand years (Hughes, 1962, p. 44).

Medieval Linquistic Study

During the twelfth century A.D. Latin was a living language used for international communication. Pronunciation and usage differed greatly from the classic models, but the period contributed little to the study of linguistic form (Moulton, 1969, p. 16). The Modistae, scholastic philosophers during the thirteenth and fourteenth century, sought to explain why languages consist of systems of rules and forms. The Modistae con-

cluded that: 1) Language is rule-governed because the universe, thought, and the attainment of knowledge are governed by a system of rules; and 2) Language must contain a core of linguistic universals because the universe, including man, and the ways in which man attains knowledge, are everywhere the same (Falk, 1973, p. 8). This universal theory was accepted by many scholars until the late nineteenth century.

The Eighteenth Century Prescriptive Grammar

According to Dineen (1967, p. 151), exploration and the expansion of trade had brought about an increased awareness in the great variety of languages, and tentative comparisons of English and other languages were made. The fact that languages change was accepted, but this change was generally considered a kind of corruption. By 1750 the varieties in the vocabulary and usage of English in the different parts of England became a source of confusion. Thomas Bailey in 1727 wrote a dictionary that attempted to deal with correct pronunciation by indicating the accent on words. Samuel Johnson in 1775 wrote A Dictionary of the English Language. In it he intended to give the meaning of difficult and ordinary words and to stabilize spelling. Johnson felt that pronunciation, spelling and meaning would thus be fixed, and could be taught in rote form to all students (Dineen, 1967, p. 158). These attempts were unsuccessful as they were based on the personal preferences of the author and not necessarily on common usage (Dineen, 1967, p. 403). Johnson himself, in his Preface to A Short Introduction to English Grammar; with Critical Note (1762) pointed out that "sounds are too volatile for legal restraints."

The perplexities resulting from diverse grammatical usage were deliberated by many, but only one major grammatical work was produced during this

period, the Grammar of Bishop Lowth (Dineen, 1967, p. 159). Lowth believed that English had simple rules, and that there was a universal grammar, but that it could not be taught abstractly. Students should be taught fixed rules of English grammar or native tongue, which, when thoroughly learned, would be applicable to the study of another language. Grammar, "the structure and system of language, was received as a set of fixed rules assumed to exist independently of actual linguistic behaviour. The rules were taught as prescriptive dogma in school. Language that deviated from such rules was labelled wrong " (Smith, Goodman, Meredith, 1970, p. 145). Most of these rules were based on the classical Latin models, with little regard for actual usage.

In summary, the traditional grammar was a descriptive discipline. It was primarily concerned with ways of describing or conceiving things, and not with how they actually exist. In this model, descriptive categories or words in isolation are either useful or not useful for handling a particular problem. They admitted that languages are arbitrary and conventional systems and recognized that usage alone makes a word or combination "correct". However, imposition of personal preferences, as with Johnson and Lowth, were tolerated and accepted (Dineen, 1967, p. 403). According to Chomsky:

> Several factors combined to lead to its (traditional grammar) decline. For one thing, the problems posed were beyond the scope of the techniques and understanding then available. The problem of formulating the rules, and the deeper problem of determining the general abstract characteristics of these rules, could not be studied with any precision, and discussion therefore remained at the level of hints, examples, and vaguely formulated intentions. In particular, the problem of rule-governed creativity in language simply could not be formulated with sufficient precision to permit research to proceed very far (Chomsky, 1966, p. 590).

STRUCTURAL MODELS

Introductory Statement:

Between the rationalist approach to the study of language and the modern linguistic view, intervened a period of more than one hundred and fifty years when different interests prevailed among scholars of language. Late in the eighteenth century, European students of language were exposed to another tradition of linguistic description, that of India, and to the Sanskrit language which had been spoken in India long before the time of Christ. Careful investigation of Ancient Indian descriptions of Sanskrit revealed many similarities between this language, and Greek and Latin. According to Chomsky "Structural linguistics is a direct outgrowth of the concepts that emerged in Indo-European comparative study, which was primarily concerned with language as a system of phonological units that undergo systematic modification in phonetically determined contexts" (Chomsky, 1966, p. 590).

In order to provide significant background information, the writer will recount some of the investigations into Indo-European languages during the nineteenth century with a brief summary of the influences these studies had on linguistic theory. This will be followed by a discussion of some of the principal linguists of the nineteenth and early twentieth century. These scholars will be presented in chronological order, writer by writer, and not necessarily in the order of importance.

Nineteenth Century Indo-European Studies

"To give a definite date for the beginning of the modern science of linguistics we may fix upon the year 1786. In that year, Sir William Jones....made a speech before the Asiatik Society in London that the Sanskrit language bore to both Greek and Latin 'a stronger affinity, both

in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident'" (Hughes, 1962, p. 51). According to Dineen the information derived from Jones' study of Sanskrit stimulated philologers of many different persuasions in that it appeared to support several views concerning the affinity of languages. It lent credence to the concepts that grammar was "substantially the same and accidentally different"; that language over time had been a process of progressive corruption; and that languages which are related in grammatical structure must be related genetically and not accidentally. The study of Sanskrit suggested the possibility of the discovery or at least the reconstruction, of the original oldest language from which all languages were descended. This discovery could ultimately establish the familial relationships between all Eastern and Western languages (Dineen, 1967, p. 181).

In accepting ones' studies and implications, nineteenth century scholars now undertook the task of analyzing and comparing languages. The problems which ensued from this undertaking generated intensive research which resulted in a more scientific approach to the study of language than had previously been considered possible. The fundamental assumption of linguists during this period was that languages were all derived from another original, or proto, language which no longer existed.

Christian Kraus (1753-1807), commenting on a work by an eighteenth century author, suggested that language comparison should begin by setting up a phonetic rendering of the letters, without the supposition that there is a "normal" way of pronouncing them. This should be followed by an explanation of the grammatical structures of both languages,

and on that basis a translation or semantic correspondence between the two could be established (Jesperson, 1922). What seemed lacking was some system for explaining the differences among languages in a regular way. Rasmus Rask, a Danish scholar, was one of the first to propose a system to account for the regular correspondences of differences in forms among languages. In an essay published in 1818, he suggested that students compare languages by attending to the roots of languages and the sound correspondences among the roots of the languages. This proposal was adopted by many contemporary German scholars, the most notable being Jakob Grimm (1785-1863). In 1822 Grimm published a "Grammar of the the Germanic Language". The work was intended as a comparison of the grammatical structures of the older and modern forms of Germanic languages, showing the sound correspondences among the roots. In his studies, Grimm progressed to sound changes within words as they exist among several languages, notably Greek, Latin, Sanskrit and German. He was the first to demonstrate a unity in the changes from voiced to voiceless sounds, as well as other regular correspondences. This important recognition of sound shifts in languages was referred to as Grimm's Law: "... a statement of regular patterns of behavior observed in the phonemes under study" (Hughes, 1962, p. 53). Grimm's work implies that during some period, there was a regular sound shift throughout a community of Indo-European speakers. By explaining these sound shifts, the hypothesis that Germanic and other languages could be descended from Sanskrit was reinforced.

Subsequent studies of languages, in attempting to compare and reconstruct the original language, resulted in further discoveries of phonological units which were pertinent to specific languages and

accounted for some differences in sounds. Among these were the phonology of Sanskrit and Greek which did not permit successive syllables to begin with aspirates, and a demonstration of the use of ablauts in Indo-European languages which is used for irregular verb forms in English and German. "The increasing ability of scholars to give more accurate descriptions of the elements involved in these relations (of structures in language) provided additional evidence of the systematic nature of languages, and a model for describing the systems of systems in a language" (Dineen, 1967, p. 181).

What had begun as the study of Sanskrit, resulted in the science of comparative linguistics and the beginning of a precise formulation of descriptive linguistics as a separate branch of science.

Descriptive Linguistics

Ferdnand de Saussure (1859-1917)

From the period 1820 through the 1870's, scholars progressed from the notion of sound shifts in languages to sound laws that accounted for changes. All of this was accomplished through the study of written language documents preserved from earliest times. This approach to studying language from an historical point of view was the only acceptable method among language specialists of the nineteenth century. Ferdnand de Saussure, in attempting to study language, became dissatisfied with historical analysis and attempted to make the synchronic study of language scientific. Using the model of a contemporary sociologist which defined social facts as "things" comparable to the "things" studied in the physical sciences, de Saussure was able to study language scientifically without taking the historical development into consideration. He attempted to

show that linguistic facts ("things") exist, and to establish methods for identifying and dealing with linguistic facts. De Saussure did not publish his model; a group of his students, in comparing the notes and lecture outlines of the author, assembled a text which was first published in French in 1913. This text, translated into English in 1959, synthesizes his main contributions to linguistics. These contributions include: distinctions among la langue, la parole, and le langage; the distinction between diachronic and synchronic language study; and his definition of the linguistic sign. In Baskin's translation of de Saussure, (1959), la parole refers to the individual manifestations of language, "speaking". Because it is individual and voluntary it is not a social fact. Le langage is the sum of la parole and the rules of language. Le langage is not a pure social fact, and cannot be studied scientifically. La langue is "le langage minus la parole". It is a set of "passively acquired habits we have been taught by our speech community" (Dineen, 1967, p. 197). La langue is considered the social fact being general throughout a community and exercising constraint over the individual speakers. It is not complete and perfect in any individual, and contains the negative limits on what a speaker must say if he is to speak a particular language grammatically. It is, to de Saussure, "a system of pure values that is determined by nothing except the momentary arrangement of terms."

De Saussure was the first to contradict the notion, prevalent at this time, that language could be studied scientifically only if studied from an historical diachronical approach. He argued that purely synchronic methods were the only means of accurate scientific language study, that is,

a study of language as it exists in a static unchangeable system of social facts. The comparison of two related languages using accurate synchronic descriptions of at least two comparable states would, to de Saussure, provide a complete history of language.

DeSaussure defined the linguistic sign as an "indissoluble association between an acoustic image and a concept, and the two most important characteristics of the sign are its linearity (a chain of speech) and its arbitrariness" (Dineen, 1967, p. 418). He discounted the importance of seeking a distinction among lexicon, morphology and syntax, since "la langue" is a system of pure values. He approached meaning by what it is and how it is to be described, and distinguished among signification value and content as making the most sense when meaning is considered basically referential--a naming relation.

DeSaussure's dissatisfaction with the historical orientation of previous European linguists led to a shift in the emphasis of linguistic studies. He is credited with originating a precise formulation of descriptive linguistics as a separate branch of science which permitted scholars to study the form of language rather than the history (Pei, 1965, p. 166).

Because of its attention to form or structure of language, linguistics in the early twentieth centruy became known as structural linguistics, and scholars were now able to approach languages without the advantage of knowing even the basic sound system, let alone principles of sentence formation or meaning (Falk, 1973, p. 10). Rules, meaning and syntax, once considered the most important aspects of language to be studied, were given little attention at

this time.

Edward Sapir (1884-1939)

Among the most important studies being carried out during this period were those being done with North American Indians by anthropologists. As these languages were not spoken by the students undertaking the task, the studies commenced with what was most immediately observable in each language--the sounds. One of the most influential of the anthropologists undertaking the study of American Indians was a man named Franz Boas (1858-1942). Unlike deSaussure, Boas focused on la parole: "articulate speech...communication by means of groups of sounds produced by the articulatory organs", and his method of describing American Indian languages was to use a native informant in his own cultural surroundings.

As deSaussure obtained a model for his linguistic work from a different field, sociology, similarly the anthropologist Boas exerted the greatest influence on the linguistic career of Edward Sapir. Sapir had been working in the field of classical philology when he first encountered Boas, and using the methods developed by Boas started on an analysis of Takelma, an American Indian language spoken in the Northwest. He later extended his studies to include several other languages. Sapir published articles on linguistic aspects of many languages, particularly American Indian, and in 1921 wrote a book entitled Language. In the Preface to Language Sapir notes that the book was not to be a technical introduction to the description of language, but a way of communicating some new insights into the nature of language. While Sapir mentions the possible involvement of psychological factors in using language, he nonetheless stated

that he did not intend to delve very deeply into this aspect. In discussing meaning Sapir followed the traditional referential model. According to Sapir "...ideation reigns supreme in language." He does succeed in describing the concept of meaning in a non-traditional way, noting that meaning may or may not be an actual term in relation to linguistic forms, that the form of language alone remains constant, and therefore can and should be studied for itself alone. He also believed that there were important aspects of language which are universal; in particular the science of experience, which is variously formed in the structure of the language in which is is communicated. Sapir did not develop a thorough system of grammatical description, and defined grammar as "...simply a generalized expression of the feeling that analogous concepts and relations are most conveniently symbolized in analogous forms" (1921, p. 39). He did not discuss the validity of distinguishing among lexicon, morphology and syntax, but he appeared to find such distinctions useful in his algebraic classification of morphological constructions. Spair conceived of language as a "slowly changing mechanism that signals meaning" (Dineen, 1967, p. 421). For Sapir, language defined as a morphological system does not and cannot determine culture, since this aspect is changeable and independent of concept type. Sapir conceded that any given language of a particular formal and conceptual type at a particular time and with the given content of the concepts could be considered a way to reflect on our experiences and a means to communicate our experiences.

Despite the limitations of his works, Sapir and his student, Benjamin Whorf, provided concrete evidence about the diversity which exists among human languages, and were among the first to dispute any relationship between language and race. To them, all known languages

were of great complexity; the same types of languages were to be found among different races, while many different languages can and do exist. The previously accepted notion of "primitive languages" was questioned as a result of these investigations (Falk, 1972, p. 10). In addition it was Sapir who bridged the gap between the traditional and modern questioning of how to make the study of language a science.

Leonard Bloomfield (1887-1949)

During the 1930's an empirical approach to psychology called "Behaviorism" was being developed by J. B. Watson. Watson explained his aim as a psychologist was to find out "when given a certain object or situation, what will the individual do when confronted with it; or seeing someone doing something, to be able to predict what situation is calling forth that response" (Watson and McDougall, 1929). The behaviouristic approach provided the basis for a major work in 1933 by Leonard Bloomfield, entitled Language. Bloomfield, of all the structuralists, was the most concerned with making linguistics both autonomous and scientific. Scientific during this period implied restricting evidence to empirical data. According to Dineen (1967, p. 415), "Bloomfield proposed the most complete and consistent technique for describing a grammar up to this time." For Bloomfield, grammar of a language "...includes a very complex set of habits (taxemes of selection) by which every form is assigned to a certain form class and is used only in certain conventional functions" (1933). Bloomfield provided norms by which lexicon and grammar, as he used the terms, could be distinguished; and provided an explanation as to how morphology and syntax could be sub-distinguished within grammar. Sentences, in Language, were classified into major and minor types on the basis of

frequency, and an order of grammatical description was suggested: phonetic, phonemic, morphological, syntactic, and semantic.

As seen by Bloomfield, language is a set of conditioned human responses to physical or chemical stimuli. These responses are neither instinctive nor inherited, and they are substitutes for other forms of bodily behavior. These responses link otherwise separated nervous systems and facilitate social co-operation. The study of meaning is the study of the connection among the physico-chemical stimuli, the conditioned linguistic activity, and the effect the connection has on the environment. The linguist in this theory views language as a set of signals of three principal types: phonemes, morphemes, and grammatical forms.

Bloomfield introduced a precise and restricted technical vocabulary for linguistic description and an ideal of empirical description on a mechanical basis; he provided techniques for the survey of a wide variety of linguistic problems, both synchronic and diachronic. Dineen states "It would be fairer to say that his (Bloomfield) most characteristic accomplishment was his effort to make linguistics an autonomous and scientific discipline" (Dineen, 1967, p. 424).

B. F. Skinner (1904 -)

American scholars continued to follow the behavioristic doctrines of Watson beyond the classic work of Bloomfield. B. F. Skinner expanded on the behaviouristic principles and developed a theory of operant conditioning, which he extended to the study of language in his major work Verbal Behaviour (1957). In it he states:

> A child acquires verbal behavior when relatively unpatterned vocalizations, selectively reinforced, gradually assume forms which produce appropriate consequences in a given verbal community. In formulating this process

> we do not need to mention stimuli occurring prior to the behavior to be reinforced. It is difficult, if not impossible, to discover stimuli which evoke specific vocal responses in the young child. There is no stimulus which makes the child say b or a or e, as one may make him salivate by placing a lemon-drop in his mouth or make his pupils contract by shining a light in his eyes. The raw responses from which verbal behavior is constructed are not "elicited". In order to reinforce a given response we simply wait until it occurs (Skinner, 1957, p. 31).

Skinner defines several ways in which speech may arise, as in imitation (echoic response), command (mand), or a response in contact with a given stimulus (tact). Meanings, for Skinner, could be accounted for by stating the contingencies under which verbal responses occur.

Skinner's work on language was given minor attention in the linguistic field despite its complete approach to language learning. This was due in part to the growing opposition to the "Bloomfieldian" or behaviouristic approach.

J. R. Firth (1890 -)

One of the leading opponents of behaviourism was J. R. Firth, one of a group of linguists referred to as the London School. Firth, in his publication "Synopsis of Linguistic Theory, 1930-1955", indicated that he did not think the phonemic approach to be either the sole approach or the best way to reveal the phonological structure of a language. He felt its usefulness could best be demonstrated in devising a writing system for language. In addition, Firth determined that the same techniques used to isolate the phonemes of a language would have to undergo significant adaption to be employed in a description of a grammar.

Unlike the behaviourists and descriptive/structural linguists, Firth began studying language in a context of situation, and this resulted in

one of his major contributions to the field of study - levels of meaning. As did Bloomfield, he accepted the level of phonetic meaning, whereby the speaker identifies himself by the sounds he makes; of phonological meaning which deals with the mode of participation in the speech situation; of lexical meaning, made up of the elements of the situation on which he acts or to which he responds, and of the grammatical meanings, which are the responses he makes according to the restrictions of the sound and grammatical systems of his language. This grammatical system can be described in terms of the items and relations involved in the immediate situation, (interior relations of the context of situation), and can also be related to a larger cultural setting of the speech activity (exterior relations of the context of the situation). In this latter social level of context extending beyond the individual level of context, Firth's analysis is distinguished from any of the behaviourists.

Firth also made explicit a useful distinction not always observed by other structuralists, namely, the distinction between structure and system. Structure, to Firth, was a syntagmatic or horizontal ordering of elements. An example of such a structure in phonology would be IC(initial consonant), V (vowel), FC (final consonant), exemplified by the word b i g. Systems, to Firth, were paradigmatic or vertical sets of terms or units which can occur at any given place in structure, as a system of initial consonants and a system of vowels. He could thus demonstrate that elements of structure, especially in relations to grammar, can be placed in an order which is not merely a specific sequence in time. In this he was able to distinguish at the grammatical level between "deep structure" which he called "structure", and "surface structure", which was often simply the temporal

sequence of linguistic units (Catford, 1969, p. 262).

Firth's sociological component of language, levels of meaning, and distinction between structure and system influenced theoretical linguistics in various fields of applied linguistics such as translation theory and language teaching.

In summary, structural linguistics was primarily concerned with accurate descriptions of sound systems and principles of word formation in living spoken languages. Several language facts were determined as a result of these studies:

1. Language is a code, using significant sounds as symbols. The symbols have no meaning per se but are a means of transmitting meaning.

2. Language is systematic and orderly.

3. Language is dynamic, ever changing. (Smith, Goodman, Meredith, 1970, p. 147).

When structural linguists attempted to investigate syntax of sentence formation, which was much more complex than the study of sounds and word formations, the need for more sophisticated principles and techniques of investigation and analysis was demonstrated.

And yet, according to Chomsky, "Structural linguistics has very real accomplishments to its credit. . . . has enormously enriched the range of factual material available, and has provided entirely new standards of clarity and objectivity. Given this. . . it becomes possible to return to the problem of constructing the theory of a particular language--its grammar --and to the still more ambitious study of the general theory of language" (Chomsky, 1966, p. 591).

TRANSFORMATIONAL GENERATIVE GRAMMAR

Introductory Statements

A synthesis of the two major traditions of modern linguistic theory is attempted in the transformational model of the present. These traditions include the "universal" notion of the prescriptive grammars of the seventeenth and eighteenth century, and the structural or descriptive linguistics of the early twentieth century. At present, transformational linguistics is in a dynamic state; its theory is constantly evolving. Noam Chomsky, the leading spokesman for this school, first published a book in 1957 called Syntactic Structure, outlining the theory as it had been developed at that time. By 1965 Chomsky's book, Aspects of the Theory of Syntax, made obsolete many of the statements of the original work. For this reason, the writer shall discuss what is being attempted in a theory of transformational generative grammar and not necessarily what has been accomplished.

While many modern linguists have contributed to transformational grammar, (as Postal, 1964; Katz and Fodor, 1964, O'Donnell, Griffin and Norris, 1967), Noam Chomsky is considered to be the leading theorist in this model. For this reason, only Chomsky's theory will be presented in this section.

Noam Chomsky (1928-)

Within this theory, it is first necessary to distinguish between language and speech. Speech is a concrete, physical act; the production of specific utterances containing particular words, and expressed by means of certain sounds. Language is a mental phenomenon, a body of knowledge about sounds, meanings, and syntax which resides in the mind. The speech is merely a representation of the language; it is not the language itself (Falk, 1973, p. 12).

The distinction can be referred to as the distinction between linguistic competence and linguistic performance. Linguistic competence is the subconscious knowledge about sounds, meanings and syntax possessed by the speakers of a language. Linguistic performance is actual language behaviour; the use of language in daily life (Falk, 1973, p. 13). This distinction is essential to the study of a transformational generative grammar, which is primarily interested in the linguistic competence of a speaker, the body of knowledge that makes linguistic performance possible. Linguistic competence is an abstraction, and not directly observable. It is ". . . an idealized version of language as it exists in the minds of individuals" (Falk, 1973, p. 73).

It is difficult to isolate the abstract competence from performance, but this is attempted first by noting instances of actual language behaviour, and second, by involving the speaker-hearer of a language in making judgements about sentences. These judgements are related to ambiguities, to ungrammatical structures, and to paraphrases of two or more sentences. The use of language and the judgement of the listener reflect the kind of knowledge about language which speakers must possess in order to perform. Chomsky is interested in what the speaker knows not what the speaker thinks he knows.

Further, Chomsky assumes that unless a child already had a knowledge of language in some sense he could not have learned a particular language. As a consequence of this assumption, Chomsky sees one of the main tasks of linguistic theory to: " . . . develop an account of linguistic universals" (Chomsky, 1965, p. 28). These universals to Chomsky are formal, abstract universals concerned with types of relations in terms of which grammatical rules are formulated (as transformations), and not merely those that concern

the vocabulary required to describe a language, (as "noun" "verb").

> Real progress in linguistics consists in the discovery that certain features of given languages can be reduced to universal properties of language . . . (Chomsky, 1965, p. 35).

Basic to this model is Chomsky's statement that a grammar "is a device that generates all of the grammatical sequences of a language and none of the ungrammatical ones" (Chomsky, 1957, p. 8). Implicit in this definition is the idea that "sentences", if they are to be grammatical must be consistent with the rules and operations specified by the "device" or grammar of the language. Such a grammar should ultimately be capable of generating all the possible sentences of the language. This grammar cannot actually produce the infinite number of potential sentences inherent in a language, but attempts to make a comprehensive account of the rules, both of phrase structure and transformations, that are employed consciously or unconsciously by a speaker in producing a sentence.

This grammar, then, operates on two levels. On the primary level, a basic sentence can be generated by applying rules that combine a list of symbols in various ways. On the secondary level, another set of rules governs the arrangement and rearrangement of various elements of the basic sentence to produce a derived sentence. Chomsky refers to the basic sentence as a subset called "kernel sentences", which are simple and involve a minimum of transformational apparatus in their generation (Chomsky, 1966). Modern grammarians however, do not agree on the specific delineation of this subset of kernel sentences but do agree that from a few kernel sentences, almost all of the sentences of English can be built by means of transformations.

The term "generative" grammar is used by Chomsky and others as it was

". . . motivated in part by an interest in the problem of accounting for the ability of a speaker to produce (generate) and understand an indefinite number of new sentences." A generative grammar can be regarded as an attempt to characterize certain aspects of this ability; and a particular theory of generative grammar is a proposal concerning its general and universal features.

A theory of generative grammars can be regarded quite naturally as a proposal concerning certain fundamental and specific skills that the child brings to language learning (Chomsky, 1964, p. 175).

For Chomsky, the particular theory of generative grammar which "seemed much more promising" (Chomsky, 1964, p. 175) was the transformational theory.

Thus given a kernel sentence, we may generate a passive, negative, interrogative sentence, two interrogative sentences, and even combination of these sentences, as negative-passive, using transformation. A demonstration may be given thus:

The man has eaten the apple. (Kernel Sentence).

By inserting appropriate parts of speech (words "been" and "by", and past participle morpheme "en") we can transform this kernel sentence into a passive sentence, thereby generating a new sentence.

The apple was eaten by the man.

"Such is the nature of Chomsky's major contribution toward the simplification of grammar" (Thomas, 1964, p. 411).

Chomsky divides all grammar into three parts. The first part presents those rules which pertain to kernel sentences ("phrase structure") and in this he draws from the structuralists. The second part presents rules that generate non kernel sentences ("transformational structure"); and the third part presents the rules that are necessary to account for irregular forms such as

"buy" and "bought" (morphological structure), and in this part Chomsky draws from historical grammarians.

We cannot derive the meaning, or meanings, of a sentence from the meanings of the individual words alone. One aspect crucial to meaning in most languages is word order. The meaning of each word interacts with the structural meaning of the sentence. Structural meaning of a sentence is the syntactic form of the sentence abstracted from the particular words in that sentence. Consider:

(1) Miles Standish loved Priscilla

(2) Priscilla loved Miles Standish

The words are identical; only the sequential order is different. Yet the sequential order determines the meaning to the speaker/listener. To Chomsky this represented the concept of "deep structure." "Deep structure" is the set of concepts a speaker wishes to express. He then converts these abstract concepts into a form suitable for expression in speech. This represents the "surface structure" in which the grammatical elements are arranged in a linear order. This type of arrangement corresponds to the way we say the sentence, with one element following the other. In between the deep structure and the surface structure we can assume a set of transformational rules which convert the hierarchical order of elements in the deep structure into the linear order of elements in the surface structure and the linear order of elements in the surface structure to the hierachical order of elements in the deep structure. Thus:

(1) Miles Standish loved Priscilla.

(2) Priscilla was loved by Miles Standish.

Both sentences share the same deep structure or underlying meaning; the

surface structure, through transformation, is different.

Chomsky summarizes the conditions that a theory of languages and linguistic structure must meet to be adequate both as a description and as an explanation:

(1) It must contain a universal phonetic theory that defines the notion "possible sentence."

(2) It must contain a definition of "possible structural description."

(3) It should contain a definition of "generative grammar."

(4) It should contain a method for determining what the structural description of a sentence is, given a grammar.

(5) It should provide a way of evaluating alternative proposed grammars (Chomsky, 1965, p. 35).

Chomsky's ultimate goal is probably best described in the statement:

> At every level of abstraction, the linguist is concerned with explanation, not merely with stating facts in one form or another. He tries to construct a grammar which explains particular data on the basis of general principles that govern the language in question. He is interested in explaining these general principles themselves, by showing how they are derived from still more general and abstract postulates drawn from universal grammar. And he would ultimately have to find a way to account for universal grammar on the basis of still more general principles of human mental structure. Finally, although this goal is too remote to be seriously considered, he might envision the prospect that the kind of evidence he can provide may lead to a physiological explanation for this entire range of phenomena (Chomsky, 1966, p. 593).

SUMMARY

Western grammar was begun by the Greeks in the fifth century B.C. It was they who compiled a technical vocabulary which exists even today. Many issues such as word meanings, regularities of language, and the inferiority of vernacular were first debated by the Greeks. Greek grammar began as a philisophical inquiry into the nature of language, and became a model for grammars of Latin and many other eastern country languages. This could not be a good model for other languages, as the structure of every language is peculiar to itself. Greek grammar became even more distorted when Greek procedures, through Latin models, were applied to modern vernacular languages of Europe, centuries later.

Scholastic philosophers in the twelfth century sought explanations about language, and were the first to propose the possibility of universal features of language.

During the Middle Ages, native vernacular was not considered respectable and the educated man of this period learned the language of scholarship and literature (Latin) with the aid of formal grammar, as Latin was now, in effect, a dead language.

In the eighteenth century, varieties of vocabulary and usage of English became a source of confusion for speakers of the language. This resulted in many dictionaries and grammars being written in an attempt to stabilize spelling, meaning, and pronunciation. Strict rules of grammar, many of which were arbitrary, while others descended from Latin, were imposed on students as prescriptive dogma. Language which deviated from these rules was labelled "wrong". It was Bishop Lowth using personal

preference, who fixed the rules regarding:

(1) double negatives;

(2) the pronoun you to be followed by were not was; and

(3) The use of the pronoun I not me when following than in a comparative construction.

These rules were dogmatically taught even though they contradicated vernacular use at that time, and the rules persist even today. Discoveries about Indo-European languages, and an interest in formulating the original language, led to accurate descriptions of form and structures of language by the nineteenth century. A new vocabulary related to linguistics was developed, and language study became accepted as a science. These descriptions of sound systems and word formations failed to explain syntax, sentence formation or language learning as a whole, but offered new insights which led to a more comprehensive analysis of language. Borrowing from scholars of the previous three centuries, and elaborating on the theories and precise vocabularies which had been formulated, contemporary scholars have proposed a new model of grammar. Unlike others, this transformational generative model offers promise as a more comprehensive and penetrating, yet simple grammar. This theory has the potential for explaining the questions about grammar and language which have remained unanswered for many centuries.

CHAPTER III
LANGUAGE AND THOUGHT
OVERVIEW

The way in which language relates to thinking has long been of interest to philosophers, linguists, anthropologists. The ancient Greeks considered thought and language as distinct activities. While appearing to be inseparable, the Greeks felt that an analysis would show that thought occurs first in the mind of the thinker, who then finds a suitable form in which to express it. Socrates was introduced by Plato as an expert in "bringing thought out from the inner world of the mind into recognizable existence in man's speech." The Modistae, scholastic philosophers of the fourteenth century, attempted to form a unified theory of human knowledge, and their explanations were based on a series of assumptions about the relationship between language, thought, and the universe. The rationalist philosopher Locke believed that words were but the names of ideas independently existing in the mind.

It was not until the twentieth century when major theories of child development were introduced that any serious attempt was made to determine the role of language in cognitive development. There are at present three major theoretical positions on the relationship between languages and thought that have developed within the past fifty years. Each of these hypotheses will be reviewed in this chapter, including discussion of some of the originators and/or leading proponents of each theory. The current controversy over the relation of language and thought to social class differences will be examined as an extension of one of the above theories. Two of the social psychologists who have been most influential

on this debate will be discussed. As well, some consideration will be given to those men who advocate that language is innate, intuitive, and perhaps biological.

The final section will examine the merging of psychology and linguistics in the new science of psycholinguistics.

INNATE COGNITIVE THEORIES

Introductory Statement

To the innate cognitive theorists, mastering of non-linguistic cognitive skills affects the acquisition of language skills. Logical thinking is considered primarily non-linguistic and derives from action. Thought involves representations and operation as well as language.

The innate cognitive theorists are usually developmentalists; that is, they are chiefly concerned with the order in which various abilities develop. The principal cognitive theorist, Jean Piaget, will be discussed first in this chapter. Considerable explanation will be given to Piaget's theory, as it is regarded by many as a fundamental model for other developmental psychologists.

Jean Piaget (1896-)

Piaget and his associates have been responsible for an intense and protracted program of research on the development of thought in the child. "Their (Piaget et al) interest in the language development of the child has actually been secondary" (Carroll, 1964, p. 78). Piaget's main concern has been to discover the operational systems by which thought is organized; and language, to Piaget, is a factor which contributes to the formation of these operational systems.

Piaget distinguishes four main periods in the childs mental development:

1. Sensori-Motor Period-(acquisition of perceptual invariants): Birth to Two Years
2. PreConceptual Period-(Preoperational intuitive thinking): Two to Seven Years
3. Concrete Operational Period: Seven to Eleven Years
4. Formal Operational Period (propositional thinking): Eleven Years to Adulthood

The ages given may be thought of as mental ages. The stages are cumulative; even in the stage of formal propositional thinking one is still acquiring perceptual invariants.

Stage I - Sensori-Motor:

This stage lays the foundation for thought development. The child begins life as a totally egocentric being, whereby no distinction is made between himself and what is outside him. Gradually he builds up a view of the world as a collection of objects continuing to exist even when they are out of his sight. He learns to perceive certain aspects of his environment as invariant despite the various forms in which they may appear. These perceptual invariants may be thought of as the basis of thought and language, but can only occur through a child's interaction with his environment; that is, through experience. The child thus contructs reality.

> None of these categories is given at the outset, and the child's initial universe is entirely centered in his own body and action in an egocentrism as total as it is unconscious (for lack of consciousness of the self). In the course of the first eighteen months, however, there occurs a kind of Copernican revolution, or, more simply, a kind of general decentering process whereby the child eventually comes to regard himself as an object amoung others in a universe that is made up of permanent objects (that is, structured in a spatio-temporal manner) and in which there is at work a causality that is both localized in space and objectified in things (Piaget and Inhelder, 1969, p. 13).

Stage II - Pre-Conceptual

The child during this stage begins to understand elementary concepts of space, time, and causality, during which time he makes intuitive judgments about relationships. By the end of Stage I, the child can recreate internal imitations of external activities; that is, the child can produce a mental image (deferred imitation). These mental images are the symbols which permit the further development of thought. These are the beginnings of symbolic thought.

As this symbolic thought emerges, there is a dramatic increase in the child's use of language. At first "the word does little more than translate the organization of sensori-motor schemas, to which it is not indispensable" (Piaget, 1967, p. 220).

Gradually changes occur and the child begins to use verbal representation. "The word then begins to function as a sign, that is to say, it is no longer merely a part of the action, but evokes it" (Piaget, 1967, p. 222). Language is still not considered a conceptual symbol system, but words are used as the basis of a mental activity.

Stage III - Concrete Operational Period

Concepts involving complex relationships, such as that of conservation of amount, weight, volume, size, and number are acquired during this period. The child attains what Piaget calls "reversible thinking"; that is, thinking that can trace a physical operation back to its starting point and account for the transformations in its appearance. The child can classify objects into groups of different sizes on the basis of different qualities; he can arrange objects in order of magnitude with respect to a given attribute; and he can perform such operations as substitution and recognition of equivalences. But a child's thought is

still bound to actual, tangible, visible materials and he cannot imagine possible potential relations among these objects, or manipulate possible relations among absent objects.

> The operations +, -, etc., are thus coordinations among actions before they are transposed into verbal form, so that language cannot account for their formation. Language indefinitely extends the power of these operations and confers on them a mobility and a universality which they would not have otherwise, but it is by no means the source of such coordination (Piaget, 1967, p. 93).

STAGE IV - Formal Operational Period

During this stage the child starts to think in terms of purely logical propositions which can be stated and tested against facts drawn from other experiences. This is the stage at which the child begins to be able to deal effectively with formally stated syllogisms.

> At this level reasoning becomes hypothetico-deductive; it is liberated from its concrete attachments and comes to rest on the universal and abstract plane for which only verbal thought appears to furnish the necessary generative conditions (Piaget, 1967, p. 94).

A question for Piaget still remains. It is not simply whether language is a necessary condition for the formation of formal operations, but whether language is sufficient in and of itself to give rise to these operations. Piaget uses studies on adolescents (Piaget and Inhelder, 1958) to determine that language is not sufficient in and of itself. For him, the acquisition of combinatory operations (as the ability to combine three or four different colored discs according to all combinations possible) "permits the subject to complete his verbal classifications and to make these correspond to the abstract relationships inherent in propositional operations" (Piaget, 1967, p. 96).

Piaget's argument, then, is that the capacity to symbolize things to

oneself and others is what we mean by thought; and that this precedes language, language being only one means of symbolizing.

To summarize:

> In the three domains we have just covered in broad outline, we have noted that language is not enough to explain thought, because the structures that characterize thought have their roots in action and in sensorimotor mechanisms that are deeper than linguistics. It is also evident that the more the structures of thought are refined, the more language is necessary for the achievement of this elaboration. Language is thus a necessary but not a sufficient condition for the contruction of logical operations. It is necessary because within the system of symbolic expression which constitutes language the operations would remain at the stage of successive actions without ever being integrated into simultaneous systems or simultaneously encompassing a set of interdependent transformations. Without language the operations would remain personal and would consequently not be regulated by interpersonal exchange and cooperation. It is in this dual sense of symbolic condensation and social regulation that language is indispensable to the elaboration of thought. Thus language and thought are linked in a genetic circle where each necessarily leans on the other in interdependent formation and continuous reciprocal action (Piaget,1967, p. 98).

The writer referred previously to Piaget's concept of 'egocentrism.' This concept was extended into speech, and was referred to as 'egocentric speech.'

By Piaget's own definition, egocentric speech is speech in which:

> ...he does not bother to know to whom he is speaking nor whether he is being listened to. He talks either for himself or for the pleasure of associating anyone who happens to be there with the activity of the moment. This talk is egocentric, partly because the child speaks only about himself, but chiefly because he does not attempt to place himself at the point of view of his hearer. Anyone who happens to be there will serve as an audience. The child asks for no more than an apparent interest, though he has the illusion (except perhaps in pure soliloquy if even then) of being heard and understood. He feels no desire to influence his hearer nor to tell him anything; not unlike a certain type of drawing-room conversation where every one talks about himself and no one listens (Piaget, 1955, p. 32).

In Piaget's model, egocentric speech "...drops to zero on the threshold of school age, from its climax at the beginning of the child's devel-

opment. Its history is one of involution rather than evolution. It has no future" (Vygotsky, 1962, p. 133)

This definition and concept of egocentric speech was the basis of considerable controversy between Piaget and Vygotsky. This will be discussed later in the chapter.

Piaget's developmental cognitive model is highly complex, encompassing many aspects of child development. This multi-faceted approach is discussed here only as it relates to language and thought, and not as a complete description

Piaget summarizes his language/thought relationship thus:

> As language is only a particular form of the symbolic function and as the individual symbol is certainly simpler than the collective sign (i.e. language-signs about which we agree collectively), it is permissible to conclude that thought precedes language, and that language confines itself to profoundly transforming thought by helping it to attain its forms of equilibrium by means of more advanced schematization and a more mobile abstraction (Piaget, 1968, p. 92).

Verbal Thought Theory

The "verbal thought" approach to language and thinking merges the lines of prelinguistic thought and pre-intellectual speech. The key concept designates a union of thought and word. The nature of this union can be observed, according to its proponents, in the development of word meanings. The word at first plays the role of means in forming a concept and later becomes its symbol (Vygotsky, 1962). In his theory words are indispensable to the development of conceptual thinking.

Russian psychologists in the twentieth century formulated the verbal thought theory, and two of these theorists, Vygotsky and Luria, will be discussed in this section. A contemporary American, Bruner, who also is an

advocate of this theory, will be deliberated upon briefly.

L. Vygotsky (1896-1934)

As with Piaget, Vygotsky outlines several stages of intellectual development which occur in young children. These stages are not as clearly defined as Piaget's, but present language in a more utilitarian role than did Piaget. To Vygotsky: "The relation of thought to word is not a thing, but a process, a continual movement back and forth from thought to word and from word to thought" (Vygoysky, 1962, p. 120). Vygotsky distinguished initially between two planes of speech: 'inner' and 'external'. In mastering external speech a child progresses from a word, to words, sentences and series of sentences; from part to whole. In regard to 'inner speech' (meaning), the child moves from the whole to the particular; from sentence to word. This movement in reverse directions would indicate to Vygotsky that development of language and thought does not coincide and is not independent, but does operate in close union.

In later periods of development Vygotsky sees grammatical and psychological subjects as coinciding; an "inter-dependence of the semantic and grammatical aspects of language" (Vygotsky, 1962, p. 122).

By ages five to eleven, word meanings already known by the child are now used to govern the categories a child forms. Basic to Vygotsky's theory is his concept of "inner speech". To him it is "a specific formation, with its own laws and complex relations to other forms of speech activity." "Inner speech is speech for oneself;...speech turns into inward thought" (Vygotsky, 1965, p. 127). It is also in this major issue that Vygotsky disagrees with Piaget. To Vygotsky egocentric speech is a stage of development preceding inner speech. Egocentric speech dis-

appears as inner speech develops. He infers that one changes into the other. To Vygotsky, "egocentric speech has a specific function: to serve mental orientation and conscious understanding." It then becomes inner speech, and all that diminishes is vocalization, which denotes a "developing abstraction from sound, the child's new faculty to think words instead of pronouncing them" (Vygotsky, 1968, p. 130).

To Vygotsky:

> The relation between thought and word is a living process; thought is born through words. A word devoid of thought is a dead thing, and a thought unembodied in words remains a shadow. The connection between them, however, is not a preformed and constant one. It emerges in the course of development, and itself evolves...thought and language, which reflect reality in a way different from that of perception, are the key to the nature of human consciousness. Words play a central part not only in the development of thought but in the historical growth of consciousness as a whole. A word is a microcosm of human consciousness (Vygotsky, 1962, p. 153).

A Luria (1902-)

Luria views the development of speech as the critical factor in the development of higher mental functioning.

To Luria:

> ...speech is central to...the process in which functions previously shared between two persons gradually change into the complicated functional systems in the mind which forms the essence of higher mental activity (Luria, 1961, p. 18).

Using Vygotsky's model as a basis for his theory Luria extends this model to include language as the basis for a child regulating his own behavior; that is, language serves also to help a child achieve self-control. To him the child must apply the metalinguistic strategy relating grammatical structure (that is, a verbal command) to the actor, action, and

recipient of an action. When this occurs, he can respond appropriately and control his behaviors. In this he also refers to the concept of "inner speech" as developed by Vygotsky. At the earliest stages, the speaker, in giving commands, tends not to get appropriate physical or external actions in many instances. The lack of understanding of speech symbols may account for this. In the next stage, the performance of three year olds were significantly improved when they used their own speech to accompany their action. However, Luria saw this as the act of speaking and not what was spoken as having the principal effect. During the final stage, about age four, "speech for oneself", that is, egocentric speech carries the regulative function, until eventually the speech becomes inaudible; inner speech now takes over and is used to control behavior" (Luria, 1961).

Luria's model is far less complex and intricate than the others discussed here; but he rigidly adheres to the Vygotsky theory which he applies to child behavior and mental processing.

J. Bruner (1915-)

Bruner must be legitimately referred to as a cognitive developmental theorist, and as such, would be more appropriately discussed in the previous model.

However, in his concept of language and its relation to thought, he more closely resembles Vygotsky, and for that reason is presented in this section.

Bruner developed a theory of cognitive development that follows closely from the work of Piaget. He has focused on the manner in which a child represents the world, and suggests three progressive modes (stages)

of representation. The first two systems of representation, the 'enactive system' and the 'iconic system', encompass all of what Piaget referred to as the sensorimotor stage.

The enactive mode involves representation through action itself; only the interaction between child and object confers reality upon the object.

The iconic mode involves the use of images to summarize and represent action. The child begins to remember representations which in turn result in the option of alternative courses of action. "The spatial image puts a range of alternative routes at his disposal " (Britton, 1970, p. 193).

The symbolic or linguistic mode occurs at about age two. The child first uses speech to regulate, organize and extend his representations made in the enactive and iconic modes; he builds a cumulative representation of his interactions with his environment. The child then "stores" these representations to be available for future use. The most efficient means by which to store these representations is by words, which are used to set up categories of experience. At first the categories gradually expand to describe a specific and general criteria about our experiences. Whole classes of words then form a general relationship by means of which we are able to encode aspects of experience; this in turn forms syntactical relationships which are both highly complex and complicated.

Bruner suggests that man's innate ability to handle symbols enables him first to learn language and later to achieve powers of conceptualization beyond those of speech.

As Bruner puts it:

> Language comes from the same basic root out of which symbolically organized experience grows. I tend to think of symbolic activity of some basic or primitive type that finds its first and fullest expression in language, then in tool-using, and finally in the organizing of experience. It is by the interaction of language and the barely symbolically organized experience of the child of two or three that language gradually finds its way into the realm of experience (Bruner et al., 1966, p. 44).

LINGUISTIC RELATIVITY HYPOTHESIS

Introductory Statement

This view of language as it relates to the mental processes,, holds that language structures thought. The theorists supporting this view isolate lexical and syntactical aspects of language, and endeavour to demonstrate that these aspects broadly determine the patterns of thought. For thinkers of this tradition, what is determined is a general manner of thinking, including the way space and time are constructed. The foremost exponent of this approach is B. L. Whorf, an anthropologist and linguist. Carrol states that "...the linguistic relativity hypothesis has thus far received very little convincing support " (Carrol, 1964 p. 110). For this reason it will be given only brief attention in this paper, with the emphasis on Whorf. Lenneberg (1953) and Malinowski (1927) support this theory, but have made only limited contributions to its acceptance through their studies.

B. Whorf (1897-1941)

Whorf, influenced by his teacher and fellow anthropologist Sapir, became convinced that the language we use influences the way we think and act. Whorf based his theory on his observations of the effect of words on people's thinking, on his work with American Indian languages, and on

the studies of Malinowski (1927) and Lenneberg (1953) with native peoples. To him languages differ from one another in ways that are critical for conceptual development. Thus, if people speak different languages, they will think differently.

Languages can and do differ from one another in at least two ways, lexically and grammatically. One language family may have many words to represent a single concept, or a single word to represent many concepts; but these words, or lack of them, will vary from language to language. In linguistic structures, some languages have no parts of speech, nor transformations to deal with tenses or modes. Whorf concludes that the absence of particular words or of a particular grammatical form in the surface structure of a language is evidence of the absence of a corresponding concept. Whorf stated his point of view thus:

> The background linguistic system (in other words, the grammar) of each language is not merely a reproducing instrument for voicing ideas but rather is itself the shaper of ideas, the program and guide for the individual's mental activity, for his analysis of impressions, for his synthesis of his mental stock in trade. Formulation of ideas is not an independent process, strictly rational in the old sense, but is part of a particular grammar and differs, from slightly to greatly, as between different grammars. We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our mind - and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way - an agreement that holds through our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees (Whorf, 1956, p. 212).

While this theory had its roots in anthropology, it extended into the fields of social psychology and social education. The following elaboration is put forth as being relevant to this section.

Social Class - Language Theories

Specific problems had been encountered in the educational field during the 1950's. Educators were seeking the best ways to teach children from low income families frequently referred to as 'culturally deprived'. Sociologists and psychologists aligned with educators in an attempt to determine the problems involved, as well as to seek solutions.

An interest emerged in the language of lower-income families, and many studies were done related to this aspect. (These will be discussed in more detail in a later chapter of this paper.) As a result of these studies, some theories developed relating the social class language differences to inferior cognitive development. Two theorists will be discussed in this section: B. Bernstein and A. Jensen. Their models bear considerable resemblance to the linguistic-relativity theory, as it relates to cultural-dialect differences within the English language.

B. Bernstein ( )

For Bernstein: "There is little doubt that the social form of a relationship acts selectively on the mode and content of the communication" (Bernstein 1961, p. 164). Bernstein suggests that children of a lower working-class group are "...limited to a form of spoken language in which complex verbal procedures are made irrelevant by the system of non-verbal identifications" (Bernstein 1961, p. 165). Further, Bernstein suggests that this limited form of language effects verbal/conceptual growth.

In middle-class settings, verbal signals begin early and the pattern is more elaborate. For the middle-class child there is a progressive development toward verbalizing, through which the child learns to internal-

ize his social structure. The child adapts to a pattern of stimuli through speech, and thus reinforces, organizes and structures his perceptions.

The language of the lower working-class child is used to mark out only what is relevant; and what is made relevant by their speech is markedly different from that form which is made relevant by the form of middle-class speech. "They have learned two different forms of spoken language; the only thing they have in common is that the words are English" (Bernstein 1961, p. 168). Bernstein refers to these two forms of language as elaborated (middle-class) and restricted (lower-class). This restricted code has four aspects, as outlined by Bernstein.

1. The sequences will tend to be dislocated, disjunctive, relatively poor in syntactic control, stress active voice, and point to the concrete, the descriptive and the narrative.
2. Verbal planning will be limited.
3. Problem solving will be related to the concrete and descriptive.
4. Toleration of tension and reduction of tension will not be facilitated. (Bernstein, 1961)

Probably no ideas have had a greater influence in affecting teachers' attitudes than Bernstein's theory of "restricted" and "elaborated" codes (Rosen, 1973, p. 246). These ideas were interpreted to mean that restricted languages were essentially inferior, thus the speakers of a restricted code were intellectually inferior, and these children would therefore do less well in school. It is important to quote Bernstein's more recent statements in this issue:

> Now because the sub-culture through its forms of social integration generates a restricted code, it does not mean that

> the resultant speech and meaning system is linguistically or culturally deprived, that the children have nothing to offer school, that their language is not significant. Nor does it mean that we have to teach children formal grammar. Nor does it mean that we have to interfere with their dialect. There is nothing, but nothing, in the dialect as such, which prevents a child from learning universalistic meanings (Bernstein, 1971, p. 199).

A. Jensen ( )

Jensen takes a more behavioristic view of language learning, referring to it as "verbal behavior," and outlines the development of this verbal behavior in relation to S-R models (Jensen, 1964). In the first stages S-R connections (recognition of names) begin to take place: in the next stage, S-R, the child responds verbally. By the third stage, V-R or connection of verbal responses, the child controls his overt behavior through his verbal behavior followed by S-V-R-V_c the V_c representing confirming response or "feedback". To Jensen, much of what we think of as intelligence can be thought of in terms of the extensiveness and complexity of this verbal network and of the strength of the interconnections between its elements.

Relating this theory to social class, Jensen (1964) uses the imitation/modelling concept as his base; that is, "the most important external factor affecting the rate of verbal development is the quality of a child's early linguistic environment" (Jensen, 1964, p. 2).

Using studies relating fewer number of persons as models and reinforcers to better vocalizations at early ages, Jensen states that most lower-class children are cared for by a large number of different people. From this he infers their earliest language model and reinforcement is lacking, and beginning speech is more apt to be delayed. This speech "shaping" to Jensen, also constitutes training in auditory discrimination, which in turn facilitates further language acquisition. Jensen deduces

that the delay in "shaping" is compounded by deficiencies in discrimination, which culminate in additional language inadequacies.

Congested living conditions in lower-class homes result in high noise background. This, to Jensen, further inhibits speech as it diminishes vocal interaction and perception of vocal models.

Lower-class language is considered by Jensen to be less flexible and less abstract; these differences are considered important because of the interdependent relationship between language and thought. To him, the "concreteness" of the language is indicative of concrete thinking, and limited intellectual growth.

Finally, Jensen corresponds the syntactical structure of verbal behavior to learning and intellectual ability, citing the following studies as evidence:

1. In studies done in 1963 (Jensen and Rohwer), he concludes that syntactical mediation is one of the most powerful of all variables affecting the speed of paired-associate learning.

2. In a study by Rohwer in 1964, he concluded that different syntactical structures representing different parts of speech and different degrees of complexity have different degrees of power in facilitating learning. The largest difference in "connective power" is that between conjunctions and prepositions.

For Jensen ". . . somewhat different syntactical structures are incorporated by individuals according to their social class background..The key question, however is whether the tendency for syntactical verbal behavior is of any psychological importance to learning and intellectual ability. We now have considerable evidence that it is of great importance. . . (Jensen, 1964, p. 9).

To summarize Jensen's thinking:

> . . . verbal behavior-not just the capacity for verbal behavior, but verbal behavior itself- is what most distinguishes the human being from the rest of the animal world.
>
> The psychological consequences of verbal behavior are ex-

> tremely profound in ways and degrees scarcely appreciated by those who are unfamiliar with the recent research. To the extent that a person is prevented by whatever reason, from falling heir to these consequences of his human potential for verbal learning, he will fall short of his potential as a human being. If some of the limiting influences on verbal development are intimately related to certain aspects of a lower-class style of life, certainly no other aspects of lower-class status can be viewed as sufficiently advantageous to offset the waste of human potential that results from these adverse influences on verbal development (Jensen, 1964, p. 1).

RATIONALIST THEORIES OF LANGUAGE LEARNING

Introductory Statement

Certain linguists and psychologists, in an attempt to explain how children acquire language, hypothesize that children have an innate capacity to acquire language; that they are in a sense "programmed" to learn the specific type of communication system that constitutes human language. This theory is based on certain aspects of language learning:

1) It is species-specific; that is, only human beings learn languages.

2) It is species-uniform; that is, all human beings learn language.

3) Children do not have to be taught their native language (as in formal language lessons).

4) Children learn language at their own pace, as they do in learning motor skills.

While this theory dates back to the time of Plato and Aristotle, Chomsky's Generative-Transformational Model, discussed in an earlier chapter, contains this aspect as an integral part of the theory. Lenneberg's (1967) hypothesis of a biological basis of human language contributes to such a theory; and McNeil (1968) in an attempt to explain language acquisition, offers support for such a theory.

These three linguists,(Chomsky, Lenneberg and McNeil) will be discussed in this section as being the foremost advocates of this view of

language acquisition.

N. Chomsky (1928-)

In the traditional view of language, previously discussed, language is a systematic relation between sound and meaning. With the theory of transformational generative grammar put forth by Chomsky, the traditional view is embodied in the distinction between underlying and surface structure.

According to Chomsky:

> the rules that determine the form of sentences and their interpretations are not only intricate but quite abstract, in the sense that the structures they manipulate are related to physical fact only in a remote way, by a long chain of interpretive rules (Chomsky, 1966, p. 49).

Chomsky refutes empirical psychologists view that this rule learning can in any way be related to given sensory phenomena. For him, rule learning must be part of the intellectual organization which is a prerequisite for language acquisition; rules must be universal properties of any generative grammar, and must be considered as intrinsic to human beings.

To develop the connection between his theory of grammar and the fact that abstract parts of language first appear in early language development, Chomsky poses for consideration what he calls the "Language Acquisition Device" (Chomsky 1957, 1965) which is abbreviated to the term LAD. LAD receives a certain corpus of utterances many of which are grammatical sentences in the language to which LAD is exposed. Given such a corpus, LAD is so constructed that it can develop a theory of regularities that underly the speech to which it has been exposed. This theory is LAD's grammatical competence, its knowledge of the language, which enables it to go far beyond the corpus with which it began.

It can distinguish the infinitely many grammatical sentences in its

language from the infinitely many nongrammatical alternatives.

Whatever the specific components of LAD may be (as yet undetermined) it must be universally acceptable; it must be able to acquire any language. LAD, to Chomsky, contains universal linguistic information.

While LAD is hypothetical, it does relate to the way in which children are assumed to acquire language. Chomsky's ". . .theory about LAD is ipso facto a theory about children" (McNeill, 1970 p. 71).

Chomsky summarizes his view of language acquisition thus:

> . . .research will show that certain highly abstract structures and highly specific principles of organization are characteristics of all human languages, are intrinsic rather than acquired, play a central role in perception as well as in production of sentences, and provide the basis for the creative aspect of language use (Chomsky, 1966, p. 51).

D. McNeill ( )

McNeill will be discussed only briefly in this section as he did not offer a new theory of language acquisition but carefully analyzed and supported Chomsky's LAD model. McNeill's contribution to the theory was to distinguish between two different kinds of universals: weak and strong.

A weak linguistic universal is the reflection in language of a universal cognitive ability. The cognitive universal is a necessary and sufficient cause of the weak linguistic universal.

A strong linguistic universal is a reflection of a specific linguistic ability and may not be a reflection of a cognitive ability at all. The cognitive universal, if it has anything to do with the linguistic one, is a necessary but not a sufficient cause of the strong linguistic universal. It is not sufficient because a linguistic ability is necessary as well.

As an example of a weak linguistic universal, McNeill gives the verb category which indicates action. McNeill then cites certain types of nouns as being strong linguistic universals; such a noun would be "playing." Presumably, association with an action is a necessary and sufficient property for this word to be a verb: but in the utterance "Playing is fun," some additional linguistic property is needed to make the word into a noun.

McNeill points out the possibility of determining which structures in the grammar of languages are so-called weak or strong universals by determining those structures which are direct reflections of cognitive categorizations and those which are not (McNeill, 1970 p. 71).

McNeill takes into account the fact that the structure of language is not evident in the acoustic signal heard. Nevertheless it is a fact that children acquire this abstract structure. McNeill suggests therefore, that children have various kinds of preliminary linguistic information (McNeill, 1968).

However, McNeill also supports in part the theory that imitation and reinforcement account for language acquisition. For McNeill, as others, this cannot explain how young children create sentences and phrases, but he does feel imitation and reinforcement have a key role in initial language learning. For McNeill, both positions (imitation and intrinsic abilities) are supportable in part, and that together they account for language acquisition.

> Because the abstract structure of sentences is not arbitrary, children can both produce and comprehend speech in terms of grammatical relations; these relations are innate but must be connected to the surface structure of sentences via associations that are arbitrarily established in each language. The direction of language acquisition therefore is toward a set of unique transformational rules (McNeill, 1970, p.79).

E. Lenneberg ( )

Lenneberg contributed to the theory of innate language capacity by offering a hypothesis that

> . . . man may be equipped with highly specialized, biological propensities that favor and, indeed, shape the development of speech in the child and that roots of language may be as deeply grounded in our natural constitution as, for instance, our predisposition to use our hands" (Lenneberg, 1964, p. 579).

Lenneberg examines language and decides in which of its aspects it is assumed to be a genetically determined trait. Lenneberg proposes four criteria which distinguish biologically determined activity from culturally determined.

1. Variation within species. In some respects all languages are alike, and this similarity is by no means a logical necessity. Some of these similarities are:
   a) phonology: speech is always a vocal affair, and the vocalizations heard in the languages of the world are always within fairly narrow limits of the total range of sounds that man can produce.
   b) concatenation: the phenomenon of stringing up morphemes or words into a complex sequence called phrases, sentences, or discourse. No speech community has communication restricted to single-word discourse.
   c) syntactic structure: no languages are known where words are strung together randomly. There are assumed to be rules that define all grammatical operations for any given language.
2. History within species. Man cannot trace spoken language back to its beginnings. But within the last 5000 years, there is

evidence that concatenation must have existed in its present complex and universal form; that there was order in the concatenation (syntax), and universality of phonemes.

3. Evidence for inherited predisposition. This aspect is based on the observation that language or language-like behavior develops even under the most unfavorable conditions of peripheral and even central nervous system impairment.

4. Presumption of specific organic correlates.

   a) Onset and fixed development of speech in children begins at a predictable age and seems to follow a specific maturational pattern.

   b) Dependence upon environment. Speech "training" cannot account for the original linguistic forms that children create.

Lenneberg (1964) offers the above as evidence of the possibility of a biological matrix for the development of speech and language, but indicates they do not prove that language is an inherited phenomenon. Further support for a biological basis came from the neurosurgeon, Dr. Wilder Penfield. Penfield and his colleagues did some interesting studies on the human brain relating to memory and speech. From the evidence there appears to be some localization of the higher functions, that is, there are definite areas of the brain associated with the production and perception of language symbols and they are almost always in the dominant one of two hemispheres. In most respects the hemispheres are duplicates, but not for speech (Penfield & Roberts, 1959). This would seem to support a biological basis for language.

The reflections of Brown and Bellugi, in a statement referring to the acquisition of syntax in children seems to best summarize the issue.

> The very intricate simultaneous differentiation and integration. . .is more reminiscent of all the biological development of an embryo than it is of the acquisition of a conditional reflex (Brown & Bellugi, 1964, p. 151).

PSYCHOLINGUISTICS

Introductory Statement:

Linguists, as noted previously, have not been the only scholars to be concerned with the study of language. In many other fields such as education, philosophy, psychology and anthropology, an understanding of language is highly important; and these disciplines share many common interests in language study. For this reason, a new interdisciplinary study evolved in the 1960's called psycholinguistics. While the name implies a merging of psychology and linguistics, it also draws from philosophy, education, and anthropology. The result is a total and comprehensive approach to language learning.

As this paper has dealt with the evolution of language studies over the centuries, a melding of many disciplines has been evidenced. Psycholinguistics must be considered here as the culmination of all the historical and descriptive models of grammar, in combination with language-thought theories that have been presented up to this point.

No attempt will be made to outline a complete psycholinguistic theory in this section; but the writer will endeavor to outline all the aspects of a psycholinguistic model, as well as some of the problems inherent in any attempts to work out a complete theory.

Definition and History of Psycholinguistics

Psycholinguistics can be defined simply as the study of language production and comprehension. It concerns itself with the relation between

messages and the characteristics of the persons who select and interpret them.

The terms encoding and decoding have been used by psycholinguists in reference to language production and comprehension and these terms are now associated with this new science.

Among psychologists, it was principally the behaviorists who insisted on a more scientific approach to language. These behaviourists determined to replace subjective studies with studies of observable data; that is, studies of only the tangible, physical manifestation of a thing. This resulted in a confusion between thought and speech, and language became merely "verbal behavior."

Anthropologists with an interest and background in linguistics were among those who were sensitive to the social and psychological processes that play an integral part in language learning. Some anthropologists used the behaviouristic techniques to describe language, which resulted in descriptions of hitherto unknown languages, such as American Indian. But some anthropologists proceeded further to study the cultural and social settings of the natives adding a new dimension to the topic.

Educators who were becoming more skillful in methods of teaching, and more knowledgeable of child development, looked to aspects of language that could establish a relationship between language and mental processes. Many of the questions posed by this group, as well as observations made by them of children in learning situations, served to broaden the scope and purpose of linguistic study.

Some psychologists by the late 1950's began to appreciate the complexities of language, and the prospect of reducing it to the laws of behaviour so carefully observed and studied in lower animals became in-

creasingly remote. "Verbal behavior" became unacceptable in its definition as a response to a stimuli; and while "thinking" could not be observed and studied as a concrete, physical element, it could not be ignored as an important facet in the linguistic process.

Of all of the modern concerns regarding language, only those of the linguist deal directly and immediately with language itself. Other scholars are interested in the relationship between language and other aspects of man or the world. But before such scholars could develop adequate theories and explanations of language in relation to other factors, it was necessary that they understand the nature of language. Linguistics provides this understanding and thus serves as a basic source of information for the development of theories, explanations, and methods in many other fields of inquiry.

Psycholinguistics adds the dimension of the speaker and listener, which must include the intellectual process and the social and cultural setting.

As Miller states:

> By working together they managed to call attention to an important field of scientific research and to integrate it, or at least to acquaint its various parts with one another under this new rubric (psycholinguistics) (Miller, 1964, p. 29.).

Description of Psycholinguistics

Any study of psycholinguistics must begin with a study of linguistics. According to Hamp, the basic assumption of linguistics is that language as a set of signs or as a code can be described quite apart from meaning, or what the signs or codes refer to in the objective, personal or social world (Hamp, 1951).

All languages are composed of speech sounds, syllables, morphemes,

and sentences.

There are several operations involved in producing speech. These include:

1. The phonological operation that transforms the messages into speech sounds produced by the articulatory system.
2. The semantic operation which selects the words (groups of sounds) according to intended meanings.
3. The syntactic operation which selects the appropriate sentence structures (groups of words) as well as function words (but, and, or, as).

According to Glucksburg & Danks, these three operations are logically sufficient to produce speech, and as such can be studied in isolation by linguists (Glucksberg & Danks, 1975, p. 2).

1. Phonological operation

The linguist usually begins with the study of vocal sounds as the primary material of which a language code is made. These vocal sounds are the phonetic features, and their systematic analysis and description constitute the phonetics of the language. All "syllables" and other sequences of talk consist of phonetic features; that is, of audible modifications of the breath stream that can be analyzed and described in terms of the muscular movements used to produce them. All sequences of vocal sounds are phonetic.

> Phonetics, therefore, is a set of techniques by which to identify and describe, in absolute terms, all the differences of sound features that occur in any language (Fries, 1963, p. 147).

Phonetics can deal with the sound features of a single language or of all languages at the same time. This systematic phonetic description of sounds covers only part of the knowledge native speakers have regarding the sound system of their language; it deals only with the most concrete, directly observable aspect of language - sounds.

These sounds of language are then organized into a system, and the study of this system is known as phonemics.

> Phonemics is a set of techniques by which to determine for a particular language which phonetic features form bundles of functioning contrasts to identify the word patterns of that language (Fries, 1963, p. 147).

Phonemics can deal with only one language at a time.

Structural linguists, by means of phonemic analysis, have explored the sound-system of a language as it is consciously or subconsciously meaningful to the speakers. A new set of terms and symbols have resulted from this analysis. These resulted in part because of the formation of new categories and development of new techniques; and in part because the familiar terms, having been previously associated with one set of concepts, might block understanding if used in a new reference. As these terms are numerous, highly technical, and of questionable value to this paper, the writer will attempt to identify and define only those considered as basic to linguistic theory. Glucksberg & Danks definitions have been used.

Phoneme- the smallest unit in a language that makes a meaningful difference to people who speak that language. Any given phoneme consists of a set of phones that are treated as identical. For example, the English phoneme /K/ is a category of sounds that includes, among others, the two phones /K/ and /q/.

Phone: The simple individual sounds of a language.

Allophone: The set of phones categorized as a single phoneme are called allophones of that phoneme. The phones /K/ and /q/ are two allophones of the English phoneme /K/.

Formative: (Morpheme) The smallest meaningful unit in a language; all

words are composed of at least one formative. (This is actually the beginning of the semantic component of language.)

Free Formative: Need not be combined with other formatives, they can occur alone as black, blue.

Bound Formative: Cannot occur alone but must be combined with other formatives in order to form a word. The plural ending -s is a bound morpheme or formative.

Allomorph: One of two or more forms of the same morpheme, as the plural ending of boys, cats, and boxes. These are all members of a set of sounds that signal plurality when attached to nouns.

Morphophonemic: Pertaining to the alterations of phonemes with a given morpheme, as the /f/ and /v/ in wolf and wolves.

Grapheme: A graphic symbol used in a writing system, as the alphabet letters in English. (Glucksberg & Danks, 1975)

To the structural linguist, the term given to the study of all aspects of the sounds and sound system of a language is phonology. This includes both phonetics and phonemics.

2. Semantic operation

The semantic component of a grammar consists of a dictionary or lexicon, and projective rules. All languages have bundles of contrasts of sounds that function in separating or marking out or identifying formatives or morphemes, which have been defined as the smallest meaningful unit. A word is defined as any linguistic unit that is capable of occurring as a minumum free form, although there is no definition of word that is acceptable to all linguists (Falk, 1973, p. 25). Free formatives, in the study of semantics, are referred to as roots while attached bound formatives are referred to as affixes. Some affixes occur before the root,

while others occur after it.

Inflectional affixes (as the plural ending -s) do not change the part of the speech of the root to which they are attached.

Derivational affixes (suffix -ly) often do produce a change in the part of speech (for example the adjective quick, becomes an adverb when -ly is affixed).

In English, derivational affixes occur next to the root or another derivational affix; inflectional affixes occur at the very end of a word.

The linguists use of these terms is necessary for a complete, clear and explicit description of word formation in human languages (Falk, 1973, p. 28).

The semantic component of grammar also includes the correct sequence of sounds. Thus the formative boy has meaning in English, while the sound sequence brt does not.

Syntactical Operation: This operation is used to select the appropriate grouping of words to formulate a meaningful unit. This has been referred to previously as the surface structure of a language or sentence construction. Building on the previous phonological and semantic rules and definitions, the linguist can study placement of these into a grammatical unit. From these he can study and define word-classes, or "parts of speech," and further determine that only three classes- nouns, verbs, and pronouns - can take inflectional suffixes. From this and other rules, the linguist can formulate phrases, constructions, (as subject/verb or verb/object) and finally arrangements into sentences. As stated earlier these three components of grammar can be defined and studied as units in linguistics which are sufficient to produce speech. Study of language systems in the abstract is the science of linguistics. As a scientific theory, it is no

longer considered a sufficient explnation as to how people successfully communicate; that is, it does not answer the questions related to how speech is used and understood in the context of everyday correspondence:

> . . .a description of a language system states, in effect, what a person must have learned in order to use that language either as a speaker or as a hearer. Since language systems turn out to be remarkably rich and complicated, it follows that a speaker of a language has learned something that is remarkably rich and complicated (Carroll, 1969, p. 162).

Psycholinguists are at present studying language development as a comprehensive analysis of linguistic and psychological processes. The following overview of a psycholinguistic model can, at present, only describe what must be involved in speech operations in order for communication to take place. It cannot account for the "how" as no complete theory has yet been established or accepted. The psycholinguist must formulate a reasonable hypothesis about what is not observable. Glucksberg & Danks suggest that the three sets of operations involved in speaking/listening comprehension as follows:

1. Phonological operations: When someone is speaking, what is spoken and heard by the listener are separate words and phrases even though the actual sound arrives at the ears in a continuous stream. The phonological processing system, at the very least, operates on the incoming sounds and segments the speech appropriately. In listening to an unknown language, what is heard is a continuous stream of sounds not separate words or phrases.
2. Semantic operations: This set of operations is used to interpret words as they are heard or used. It must be closely allied to syntactic operations in many instances for correct meaning. In the phrase.....the ball was .....the and was can be interpreted immediately; ball cannot be assigned

a specific meaning until its semantic and syntactic components are known, as in:

(1) The ball was red.

(2) The ball was a tremendous success.

In addition the semantic operation is used to determine such differences of meaning as occur with the addition of the plural suffix -s, or the derivational affix -y, which gives adverbial qualities to an adjective.

While linguistics can be used to identify and describe the phonetic and phonemic components of these words, it cannot be used to determine how these components have meaning for the speaker/listener.

3. Syntactic operations: This operation, in combination with semantic processes, is used to provide meanings of sentences as uttered by the speaker or heard by the listener. It is used as well to sort out ambiguities which may occur in the speaking/listening process by assigning syntactic properties to the words and phrases heard. Consider the sentence:

Taunting policemen can be dangerous.

The word taunt retains its core meaning, regardless of interpretation. The determination must be made as to whether the subject is "taunting" or "policemen" in order for the deep structure to be interpreted correctly. While the science of linguistics can be employed to label the elements of the sentence, it does not offer an explanation as to how a correct interpretation is made.

The syntactic operation must also be used to establish correct placement of words within a phrase or sentence to provide meaning. For every known language, word order is rule-governed and not arbitrary. One of the major problems facing psycholinguists is how children learn "rules" of syntax to create new sentences which are understood by the listener.

The three operations involved in grammar have been described in relation to the psychological process necessary for each.

These must necessarily include environmental, cultural and social factors for a complete study of meaning and interpretation. The psycholinguistic models of Chomsky (1965) offers at present the most comprehensive and widely accepted theory, but many questions remain unanswered.

Brown summarizes the problems psycholinguists encounter in trying to determine how language is learned by stating:

> Fewer than one hundred sounds which are individually meaningless are compounded, not in all possible ways, to produce some hundreds of thousands of meaningful morphemes . . .(for example, words). . . which have meanings that are arbitrarily assigned, and these morphemes are combined by rule to yield an infinite set of sentences, having meanings that can be derived. All of the systems of communication called . . . (human). . . languages have these design features. (Brown, 1965, p. 248).

SUMMARY

The relationship between language and thought has long been a subject for consideration by various disciplines. This has resulted in three major theories of language-thought development.

In one model, language did not serve as an explanatory principle. Thought was seen to be derived from the child's actions. These actions prefigure the skills which are utilized later in language learning. Language in this model plays a supportive rather than a determining role in thinking.

Another view of language-thought relation holds that the rules of language are part of the conceptual equipment that the learner brings to the language-learning task. Linguistic rules are considered innate by some proponents of this theory.

In the third view of language/thought relationship, language was considered the essential instrument determining the content and perhaps the structure of thought.

The application of this latter model to social class differences, and the merging of the sciences of psychology and linguistics to answer questions pertaining to thinking in language learning were discussed as extensions of the above hypotheses.

While the fundamental questions relating to language and cognition remain unanswered to date, it is nonetheless generally assumed that a relationship does exist and can be established.

CHAPTER IV
REVIEW OF LITERATURE

Introductory Statement

Research studies have been executed to examine many features of children's language. While researchers have delved into all known aspects of language development, using increasingly precise measurement techniques, no conclusive answers have been found to the most basic questions: How is language acquired and developed? What are the processes by which a child acquires language? What conditions foster or hinder the development of a complex language system for children? What is the relationship among the linguistic strands--listening, speaking, reading, writing? While the results have been inconclusive as they relate to the total problem, much has been learned about individual, specific facets of these fundamental issues.

The purpose of this chapter will be to present a limited analysis of research studies dealing with specific areas of language learning. It is in no way intended to be exhaustive, but will offer a broad survey of the literature relating to aspects of normal language development including language and thought, deviant language development, language and reading, and formal language learning through the teaching of grammar. The conclusions as defined by the authors will be presented in this chapter. Additional implications will be presented in chapter V.

NORMAL LANGUAGE DEVELOPMENT

Introductory Statement

Research relating to "normal language development," as referred

to in this section, may be said to include studies carried out with children who have not been diagnosed as having mental handicaps or language/hearing disorders, and who reside with parent(s) as opposed to an institutional setting. This section will deal with four separate facets: analysis of language acquisition (comprehension and expression); divergent and immature speech; dialect (including culturalism and bilingualism); and extraneous factors such as environment, age and social setting. As stated earlier the research cited will not be comprehensive. Rather, the writer will attempt to present some of the more meaningful research descriptions as they relate to the topic.

Language Acquisition

Knowledge of a language is not always accurately reflected by the use of that language. There is a real distinction between linguistic competence, the subconscious knowledge about sounds, meanings, and syntax possessed by the speakers of a language, and performance or actual language behavior. Any instance of linguistic performance requires the speaker and/or listener to have developed a competence in the language. Linguistic competence is an abstraction, and not directly observable. It can be studied only indirectly, by noting instances of actual language behavior and from it determining:

1) the kinds of linguistic knowledge people must possess in order to use language as they do;
2) the kinds of linguistic knowledge people must possess in order to respond (verbally or non-verbally) to the language (Falk, 1973, ch. 2).

This section will consider studies relating to the acquisition of the grammar of the language, including a knowledge of sounds, meanings, and syntax. Most of these studies have been based on performance aspects.

Phonological System

These studies will deal with some prosodic features of language (intonation and stress), segmental differences (features of each consonant & vowel), and sets of rules concerning permissable sequences of segments, as well as use of segments for marking number, tense, and case.

Intonation and Stress

Many studies interpreting observations of intonation and stress patterns of infants have been outlined. Menyuk and Bernhaltz (1969) undertook a study to examine the hypothesis that first utterances (13-18 months), have a basic intonational pattern of a declarative statement, and that varied patterns of intonation in certain situations and in the presence of certain objects and events are acquired through imitation of adult models. The results indicated that:

1) first one-word utterances are not simply the names of things and events (declarative intonations);
2) one-word utterances are produced spontaneously and not in imitation of adult utterances; and
3) all three intonational patterns (declaratives, questions and emphatics) are applied to a whole range of lexical items as opposed to specific lexical items. The author feels this is an indication of the child's intent to produce different sentence types by use of prosodic features.

Studies of infants' speech cries by use of spectrogram (Lieberman, 1967. Ch 3) indicate a marked rising and falling increase in the fundamental frequency contour of the cry of a 5 month old over the cry of the neonate. This has been interpreted as a precurser to the contours observed in intonation of single-word utterances.

Segmentation.

Segmentation in the phonological system, is that which deals with segments (clusters of features) smaller than word lengths, as perception of differences between /m/ & /b/ and (th) as in "this" and "with". These types of differences must be identified and stored in memory for later use in the decoding and generation of utterances. Segmentation here involves the set of rules concerning permissible sequences of segments and rules for use of certain segments to denote number, tense, case.

Basic to segmentation is a study by Lewis (1963). In it, he categorized the noncry utterances of infants into comfort and discomfort sounds or segments, and concluded that some of these sounds appear to be accidental products of the physiological state.

Nakazima (1962) found there were no differences in the speech sound repertoire of Japanese and American children from babbling to the first stages of words. This would indicate speech sound production to be a product of physiological maturation.

Lewis (1963) noted that an infant's first words are often composed of those sound combinations frequently found in babbling (mama); and Menyuk in 1968, determined that speech sounds containing certain features are successfully mapped into morphemes in approximately the same

order of their proportional usage during the babbling period. There appears to be a correlation between order of acquisition and use of sounds in babbling and order of acquisition and use in later phonological development in terms of distinctive features. What has yet to be established is the period when a child perceives individual segments which distinguish the speech sounds of his language, and the sequential rules necessary for appropriate word formation.

Roger Brown in a study of the early stages of language development in children, determined that in Stage II "there is some evidence of segmentation errors involving such grammatical morphemes as the copula and auxiliary 'be', and articles.

"...Certain morpheme - pairs which constitute high frequency pairs seem to get lumped together as monomorphemic forms and so are overgeneralized to contexts in which they do not belong " (Brown, 1973, p. 399).

He refers to the English text as being "collapsed" into an unbroken sequence of letters, and making "lumping errors." An example of such an error would be: They are hitting the chother (each other) (Brown, 1973).

Omissions and substitutions of speech sounds by young children have received considerable attention by scholars. All of the data presently available, including that of Snow (1963), Willman (Powers, 1957, p. 716) and Menyuk (1968), add substantiation to the hypothesis that there is a hierarchy in ease of discrimination and mastery of segmental features, both in speech sound sets and among members of these sets. The process of refinement of some of these substitutions and

omissions towards a closer approximation to adult productions has been studied by Klein (1969). He determined that it was the relative position of formant locations (tongue, lips, teeth) rather than absolute nearness to an adult acoustical model that made it acceptable to the child.

It has been hypothesized that the late acquisition of certain distinctions of speech segments, and the early acquisition of others is due to the fact that acoustic clues are much more subtle for some than others, and it is more difficult to translate these subtle clues into appropriate articulatory gestures.

Phonological Rules.

During this period of phonological acquisition children also acquire rules of their language which pertain to sequential segments. In a study by Menyuk & Klatt (1968), there is some evidence that an analysis of segmental features begins to take place as early as 18-24 months. Messer (1967) found children as young as 3 years 3 months of age showed a significant tendency to select those initial and final clusters of consonants which more closely resembled English clusters. Messer cites as examples /ʒ a r j/ which subjects changed to /j a r j/ and /s k i b/ which subjects changed to /s k i b/. "It appears that children are aware of sequential rules in their language, and of the fact that some sequences violate these rules" (Menyuk, 1971, p. 85).

In the final stage of phonological development, the ability to add final segments to morphemes to denote pluralization, tense or possession is acquired. In studies done by Berko (1958), and Newfield and Schlanger (1968), children of approximately 6 years of age were able to apply these rules of segmentation with 80% to 100% accuracy.

The development of the phonological system may be summarized thus:

Infant crying indicates a marked rising and falling increase in contour by 5 months.

Varied patterns of intonation and stress are evidenced in children by the age of 13-18 months.

Initial speech sounds may be accidental products of a physiological state, and speech sound production may be the result of physiological maturation.

Babbling sounds are frequently the same sounds used in words.

Omissions & substitutions of sounds are based on formant location rather then acoustical clues.

Children as young as 3 years 3 months select clusters of segments which more closely resemble English words.

Children by age 6, are successfully able to add final segments to morphemes to denote plural tense and possession.

Syntactic System

This section considers the acquisition and development of methods of combining words together to form syntactic rules. These rules are finite, but can be used to generate an infinite number of different sentences conveying different meanings. Comprehension of these varying combinations will be considered as well.

As noted previously, the application of intonation and stress to single word utterances results in the production of sentence-like words. "No!" or "No, No, No", or "No?" each has different meanings and form the basis for sentence production. These single word utterances may be classified as nouns, verbs, adjectives, adverbs, and prepositions, and

may be used or interpreted as imperatives, declaratives, or interrogatives (Menyuk, 1969, ch.2).

Brown and Bellugi (1964) made a special study of the grammatical characteristics of young children's utterances. Their findings indicate that not only do young children imitate adults, but that adults, in speaking to children, imitate and expand upon the child's forms of speech. The child's imitation is a reduction of the adult utterance, and is referred to by Brown and Bellugi as 'telegraphic speech'. An analysis of the speech reductions indicated that nouns, verbs, and adjectives, the words that carry the main stresses in speaking, are retained; the function words, which are unstressed, are omitted. As well, Brown and Bellugi demonstrate that children's spontaneous utterances could not have been directly imitated, and that the majority of these are in general accordance with the rules of English syntax.

Susan Ervine-Tripp, in a 1963 study of the speech of 2 year olds, attempted to determine whether imitated utterances were grammatically different from free utterances, and if different, were they more advanced? She collected language samples from five children for analysis, and concluded that language development involved at least three processes.

1. In one process there is continual expansion in the comprehension of adult speech, perhaps requiring some ability to anticipate and thus involve some behavior that occurs in speech production.
2. Another process involves the imitation of particular instances by children; this imitation may be immediate or

delayed, but cannot account for the total syntactical development.

3. The third process includes the building by analogy of classes and rules, inferred from the child's consistent production of sentences he could not have heard. Ervin Tripp feels this latter accounts for the most advanced language learning, and that imitated utterances alone cannot account for syntactical development.

A 1963 study by Martin Braine attempted to explain what is learned when a child learns language. Braine thought the answer should in some sense explain why the grammar at a particular stage has the structure it has. He concluded that children in the first phase, beginning at about 18 months of age, have learned the positions of the pivot words; that is, they have learned that each of a small number of words "belong" in a particular one of two sentence positions. The other words, called the X-class, consists of the entire vocabulary apart from pivots. During the first phase, language grows structurally by the formation of new pivot words (the child learning the position of new words); and language grows in vocabulary by adding the X-class.

This analysis was challenged by Lois Bloom. From a study of the language of three 20 month old children, Bloom (1970) determined that children know more about the inherent relationships between words in syntactic structure than could possibly be accounted for in pivot and open class analysis.

Fraser, Brown, and Bellugi (1963) in a study of twelve 3 year olds, concluded that children understand a great deal of language before they

speak it. Understanding was more advanced than the production of words, but imitative production seemed more advanced than their understanding of the imitation. In other words, children can and do understand more of what they hear than they produce; but can and do produce imitations which seem more advanced than they understand.

The final study to be discussed relating to syntax acquisition was that done by Menyuk in 1961. Using Chomsky's explanatory model, or theory of linguistic intuition of the native speaker, Menyuk set out to determine whether this model could be used to describe a child's grammar as a self-contained system, and/or to indicate developmental trends. The study was done on children ages 3 to 7. Menyuk concluded that all the basic structures used by adults to generate their sentences can be found in the grammar of nursery school children. Most structures are acquired at an early age and used consistently. Older children demonstrated an increased ability to used basic structures in an additive manner; as well, older children demonstrated an increased total sentence output in like stimuli situations. Of interest was her finding that all the children in the sample used all rules found in phrase structure and all rules described in the morphological level of grammar.

Semantic System (Including Language-Thought)

The child's comprehension of the semantic properties has been studied mainly in terms of the words produced and the context in which they are produced to determine the meaning (for the child) of the lexical item. Despite the obvious relationships, few studies have been undertaken which relate the integration of the semantic, phonological and syntactic features of a child's language. This section will explore some aspects of word meanings as they are acquired and used by children. It will neces-

sarily involve some consideration of the relation between language development and cognitive development, and hence the relationship between cognitive and semantic complexity.

Clark (1973) outlined the problems occuring for children in determining the criterial features of a category. Merely saying to a child "That's a doggie. Say doggie." does not tell the child whether he should be paying attention to the dog's shape, size, texture of fur, movements, number of legs, all of above or some of above. The child has to decide which is the relevant factor of the many features he sees. In studies undertaken by Clark related to naming and meaning, the available data suggest that the child initially picks out one or two features as criterial to begin with and gradually adds in the others used by the adult until his meaning for the word eventually matches the adult meaning (Clark, 1973).

Murai (cited in Menyuk, 1971, p. 167) studied imitation and comprehension of words in Japanese children. He noted no precedence of either imitation or comprehension in the acquisition of a word, since instances of either order were observed.

Bullowa, Jones, and Duckert, through use of movie film, comments of an observer, and tape recordings, traced the acquisition of the word "shoe" by a young girl. The experimenters noted that the child obeyed commands about the shoe before producing the word form. When the child attempted to produce the word, the mother rejected some forms but accepted other forms which seemed no more phonetically correct. Further, the acquisition of the meaning of the symbol did not seem to be a simple progression from imitation to comprehension to production. To compre-

hend the meaning of the verbal symbol, the child must make observations of the use of the symbols in environmental and syntactic contexts, and that modification of the production of the symbol comes about through the same means. Thus the word "shoe" takes meaning, over a period of time, as a physical object having a certain shape, color, texture, and functional properties, and can be manipulated in several ways. The child responded to comments about the shoe before producing the utterance (Bullowa, Jones, Duckert, 1964).

In a study done in 1970, Nakazima determined that at the early stages of word production, speech perception and production were not yet integrated. For example, the label "mama" was used by the child to refer to mother, the maid, and other adult females. By age 17 months, the sequence was correctly articulated and used appropriately. Labels and particular objects were not definitively associated until a later stage.

Clark (1973) refers to the misapplications, noted above, as "overextensions;" that is, the child has attached some meaning, but the meaning is incomplete, and thus applied inappropriately to other objects or people. The initial meanings are based on one or two percept based features in their lexical entries, which Clark sorts into six categories: those based on shape, movement, size, sound, taste, and texture.

Eve Clark, in commenting on studies of children aged 1:6 - 5:0 in use of the locative terms "in", "on", and "under", suggests that the acquisition of some linguistic structures may not require the postulation of linguistic universals as proposed by Chomsky (1965) and MacNeil (1970). Clark suggests that ". . . it is first necessary to explore the limits of the relationship between general cognitive capacities and the ability

to acquire language". She suggests the Piagetian model of cognitive development might best be used in such a study (Clark 1974).

Vygotsky and his associates did some experimental work on the stages in which language comes to influence thought. Using a set of 22 wooden blocks of different colours, shapes, heights, and sizes, the Russian psychologists focused on two heights (tall and flat) and two sizes (large and small) for the experiments, thus setting up four categories - tall and large, flat and large, tall and small, and flat and small. Each category was given a nonsense syllable as its name. The child was given one block (with the category "name" marked on the bottom) and was told to put it with all the blocks he thought might be of the same kind. Initially, all the children could only use guessing techniques, as names could not be seen and no information was given about the reasons for choosing the block that was presented. Vygotsky traced a sequence of different behaviours in the children performing the task.

The youngest children attempted the task by putting blocks together in seemingly random heaps. Later, these 'heaps' seemed to be influenced by the way the blocks were placed in front of the child, their spatial relationships. This "heaping" was still considered to be a random act. Vygotsky related this random 'heaping' to the child who learns a name of a thing and attaches this name to many seemingly random objects (Vygotsky 1962, p.70).

The second major phase in Vygotsky's experiment came when the child grouped the objects according to perceived similarities. The child used concrete, factual criteria for choice. Vygotsky refered to this as thinking in complexes and compared it to the language function of grouping by

family relationships. The early stages represent the forming of an associative complex adding blocks of the same colour or shape. The next stage, called "a collection", refers to the grouping of objects by perceived differences - converse thinking.

The third stage was described by Vygotsky as the "chain complex". The child began matching the blocks using one feature, then switched to a different feature related to the last block added thus forming a "chain" of objects. Vygotsky regarded this as the purest form of thinking in complexes. The last of the complexes forms the beginning of true concepts. These are called pseudo-concepts, as they do not rise above their elements, but rather merge with the concrete objects that compose the concept. For Vygotsky, the word meanings already in the language govern the categories a child forms (Vygotsky, 1962, ch.6).

Britton summarizes Vygotsky thus:

> Here then, in more specific form, is the process we referred to earlier: as a child learns words in association with the objects of his environment he sorts those objects into categories: those categories are complexes; but since the naming will be for the most part in accord with social usage- the uses he has heard in others - these complexes will be pseudo concepts. And in the course of handling complexes (in both speech and thought) to organize experience, meet the challenges of new experience, manage his practical undertakings, satisfy his curiosity, commune and argue with adults - in the course of all this the ability to think in concepts (at least for some of the time) is achieved in adolescence by most members of our society (Britton, 1970 p.211).

The study by Vygotsky outlined above, bears some resemblance to studies by Werner and Kaplan (1964). In these studies, definitions used by children to describe certain objects were analyzed as to the conceptual nature of the terms used. Werner and Kaplan determined that younger children tended to define the objects using concrete terms. For example

"bottle" was defined by an 8 year old as: "something you put milk in." By age 15, there was only a 33% usage of definition in terms of concrete; definitions by this age tended to be highly abstract, using typical items of a conceptual nature. "Bottle" was defined by a 14 year old as: "a hollow round glass vessel into which liquids go." (Each underlined word represents a concept).

In summary, there appear to be several processes occuring in the child's acquisition of meaning in lexical items. This acquisition does not seem to be a simple progression from imitation to comprehension to production, but seems more to be related to stages of cognitive development. Semantic operations are probably best described as cognitive based.

Divergent and Immature Speech.

Studies by Menyuk (1964), Strickland (1962) and Loban (1963) prove that children typically come to school with a complex language system. Menyuk (1964) noted that practically all of the basic syntactic structure used by adults to generate their sentences could be found in the grammar of very young children (ages 2-3 yrs.) Loban (1963) and Strickland, (1962) in earlier studies, determined that children in grade one used all the basic patterns of English sentence structure. "While it is true that children have regularized most of the basic structures by the time they enter school, it is unusual for the young child to have regularized all the irregularities of the language (Braun, 1974, p.468)." Thus a child may understand the phonological rule for denoting past tense by adding -ed, but not the irregular form of the verb, resulting in the use of "bringed" for "brought." In this sense, the child's speech is im-

mature.

Research related to linguistic development or linguistic maturity will be discessed briefly as it relates to the normal language acquisition of a child. Indices for linguistic maturity as developed by several researchers will be explained as they relate to the studies.

Loban (1963) in a study of elementary school children, indicated several directions in which language grew as children became older and more proficient in language. Braun summarizes them in this way:

(1) They used a greater number of communication units in their speech.

(2) They tended to use more language.

(3) They tended to use longer communication units (that is, more words per communication unit).

(4) Their units changed toward increased grammatical complexity.

(5) Their language showed a trend toward increasing tentativeness, more supposition, more hypothesis, and more conditionality.

(6) They used less disjointed, more articulate language.
(Braun, 1974, p.469)

While testing inflections (word endings) on nonsense words, Berko found that preschoolers of about 4:5 could often correctly use noun plurals and third person singular verb forms, but to a lesser degree of success than children aged 6:3. Generally, all children in these age ranges had difficulty with plural endings in words such as "glasses," and with irregular verb forms. In general, the differences between younger and older groups were in terms of numbers of errors rather than kinds of errors made.

Chomsky's study (1969) indicates that syntactic knowledge is not complete at age five or six; children still have to learn some specific syntactic rules which apply to specific words.

The use of the T-unit as the best index of syntactic maturity has been used recently by several researchers.

Hunt (1965), O'Donnell, Griffin, and Morris (1967) and Braun (1969) did studies of oral and written language using this index.

Hunt (1965) asserted that the best index of syntactic maturity was number of words per T-unit, followed by number of words per clause, clauses per T-unit, and words per sentence, in that order.

The findings of O'Donnell, Griffin and Morris (1967) approximated those of Hunt, while Braun (1969) corroborated the major findings outlined above.

In summary, children continue to learn specific rules relating to specific words after school age.

Measurement of linguistic maturity by T-unit, while not considered a perfect instrument, indicates that length of linguistic strings and complexity within the strings, as measured by sentence-combining transformations, appear to be reliable and valid indices of language maturity.

Factors Affecting Language Development

Some extraneous conditions play an important part in language learning; others seem to be of little or no importance to the total development. Two of these factors, age and home environment, will be given some attention at this time. Two others, sex and intelligence, will be noted.

Age: This factor was discussed to some extent in the previous section.

It is restated here because of its obvious relationship to language development.

Welch (1967) recorded and analyzed language samples of thirty young children. The results indicated that certain aspects of language appeared to be a function of increasing age. These include:

- Reduced use of short sentences
- Flexibility in handling movables
- Increased use of compound sentences
- Increased use of non-structured elements in oral language.
- Increased ability to expand and elaborate

O'Donnell's findings (1967), reported earlier, substantiated these results. Loban, (1963), also found a close relationship between language ability and age; and Brown (1968) showed a definite relationship between chronological age and mean utterance length.

Chronological age and linguistic maturity are directly related.

Environment: Research has been conducted on the possible relationships between certain home environmental factors and children's language development. The problem of determining which factor or factors to include, and the possible negation of some of these results because of other extraneous factors in an uncontrolled environment, must be noted. Some pertinent investigations concerning certain of these environmental elements will be reviewed.

Hess and Shipman (1965) conducted research at the Urban Child Center of the University of Chicago on the relationship between maternal language style and children's cognitive level. They found a significant relationship between the level of abstraction of a mother's

language and the cognitive style level achieved by the child.

Evidence from a survey done by NCTE in 1965 stressed the need for providing a "talking" environment for children. This need seemed greatest for children around the age of two, and fell off sharply after age five. That is, children between the ages of two and five, who were exposed to a great deal of speech by adults and other children, seemed to have a distinctly higher ability in school than children who were not exposed to a great deal of speech in their environment.

Dr. M. Templin has done studies of children's language over a period of several years. The results of her study, done in 1957, were compared with studies done in 1932 by Dr. Davis. There were four notable changes in children's language during this period:

1. Six-year-olds in 1957, used sentences longer than those of nine-and-one-half-year-olds twenty-five years previously.
2. Use of compound-complex and elaborate sentences increased substantially from year to year, children in 1957 using twice as many as children in 1932.
3. Deviations from standard English decreased in 1957 from 1932.
4. Between 1932 and 1957 there was a fifty per cent increase in the use of slang and colloquialisms among children ages three to six, and a similar increase from ages six to eight.

Dr. Templin attributed what she considered to be significant language improvement over a period of twenty-five years to the increased linguistic stimulation from movies, radio, television and to the greater permissiveness in the relationships of children and adults.

Milner (1951) found that children who engaged in a two-way conversation at mealtime with parents who encouraged them to talk, could be distinguished from other children during early school years by their language skills.

Research relating sex and intelligence factors to language development has been carried on for many years. These studies will not be discussed in this section. The studies relating sex to language ability have resulted in considerable disagreement over the years, and the possibility exists that sex may not, of itself, be a determinant in language learning.

Intelligence factors become an issue of major controversy, as environmental factors, lack of definition of "intelligence", and the possible confusion of low intelligence with language disability negate many of the studies done in this area. While it is possible, even probable, that retardation negatively affects language learning, this will be discussed in a separate section.

In summary, the importance of the home environment to language learning has been determined in the past; the chronological age of a child is directly related to language maturity; sex may not be a factor in language learning, and intelligence, because of lack of definition, and through the inclusion of many extraneous factors, is difficult to assess in terms of its relationship to language development.

Dialects/Culturalism/Bilingualism

Studies pertaining to dialects, culturalism, and bilingualism, as these topics relate to each other and to the language development of some children, will be summarized in this segment.

Dialects and Culture

A dialect may be defined as:

> . . . an habitual variety of a language, set off from other varieties by a complex of features of pronunciation, grammar, or vocabulary. Dialects arise through regional or social barriers in the communications system (McDavid, 1966, p.185).

'Culture' here refers to economic class differences among groups of people. These differences are used in combination with dialect variations to determine social status in a particular region.

Bernstein (1961), in comparing socially different dialects in England, determined that some dialects spoken by members of lower socio-economic classes were intrinsically less adequate for educational purposes than middle-class dialects. Bernstein referred to the lower-class language as being a restricted code, and the middle-class language as being an elaborated code.

Bernstein's language-deficit theory provoked considerable controversy and provided the analytic framework used in many other studies to support or refute this position.

M. Deutsch (1965) analyzed language data at the first- and fifth-grade levels. He concluded that being poor and/or a member of a minority group resulted in a tendency to have poorer language functioning. The differences appeared to be in the ability to use language for abstract purposes, and were greater at the fifth-grade level than at the first-grade level. This led the author to assert that there was a cumulative deficiency in verbal development.

C. Deutsch (1964) believed "poorly developed" auditory discrimination among poor black children might be the cause of reading failure,

and suggested that noisy slum homes contributed to this factor. It was later suggested by other researchers that Deutsch's study offered no evidence to show that the homes of the children perceived as having "poor" auditory descrimination were excessively noisy.

Hess and Shipman (1965) analyzed verbal interaction between black mothers and their four-year-old children from four socio-economic groups. They concluded that middle-class mothers used more verbal explanation, and promoted problem-solving behavior in teaching a task to their children, more often than did lower-class mothers.

The above study is often used to support the position that there is insufficient verbal interaction between adults and children in poor families to foster the development of language fully. Studies challenging the language-deficit theory have been equally persuasive.

Loban (1969) determined that such seemingly careless omissions in Afro-American English as deletion of the words "is" and "are", as well as the possessive "s", and the "s" ending in the third person singular of present tense verbs, are differences in dialect rather than deficiencies in language development.

Torrey (1969) reported that dialectic differences relating to pronunciation had no discernible effect on reading or writing.

Labov, working with other linguists, spent several years studying dialects of teen-aged black youths living in New York. The focus of these studies was on the variances in morphological and syntactical structures, and the effect of these variances on comprehension of standard forms. In one study Afro-American boys were asked to repeat sentences that were presented orally. These boys commonly "translated"

some standard forms into Afro-American forms, but always retained the meaning. Labov concluded from this study that a speaker may use a different grammatical form (as Afro-American), yet fully comprehend the standard form (Labov et al, 1968).

Anastasiow (1971) supported this finding in a similar study with inner-city black children.

Shriner and Miner (1968) in a study of white preschool children showed that these children did not differ by social class in their ability to generalize morphological rules. In a similar way, Cazden (1972) reported that very early growth in acquisition of language structures demonstrated that lower-class black children were undergoing the same sequence and kind of acquisition as middle-class whites.

Entwisle's studies (1966, 1970) of children's word associations also gave evidence to support the language-different theory. According to her analysis, the ability to give a spontaneous word in association with a stimulus word which is of the same grammatical class and semantic cluster indicates language maturity. At the first-grade level Entwisle found white slum children to be superior to white suburban children in this respect; in addition, she found black slum children were also superior to white suburban children but behind the white slum children.

While this superiority feature disappears over the school years, Entwisle believes that at the start of school there are some strengths existing in the language of slum children, and the depression of verbal ability with advance in school can be the effect of poor schooling on slum children.

In 1971, Bernstein himself had repudiated the view that this dis-

tinction between codes referred to linguistic deprivation.

> Now because the sub-culture or culture through its forms of social integration generates a restricted code, it does not mean that the resultant speech and meaning system is linguistically or culturally deprived, that the children have nothing to offer school, that their language is not significant. Nor does it mean that we have to teach children formal grammar. Nor does it mean that we have to interfere with their dialect. There is nothing, but nothing, in the dialect as such, which prevents a child from learning universalistic meanings (Bernstein, 1971, p.199).

Bilingualism

"If the home environment effects differential language development one might well expect that the child's exposure to more than one language would produce differential effects" (Braun, 1974 p.475).

These "differential effects" have been interpreted by some to be positive effects, and by others to be negative effects. Studies appear to support both views.

Surveying the available research and drawing on his own study, McNamara (1966) found evidence that the linguistic and educational attainments of bilinguals are inferior to monoglots. He suggested four reasons why they tended to develop less well in both languages:

1. Linguistic interference from the first language-e.g., certain grammatical forms may persist, certain pronunciations may be used, certain sounds in the second language may not even be heard because they do not occur in the first language. If the languages are unrelated (e.g. English and Chinese) the interference is greater.

2. Cultural interference. The second language may imply an approach to reality different from that of the first. It may not be merely a matter of learning a new language, but rather of learning to see reality through the eyes of a native speaker of that language.

3. Parental confusion in language. The parents of bilinguals may themselves have learned imperfectly the second language (this applies particularly to adult immigrants), and thus provid poor models of both for their children.

> 4. It takes time to learn a language. If bilingual children learn two languages in the time monoglot children learn one, then both their languages suffer. When one of the languages is not the language of use and advancement, but is taught for cultural and national reasons, then the motivation for learning it may be low, and this aggravates the problem.
>
> (McNamara, 1966)

Carrow (1957) reported findings that bilingual children at all levels of intelligence scored lower in language achievement tests than monolingual children.

Arnesien, (cited in Braun, 1974, p.475) in an extensive review of studies, concluded that monolingual children tend to be superior to bilingual children in verbal intelligence, vocabulary, and school achievement through the elementary school years.

J.V. Jensen (1962) adduced several studies to support the claim that individual speech development, overall language development, and intellectual and educational progress would be handicapped in a bilingual person. His review also summarized some of the advantageous effects of bilingualism in children. These included such factors as maturity in sentence structure, superior vocabulary, and longer mean sentence length.

Anastasi (1953) produced evidence showing bilingual children to be superior in mean sentence length, maturity of sentence structure, and vocabulary.

Pitner (1932) in an early study of bilingualism and its effects on intelligence determined that associated language handicaps diminished with increasing age. Spoerl agreed with these findings, and concluded that at the college level, bilingual students possessed some educational advantages.

Braun (1969) in a more recent study, using bilingual-French, bilingual-German and monolingual groups, found specific language variables among all the groups. Braun concluded that bilingualism was too global a term for effective assessment, and that the interaction of bilingualism with variables like socio-economic status, intelligence, and amount of exposure to adult English communication may well account for differential language skill within the bilingual community.

In summary, it is evident that dialect, economic status and bilingualism have an effect on a child's language learning and ability. There is evidence on both sides to support these effects as being negative and positive.

The language-dificit/language-difference controversy seems closer to resolution with the distinction between dialect and grammatical forms. This distinction has come about through the use of linguistic analysis, as opposed to the empirical studies used in the language-dificit hypothesis.

Studies related to bilingualism contain many variables which can alter the outcome or conclusions. At this time there seems to be no conclusive evidence as to the full effects of speaking two languages.

DEVIANT LANGUAGE DEVELOPMENT

Introductory Statement

Research relating to "deviant language development" includes studies carried out with children exhibiting language behavior differing markedly from the norm. The group or individual differences in patterns of language acquisition and development dealt with in this segment are those differences which would be noted by native speakers of the language.

The factors contributing to these differences are physiological,

environmental, both, or unknown. The diagnostic classifications of deviant language development noted here will include deafness, aphasia (including language disorder), mental retardation, and institutional language patterns.

The techniques used to examine developmental differences are all those techniques, previously described, which have been used to describe and examine normal language acquisition and development.

Most of the groups being discussed will exhibit "delayed speech" which implies delay in onset, slowness of the process, and termination of the process before average adult linguistic performance is reached. As well, many will have "articulation defects", which is viewed as some deviation from acceptable speech sound production (Menyuk, 1971, p.201).

It should also be noted that there may be degrees of deviance in each performance aspect. The extent of deviance is dependent on the number and types of rules which differ in all components of these children's grammar - syntactic, semantic, and phonological.

The Deaf

Deafness may be described as the lack of the sensory ability to hear sounds.

Cooper (1967) examined the ability of deaf and hearing children to comprehend and produce morphological rules. These children ranged in age from 7 to 19 years. All were reading at the grade 2 level or above.

Comprehension and production were tested in two separate tests. It was found that in hearing subjects, performance was strikingly superior. A mental age and chronological age comparison of the same subjects produced the same results.

There was evidence in this sample, that qualitative as well as

quantitative differences exist in the performance of these groups. These qualitative differences are due to the types of rules which the deaf group not only is slower in acquiring, but also appear to have marked difficulty in acquiring.

A study by Schmitt (1968) was undertaken to examine deaf children's ability to comprehend and produce certain types of syntactic structures. These tasks were labelled: 1) comprehension, 2) production selection, and 3) production construction. Eight-, eleven-, fourteen-, and seventeen-year-old deaf children were tested.

In comparing the performance of deaf and hearing children it was found that the combined task mean score of 8 year old hearing children was significantly higher than seventeen-year-old deaf children. For the deaf group total scores generally increased over age range. It was felt that the differences in performance between deaf and hearing children may in some way be a reflection of the structure of sign language.

Again, differences in the sequence of acquisition of structures of the deaf children as compared to the hearing children were noted; not simply a slowing down of the sequence of acquisition.

In a study with deaf and hearing adults and deaf and hearing 6 year old children, Lantz and Lenneberg (1966) found that communication accuracy in formulating distinctive linguistic categories for colors was consistently related to performance in a color recognition task. Hearing adults did best in the task of recognizing colors, and deaf children did worst. None of the differences obtained could be explained on the basis of perceptual discrimination.

Vernon (1967) summarized the results of 31 studies comparing the cognitive abilities of 8,000 children, hearing and deaf, using nonverbal

I.Q. scales. These tasks involved memory abstractions, reasoning and concept formation. In 13 of the studies of deaf population was superior to their hearing peers; in 7 there were no significant differences in performance; and in 11 they were inferior. In the latter instances the differences were "small." Despite these findings "...only 35 percent develop average skill in verbal language by adulthood "(Menyuk, 1971,p. 14). It would appear that the deaf population does not acquire the verbal/ literacy skills commensurate with their intellectual potential.

Aphasia

The term "aphasia" is ordinarily applied to a condition in which a person who has already acquired language competence suddenly and dramatically loses some or all of this competence because of brain damage (Carroll, 1964, p.70). This term is also used, however appropriately, to describe a condition in children where delay in language development is associated with some specific kind of birth injury or maldevelopment resulting from prenatal condition or birth trauma.

There are no distinct types of aphasia, although it is recognized that cases differ not only in severity but also in kinds of loss.

In some cases the loss may lie in speech reception; in others, it may be in verbal expression. Among the latter, the chief handicaps are anomia, the inability to find particular words for concepts; and syntactical aphasia, the incapacity to form coherent sentences.

There is also a group of children whose verbal performance essentially matches that of brain-damaged children but who display no other sensori-motor deficits, and who exhibit no positive signs in neurological testing. These children are categorized as "schizophrenic," implying that their linguistic disability is due to psychopathology.

Studies referred to in this section will deal with childhood aphasia and/or schizophrenia with the term aphasia encompassing language disabilities.

Lee (1966) in comparing the syntactic structures in the utterances produced by a child of 3 developing language normally, and a child of 4.7 years who had been diagnosed as aphasoid, found that the aphasoid child did not simply use fewer or less developed types of structures, but, in certain instances very different structures were used. Menyuk drew some conclusions from this study:

1. Delayed speech does not simply mean producing language which is more appropriate for a younger child.

2. It would be difficult, if not impossible, for the aphasoid to develop the rules of his language on the basis of the rules he has already acquired.

3. The child appears to have developed his own unique set of rules for generating sentences. His linguistic performance was consistent, rather than random (Menyuk, 1971, p.211).

In her own study done in 1964, Menyuk had compared the language of normal speaking children, aged 3 to 6 years, with the language of children using "infantile" speech but with no positive signs of physiological damage. Menyuk found there were differences and not simply delay in the language patterns. The group using "infantile" speech had developed a grammar that was more sophisticated in terms of some structures and different in terms of others.

In a later study, Menyuk (1969) began a preliminary attempt to obtain some answers to the question of why these aphasic children acquire and use language in a manner different from that of normal speaking children. A group of language disordered children were asked to repeat sentences containing various syntactic structures. Their repetitions were compared to those of normal speaking children. In her summary, Menyuk

noted that normal speaking children appeared to have the capacity to store and to fully, or at least partially, analyze a sentence; while children using disordered language were incapable of this task unless the utterance was sufficiently short and/or simple. She concluded that decoding parts of a sentence or only partial anaylsis of a sentence could lead to such distortions and the storage of different types of rules in the grammar; thus the decoding process, not the memory process would seem to be faulty.

Hirsch (1967) studied and compared two groups of children exhibiting deviant language behavior. One group was labelled "aphasoid" and the other "schizophrenic." Hirsch noted these distinctions:

1. The auditory memory span of aphasoid children was extremely short, whereas schizophrenic children demonstrated an excellent memory span for meaningless material.

2. The schizophrenic children produced bizarre and idiosyncratic language exhibiting lack of functional relationships between the words in the utterance; the aphasoid children did not.

3. The pitch, intonation, and stress of the utterance of schizophrenic children deviated markedly from the normal, whereas they did not in the aphasoid. He concluded that language behavior itself may lead to more clarifying categorization of members of these groups.

It would appear that aphasoid and/or language disordered children, as with the deaf population, have a different, not merely a delayed or immature linguistic competency; and that these differences are unique to the individual.

Mental Retardation

A simplistic description of mental retardation will be used here, as it will be assumed that the studies relating to language and the retardate

will have first established the retardation through acceptable testing. The retarded child can be described as the child who is moderately or severely delayed in most aspects of his genetic development, including language.

Myklebust (1954) in a study of 228 children seen for differential diagnosis of auditory disorders, determined that 11% in the sample had an auditory disorder due to mental deficiency. He felt these children differed from other language disordered in that their "inadequate auditory behavior was a manifestation of their generalized retardation" (Myklebust, 1954, p.218). Myklebust furthers considered that the degree of mental retardation could be determined by the extent of the auditory (language) defect.

Karlin and Strazzulla (1952) in a study of the speech and language of mentally deficient children observed some of the characteristics of their language function. These included: use of concrete language; paucity of ideas; lack of abstract thinking; irrelevancy of ideas; echolalia; and a tendency to perseverate.

Myklebust (1954) noted the possible confusion between retardation and childhood aphasia, and concluded that behavioral symptoms could be used to differentiate between the two categories.

Fuller (1966) studied the comprehension of syntactic structure and morphological rules of two mildly retarded young adults. In comparing the performance of these two boys in a sentence comprehension test taken from Fraser et al (1963), he found that the sequence of difficulty of structures was comparable to that found in normal 3 to 7 year olds. The order of difficulty was parallel in the morphological test. The experimenter concluded that the acquisition of structures tested

followed the same sequence as that observed with normal speaking children, except that acquisition took longer.

Lenneberg, Nichols, and Rosenberger (1964) observed the language behavior of a group of mongoloid children. They concluded that comprehension of linguistic structures is not dependent on the ability to produce these structures.

The morphological rules used by normal and educable mentally retarded children were examined by Newfield and Schlanger (1968). There was significant correlation between success with the total task and mental age for the groups. Some interesting differences were noted between the two groups; these differences primarily involved verbs. Verb forms requiring memorization or the learning or rules which apply to unique subsets were considerably more difficult for the retarded group than the normal group. These differences became more marked when the performances of the two groups were compared in the application of rules which applied generally and those which applied more specifically. The differences appear to be qualitative as well as quantitative. Newfield and Schlanger felt that the position stating that the linguistic performance of mentally retarded children is the same as normal children, only reduced, is open to question.

As with other forms of deviant language behavior, the language of mentally retarded children appears to have qualitative as well as quantitative differences. As well, comprehension of language is better than ability to produce language; and the use of comprehension tests to measure receptive language seem to be the most appropriate way to differentiate between mental retardation and childhood aphasia.

Institutional Language

Children who have been reared in an institutional setting are

frequently assumed to have deviant language behavior. An institution is defined here as a place of residence other than home, inhabited by people of similar deprivations and/or disabilities, with no one person or group acting as parents.

As early as 1930, Gatewood and Weiss reported that vocalizations were less in a situation in which newborn infants were "allowed to lie naturally without any external stimulation" than in an experimental situation in which they were stimulated by various forms of controlled stimuli such as light, sound, temperature, and odor (cited in Braun, 1974).

Brodbeck and Irwin (cited in McCarthy, 1946) were among the first to compare the language of orphanage children with children living at home. They found statistically significant differences in favor of the "home" group as early as the first two months.

Fisichelli (1950) compared the language of children living in an institution with those living with their families, and found the institutionalized infants much more retarded in all measures of their prelinguistic growth.

Lenneberg (1963) cites data suggesting that psychological deprivation (institutionalization at infancy) need not, and typically does not, cause irreparable damage to language acquisition. Lenneberg in this instance, was referring to psychological deprivation only.

Frank May in an extensive review of the effect of environment in oral language development concluded: "Research lends support to the general observation that home and school are environmental forces of vital importance in the development of oral language" (May, 1967, p.33).

May further stated that the ". . .meagre quantity and quality of adult contacts provided for children in many orphanages lead to

deficiencies in vocabulary, articulation, and fluency" (May, 1967, p.33).

Lack of: 1) physical stimulation, 2) adult models and 3) language stimulation has a measureable adverse affect on the linguistic development of children reared in institutional settings.

LANGUAGE AND READING

Reading, for the child, can be described as the ability to recognize and understand the printed symbols of the child's spoken vocabulary. Printed words, as well as spoken ones, are meaningful to the young child only insofar as his field of experience coincides with that of the author of the printed text.

The relationship between language comprehension and reading comprehension has never been questioned; there will be limited discussion on this relationship. A review of some of the literature dealing with the relationship between learning to read and the comprehension of instruction used in the process will be introduced and finally, studies relating language as a potential variable affecting reading achievement will be given some attention.

Goodman (1965) conducted a study of grade one and two children in the reading of word lists. The errors were noted, and the children were then asked to read passages containing the same words they had missed when reading the word lists. Goodman found that the children read most of their "error" words correctly when used in a sentence, indicating the use of sentence context.

Weber (1970) analyzed reading errors in two first-grade classes, both of which included students of varying abilities. While substitution was by far the most common error, (eighty to ninety % of the errors), further analysis of these errors indicated that ninety % were grammatically

acceptable. The findings strongly suggest that beginning readers apply their well-developed knowledge of the grammar of their language to the task of reading.

Milner (1951) concluded from his study that the "critical" skill to be mastered to ensure reading was the child's mastery and comprehension of spoken sentences and phrases.

While the relationship between learning to read and the specific instructional process used is more closely related to language comprehension, the writer will briefly report on some specific references.

John Downing (1964) in a volume published by an international reading symposium, pointed out that readiness depends on what kind of task the children are confronted with, and suggested that reading readiness is a matter of methods and presentations, as much as of maturation.

Anastasiow (1971) suggested that lack of understanding of the intent of the lesson, and not inattentiveness to the instruction, was the cause of some reading errors.

Numerous studies have been conducted on the efficiency of various specific approaches to teaching reading. These include studies on:

1) the language- experience method,by Lee and the San Diego Dept. of Education (1961) and Allen (1963);

2) the phonic approach, by Gates and Russell (1951) and T. Clymer (1963);

3) reading methods suited to teaching the "disadvantaged" child by Mergentime (1964) and the Detroit Public Schools (1964).

It is interesting to note that each method has been proven through studies to be both effective and ineffective in the teaching of reading. The most important variable in all the studies has been found to be the teacher; her ability to instruct at a level of understanding is frequently cited as one of the chief causes of success or failure of any given reading

program.

The interest in language as a possible variable affecting reading achievement has been stimulated by the study of Strickland (1962) when she set about to investigate the relationship of the language of textbooks used in the teaching of reading to the language of elementary school children. Based on analysis of four widely used basal texts, her findings indicated that patterns of sentence structure were introduced rather haphazardly and often were not followed up by any sort of repetition or effort at mastery, as was vocabulary. Strickland went on to question whether children would be aided or hindered by the use of sentences in their books more like the sentences they use in their speech.

Ensuing studies investigated the relationship between syntactic structures used by children and competence in reading materials employing these structures. Most of these investigations centered around the dialect differences among groups of children. Ruddell (1965) demonstrated that comprehension improved when children read material written in the grammatical forms they normally used in their speech.

Kenneth and Yetta Goodman (1965, 1972) have done research on what they referred to as "oral reading miscues". In this research, they recorded reader's miscues and evaluated them, based on the degree to which the miscue disrupted the meaning of the written material. Thus, qualitative, not quantitative analysis of errors was undertaken.

> The number of miscues a reader makes is much less significant than the meaning of the language which results when a miscue has occurred (Y. Goodman, 1972, P.32).

This research has indicated that it was not uncommon for children to 'translate' what they were reading into a syntactical form that they normally used.

In the 1972 study, Y. Goodman made observation of a reader's miscues in three different stories. In story number 1, the reader had fewer miscues in total, but had the greatest percentage of miscues that caused loss of meaning. These were mostly substitution miscues with high graphic similarity. In story number 3, the reader had the highest percentage of miscues, but these caused no loss of meaning, with the smallest percentage of substitution miscues of high graphic similarity.

Goodman stated that this was consistent with conclusions emerging from the research on miscues, that when a student did not comprehend the written material he was reading, he tended to be much more careful a reader on a superficial level, and did less 'translating' of the material into his own grammatical form (Y. Goodman, 1972, p.35).

Shuy (et al, 1968) in a comparative study of the language of lower-class black and middle-class white children, concluded that there was evidence that the black children experienced difficulty in reading standard English because of their dialect.

Torrey (1969), in a study of grammatical variables in the dialect of Harlem children, found that the children more often understood the suffix -s as a tense marker, than as a plural marker, and that attempts to teach it as a plural marker to second grade black children were unsuccessful.

Stewart and Baratz (1969) conducted experiments in Washington, D.C., on teaching black children to read using basal readers that incorporated Black English dialect. The results were not successful, and Baratz (1969) reported this was possibly was so because of resistance by the teachers and not a fault of the system.

Labov (1970) studied the reading, as well as the speech, of black adolescent boys, for the purpose of seeing how the nature of the dialect

affected their comprehension of printed sentences. He concluded that dialect may influence comprehension of certain syntactical forms, as the use of the suffix -ed to denote tense.

Language and reading, with respect to comprehension of written material and instruction used in the process of teaching reading, are directly related.

There appears to be an adverse effect on comprehension when the printed grammatical forms used in reading are different from the spoken grammatical forms of the reader. This may be especially true when there are dialect differences.

FORMAL LANGUAGE LEARNING

Grammar, as defined by Britton is "... a system of relationships that makes language possible" (Britton, 1970, P.132).

As discussed previously, there are three levels in grammar - the phonological, the semantic, and the syntactic. Each of these levels is rule - governed.

Formal grammar teaching may be defined as the teaching of a set of fixed rules relating to the structure and system of a language.

Many reasons have been offered by educators as to why formal instruction in grammar would be beneficial to students. Among the reasons cited for teaching grammar was the belief that teaching grammar:

1) is good for the mental discipline of the student;
2) produces transfer of learning to other subjects;
3) aids reading comprehension;
4) improves written ability and is the best approach to teaching sentence structure and punctuation;
5) reduces errors in usage by applying grammatical rules.

Because research findings over the years have been fairly consistent about the value of teaching formal grammar, this section will be given limited attention. Research relating to each of the reasons listed above will be presented.

1. Studies citing formal grammar as an aid to mental discipline have dated as far back as 1913, when Briggs tested nine typical claims for mental discipline value for grammar instruction and found no improvement.

   Macauley (1947) did a survey of 1,000 children in Glasgow, and found that despite training, the average pupil of twelve could recognize only common nouns and simple verbs. At the end of a three-year secondary school course, only 41.5% of pupils were able to score 50% on the five simple parts of speech. He concluded that formal grammar should not be taught to children under fourteen, as they are unable to grasp the concepts; formal grammar could not be considered an aid to mental discipline.

2. Studies by Rice (1903) and Bender (1935) showed no evidence to support the belief that grammar study produced transfer of learning to other subjects.

   Boraas (1917) found highest correlations between scores in grammar and those in history, geography, and arithmetic than between those in grammar and composition.

   A later study by Segal and Barr (1926) found the relationship between grammar and composition was no more than that found between any other pair of school subject.

3. Grammar training as an aid in reading comprehension was first

questioned by H. Greene in 1947. He reported finding no important relationship between the amount of grammatical information possessed and the ability to read and comprehend sentences.

Rystrom (1968, 1970) did two studies where he attempted to train black children to learn "standard" English dialects. In both studies the trained pupils did no better in reading comprehension than the untrained pupils.

4. In 1934, Ellen Frogner demonstrated that children taught sentence structure by thoughtful analysis of their own writing rather than by direct grammar instruction learned sentence structure better. She reported that the time spent on formal grammar instruction was wasted time as far as improving sentence structure was concerned.

In his research findings, a report by Bender (1935) stated that written expression did not improve with ability to cite grammatical rules.

Punctuation was taught more effectively by example as an aid to comprehension than by teaching rules of grammar, according to Evans in 1939.

Robinson (1960) compared children's scores on general ability, parts of speech recognition and sentence analysis with their gradings on three compositions and found little relationship between the scores in grammar and the grades on composition.

Bateman and Zidonis (1966) however, concluded that a knowledge of generative grammar could enable high school students to reduce errors in writing.

5. The reduction of speaking errors by applying formal grammatical rules has been disputed since 1916, when Sears and Diebel reported

that eighth- grade pupils made more mistakes in using pronouns after receiving formal instruction than did third-graders who received no instruction.

Loban (1968) and Strickland (1966) clarified the distinction between grammar and usage. Grammar, to them, referred to the linguistic processes involved in human communication while usage pertained to a given dialect in a social setting. Grammar and usage are not synonomous. For this reason, teaching formal grammatical rules will have no effect on speaking.

There is little evidence to support the value of teaching formal grammar to children for any reason; there may be some limited value to teaching grammar to older students.

SUMMARY

Many aspects of language research await refinement and extension. Most of the research activity has the greatest and most imminent implications for language researchers. However, many of the findings that have emerged from research have implications for educators, and some of these have been presented in this chapter.

The ways in which children acquire language, what it is they acquire, and the processes used to acquire it have been given considerable attention in studies. While our knowledge is incomplete, these studies have served to demonstrate the complexity of the language system.

Extraneous factors related to language acquisition, such as home environment, age, and culture have been cited as important elements in the development of the language process.

Research carried out with children exhibiting markedly different language behavior, and comparing this behavior to that of normal children,

has resulted in new insights into possible teaching strategies to correct deviant patterns.

The relationship of language to reading and to formal grammar as taught in schools has been investigated extensively, with significant findings for teachers.

As research tools are increasingly being refined, new information and modifications of theories will be forthcoming. While many inconclusive results and unanswered questions remain, much is already known and can be applied.

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Chapter V of this study is organized in the following manner:

1) A summary of the theories of language development.

2) A summary of current research data.

3) Implications for teaching. (This section will include theoretical implications as well as practical implications.)

4) Conclusions

5) Recommendation concerning areas and topics upon which further research might be undertaken.

SUMMARY OF THEORIES

Traditional Grammar

Traditional grammar as it is understood at present, evolved from ancient Greek and Latin models.

The Greeks, beginning in 500 B.C., developed a technical vocabulary which is currently used and accepted. The Greeks introduced the concepts of noun, pronoun, subject, verb, adjective, predicate, figures of speech, sentence types, vowels and consonants.

By 100 B.C. Latin, as described by grammarians, was predicated on the language of the literature. This written language had as its source Greek models which stressed proper forms and rules for correct combination. While Latin remained a living language until the Middle Ages, the language as used by the people was not described or defined; little contribution was made to the study of its linguistic form.

The concept of a "universal" grammar was introduced by the Modistae in the twelfth century, dismissed by scholars in the late nineteenth

century, and re-introduced in the twentieth century. This concept was among the most significant contributions made by the Modistae. It provided the basis for later discussions by Firth and Chomsky on the nature of deep structure and surface structure, fundamental to the transformational theory.

By the eighteenth century the emphasis of English language scholars was on stabilizing and fixing pronunciation, spelling, and meanings of words. At the time this resulted in the publication of many dictionaries and grammar primers, incorporating fixed rules which were taught as prescriptive dogma. These rules were either arbitrary, (based on personal preferences), or descended from Latin, and often contradicted the vernacular used in the eighteenth century. The major difficulty with the application of Latin grammar rules to the English language was that Latin was an inflected language, depending heavily upon word endings, while Modern English, as it had evolved in the eighteenth century, was no longer an inflected language. Most of the grammatical function formerly supplied by case endings had been supplanted by positional indication, that is, position of words and phrases in a sentence.

The philosophical assumption that rules of grammar may exist even though they are not consistent with the realities of language usage had a long-term detrimental effect on language teaching in schools.

Structural Models

In an attempt to reconstruct the original, or proto, language from which all language derived, linguists were faced with the task of comparing contemporary languages and ancient languages. This led to accurate descriptions of elements involved in these languages, as well

as relationships of sounds among languages. Because of its attention to the form or structure of a language rather than to fixed rules, linguistics during this period became known as structural linguistics.

Comparative linguistics was recognized as a science, while descriptive linguistics was formulated as a separate branch of that science. In descriptive linguistics, language, as it was spoken, was subjected to careful empirical study. No preconceptions interfered. Grammar was the structure that the scientist discovered in the process of describing a language. From this science of comparative linguistics a more precise terminology developed, and definitions for word classes and functions, phonemes, morphemes, inflections, intonations and dialects were put forth.

Meaning was given minor consideration by the early descriptive linguists in their attempts to study hitherto unknown languages. By the early 1900's structural linguists had become increasingly aware of meaning as a more complicated aspect of language. Syntax or word order was scrutinized and its importance to the total structure, including meaning, was emphasized. The difference between the structure of a language and the system of language was first noted by J. R. Firth in the mid 1900's, providing the basis for the definition of "surface" and "deep" structure.

The works dealing with meaning and syntax were among the first to offer concrete support relating to the diversity and complexity among languages, thereby dispelling the previously held notions of "primitive" languages and of the relationship between language and race.

The precise vocabulary and the noting of levels of meaning combined to provide a basis for the most complicated and profound language

theory offered to date--the transformational generative theory.

Transformational Generative Grammar

By combining the universal notion of the prescriptive grammars with the concepts developed in the structural models, a new theory, that of transformational generative grammar, evolved. Grammar in this model is viewed as a process. This school of linguists attempts to study the process by which the linguistic product is generated. The rationale behind this theory is that every speaker of a language can generate an almost infinite number of sentences in his language, many of which he has neither heard nor uttered before. These sentences, however, can be easily differentiated by the speaker and listener as being acceptable or non-acceptable sentences. These linguists reason that while the number of acceptable sentences in a language is very large, the speakers generative process must be governed by a much smaller number of rules. Further, they argue, the speaker must have some innate capacity to learn these rules, as all speakers of a language use and understand rules; and that certain features of given languages can be reduced to universal properties of language itself. The generative grammarian claims that the descriptive linguist is concerned only with the surface structure of language-the end product of the linguistic process. The generative grammarian considers each utterance has a deep or underlying structure, that is, a meaning or intention to be conveyed by the speaker. The speaker the combines words in an order which will convey this meaning. This order is referred to as surface structure. By the use of transformations, the surface structure, including word order, may be changed, while the deep structure remains intact. Meaning is significant to the work of the

generative-transformational linguist. He seeks to go beyond linguistic performance, the end product, to linguistic competence--the knowledge a speaker has of a language, which enables him to communicate as he does.

Language and Thought

There are three major theories of language-thought development. These are the innate-cognitive theory, the linguistic-relativity hypothesis, and the rationalist theory. Proponents of each of these theories differ from each other in certain aspects while retaining the fundamental concepts.

Innate Cognitive Theory

To these theorists, non-linguistic cognitive skills and language skills are, or become, somehow interdependent; that is, the expansion of one becomes dependent on the expansion of the other. These theorists tend to be developmental in their approach; they are concerned with the order in which various abilities, including language and thinking, evolve.

Piaget, the leading theorist of this model, adopts the position that thought has its roots in action and in sensorimotor experiences; and that language becomes necessary to achieve an elaboration and refinement of this thought development. It becomes a necessary but not sufficient condition for the construction of logical operations. Language and thought are interdependent: ". . . linked in a genetic circle where each necessarily leans on the other..." (Piaget, 1967, p. 98).

Vygotsky in his verbal-thought theory, merges prelinguistic thought and pre-intellectual speech. A union of thought and word is basic to this theory. To him, words play a central part in the development

of thought.

Both Vygotsky and Piaget outline stages of development of thought and language. Piaget's model is of particular value to educators with respect to student learning abilities as they relate to curriculum content.

Linguistic Relativity Hypothesis

The idea that language structures thought provides the foundation for this hypothesis. While there is little convincing evidence to support this theory, the educational problems of the 1950's relating to social-class differences led some educators to accept and elaborate on it. Dialect differences among groups of people were considered indicators of limited intellectual capacity. This theory had a profound effect on education during the decade 1961-1971.

Rationalist Theory

This theory supports the view that children have an innate capacity to acquire language. To the rationalists, the rules of language used and understood by the speaker/listener are themselves part of the conceptual equipment the learner brings to the language-learning task.

The concept of universals in language and the establishment of criteria to distinguish biologically determined activity from culturally determined activity provide the basis and support for this theory.

Psycholinguistics

The merging of disciplines, particularly the science of linguistics and the study of psychology resulted in a new study, known as psycholinguistics. Most of the linguistic concepts previously outlined, as well as increasing

knowledge as to how language is learned and as to the relationship between language and thinking, were combined to make this new study. It is the culmination of all the information about language and language-learning known at this time. The psycholinguist studies language as it is produced and the characteristics of the person producing it. Grammar is considered to have three separate operations: phonological, semantic and syntactic. While each can be described using linguistics, the psycholinguist attempts to understand how each operation is learned and understood by the speaker/listener.

Of the language-thought theories, outlined above, the linguistic relativity hypothesis is in direct conflict with the others, which assume that language and thinking are directly related, inter-dependent and non-limiting.

SUMMARY OF LITERATURE

Normal Language Development

There is some evidence to support the fact that the phonological system is developing in infants as early as age 5 months.

Imitation by child and adult accounts for some initial language learning, but cannot account for the total syntactical development.

The development of the semantic system seems directly related to the development of the cognitive system.

Language learning is not a simple progression from imitation to comprehension to production, but an intricate cumulative process which is probably best described as cognitive based. Language development and cognitive development are interdependent.

Children come to school using all the basic patterns of English sentence structure, but have not learned certain specific syntactic rules which apply to specific words; that is, irregular forms of English. Linguistic maturity and chronological age are directly related.

While the home environment, in terms of language usage, is an important factor in language learning, social class and dialect differences are no longer considered restrictive to language/thinking development.

Deviant Language Development

The specific classifications of people considered to have deviant language development exhibit not merely "delayed" speech, but differences in sequence of acquisition of structures. The assumption previously held that delayed speech meant producing language identical to, and appropriate for, a younger child, seems to be erroneous. The linguistic performance of each group was consistent rather than random, but each person appeared to develop a unique set of rules for generating sentences. Qualitative as well as quantitative differences exist, and these differences are unique to the individual.

Among the above mentioned groups, comprehension of language is better than the ability to produce language.

Auditory memory deficits seem to be a factor in the deviant language patterns of some of the groups, such as aphasoids, hard-of-hearing and retarded.

Language and Reading

Children learning to read perform better when using context clues rather than lists of words.

Comprehension of instruction while learning is more important than the method of teaching reading.

There appears to be a direct relationship between syntactic structures used by children and competence in reading materials employing these structures. This is true whether dialect differences exist or not.

Basal readers do not employ syntactic structures used by most children, and tend to introduce patterns of sentence structure in a seemingly uncontrolled/random manner.

Children, when reading syntactic structures that are different from their own, tend to translate these structures in much the same way as if they were reading a foreign language.

The use of grammatical forms in reading which are different from the spoken grammatical form of the reader appears to have an adverse effect on comprehension.

Language and reading are directly related in comprehension of written material and the instructional process.

Formal Language and Learning

Repeated studies dealing with teaching a set of fixed rules relating to the structure and system of a language for whatever purpose, offer little evidence to support the value of such teaching.

Students younger than fourteen seem unable to grasp the concepts outlined in formal grammar. This would be consistent with the stages of cognitive development defined by Piaget.

Written expression, including punctuation and sentence structure,

improved when students proof read their writings; no improvement in written expression could be determined to be a direct result of formal grammar instruction.

The rationale held by the transformation-generative grammarians that man can and does generate infinite numbers of sentences which are easily differentiated by the speaker and listener as being acceptable or non-acceptable would support the view that not only is formal grammar teaching of little value, it is unnecessary.

SOME IMPLICATIONS OF RESEARCH

This study has provided an historical overview of language theories and a broad investigation of the research literature relating to language development. The purpose of this study was to identify those characteristics of language which are meaningful to educators.

Implications based on research will be presented in this section.

Certain of these implications will be theoretical, others will be practical. The practical implications will include general teaching suggestions applicable to any age group or subject area; and specific teaching suggestions, offering strategies appropriate to a designated age group and/or curriculum area.

The implications are listed in point form.

GENERAL IMPLICATIONS

Normal Language Development

1. Children initially learn language using adult models. Children imitate adult models and expand on the imitations. Adults imitate children's speech, and expand on these utterances. The expansion (elaboration) by adults is a key factor in language learning.

2. Children "practise" language when alone and with other adults and peers. This "practise" includes play on words, word games, symbiotic exchanges between child and others, and talking to self. Children learn the skills of language and communication through usage.

3. Parents do not typically reward, re-inforce or correct the language children use.

4. Stimulating home environments where a great deal of language is used have a direct, positive effect on the child's mastery of his language.

5. While most children have mastered all the basic syntactic structures by school age, the process of language learning is on-going. There is a direct relationship between chronological age and linguistic maturity.

6. Children understand more language than they produce. Understanding precedes production.

7. Children are typically exposed to language that is more complex than is their comprehension of it. This can be stimulating and motivating.

8. Language is a social phenomenon and is learned most effectively in group situations.

9. There is a continuous tendency for the child's language to move toward the speech norms of the adult community.

Language and Thinking

"The linguists' findings so far mesh very neatly with Piaget's description of young children's intellectual development" (Pines, 1966, p. 218).

1. Language growth and conceptual growth are concomitant.

2. Children first form mental images of things by manipulating these things and attaching names to them. Ideas result from experience, thus language growth is dependent on experience.

3. Language is concerned with ideas; it is the symbolization of ideas and the interpretation of those symbols.

4. Children verbalize aloud about events and objects as they perceive them. The objects, events and verbalizations are open to their examination. This inspection of language and experience can determine a mismatch between the language and the experience.

5. Children use language to extrapolate from experience; that is, to represent things which they have never experienced.

6. Children's early thinking is self-centered and faulty; inconsistencies of judgement are demonstrated in students of varying ages.

7. Abstract concepts are best learned when language and experience are presented simultaneously.

8. Concept learning, simple or complex, is a slow process. Children first acquire attributes of concepts; these attributes are synthesized into meaningful conceptual terms.

9. Children can and do use words in a normal and sensible manner, without fully grasping the concept behind it. Complete understanding of a concept is necessary for mastery of it.

Transformational-Generative Grammar

1. All languages incorporate procedures by which simple statements may be transformed. Abstract systems have been devised which describe structures used in speaking, but do not explain how a speaker produces sentences.

2. Young children create (produce) new sentences without any formal knowledge of grammar.

3. Sentences in any language can be determined acceptable or not-acceptable by the speaker/listener. This determination is made on the basis of phonological, syntactical and semantic components; it is not dependent on previous formal linguistic training.

4. Rules governing language are used and understood by all speakers of that language.

5. The speaker may use different words or word order to convey the same meaning.

Dialect Differences

1. Children learn the language as used by their adult models. There may by dialect differences demonstrated in the structure of languages. These dialect differences do not reflect intellectual differences.

2. Children using different forms of a language understand other forms of that language but may not produce them. On hearing another form, the child may translate it into his own dialect.

3. Attempts to teach another form of a language to children through use

of drill or formal lessons will be unsuccessful.

4. Comprehension may be negatively affected when the printed material is markedly different in sentence structure and vocabulary from the reader's language.

5. The ability to translate one form of spoken or printed language into another form of the same language is indicative of a higher intellectual function.

Deviant Language Development

1. School age children, whose language is markedly different from the language used by other children, reflect unique patterns of rule learning of their language.

2. These children are not using the same language structures as younger children.

3. These children will not "outgrow" their language patterns as they mature. These patterns will be habituated and serve as a foundation for continued language learning.

CLASSROOM IMPLICATIONS

Normal Language Development

Teachers must provide:

1. Opportunities for students to engage in meaningful dialogue with adults and peers.

2. Freedom and encouragement for students to experiment with language. This would include freedom to talk to oneself and to make "errors" in speaking.

3. Opportunities to hear interesting language models.

Transformational-Generative Grammar

1. Children come to school understanding and using the rules of their language. Teachers should make observations of the language children use to gain a clearer perspective of how language works.

2. Children come to school competent in their language skills; their performance in language may not be at the same level as their competence. Teachers must be prepared to help children develop their language skills, not aquire them.

3. "Teachers must recognize the distinction between conventions of "acceptability" and conventions of usage as eternal laws" (Thorn, 1974, p.23). The acceptable or unacceptable language distinction originated with the rigidly prescriptivist theory of the eighteenth century. These theorists attempted to apply Latin and Greek rules to English, supplemented by rules of personal preference. Conventions of usage allow for changes in language on an on-going basis. English is a living changing language.

4. Teachers cannot teach or impose rules of language on students. "A speaker can study his own language to discover the rules he is using " (Smith et al, 1970, p.156).

5. Teachers must convey to students that the function of the dictionary is to describe what is commonly spoken at the time and not to prescribe what is appropriate.

6. The language used by the teacher will serve as a model for the students.

> Since formal instruction in grammar seems to be an ineffective method of improving expression, one can conclude that pupils need many opportunities to grapple with their own thought in situations where they have someone to whom they wish to communicate successfully (Loban, 1963, p.88).

Dialect Differences

1. The myth that children with dialect differences are also intellectually deficient has been dissipated through research.

2. Teachers must fully accept the language of each child; acacceptance of language can be assumed to be equated with acceptance of the "self" in the child's perception.

3. Teachers should be prepared to develop in their students an awareness of differences among forms of speech. This could lead to a recognition of differences in the way different people speak and the way they speak for different purposes.

4. Awareness of these differences can be developed to the point where children will habitually adapt speech to suit different purposes and occasions.

5. The speech of all children can and should be enriched and extended in a variety of ways.

Language and Reading

1. Teachers may use any preferred method of teaching reading; the language of instruction must be appropriately congruent with the child's learning language for the method to be

successful.

2. The language experience approach, using the child's vocabulary and syntactic structures, is the most meaningful reading method for the child.

3. Comprehension of material is facilitated by using the language-experience approach in reading.

4. When the vocabulary and syntactic structures in print are different from the vocabulary and syntactic structures of the reader:
   a) the reader must translate the printed symbol into his own vocabulary and structure.
   b) comprehension is negatively affected.

The teacher must be aware of this additional linguistic cognitive process when using basal readers, literature from a former era (as Shakespeare), poetry (be it nursery rhymes or E. E. Cummings), and materials containing regional or dialect differences. These must be translated to be understood; when translation is incorrect or faulty, comprehension is limited.

Language and Thinking

1. There must be interaction between the language of the children and the language of the adult teachers at every stage of the development of language and thinking (Smith et al, 1970, p.116).

2. Teachers must be aware of the levels of instruction to increase language meaning. The first level is concerned with expansion of the size of the vocabulary; the second level considers the increase of in-depth understanding of major concepts. These levels may overlap in teaching.

3. Teachers must provide basic experiences of reality and varied concrete examples when teaching vocabulary expansion and concept development. These experiences must be combined with language which describes the attributes of the object or concepts being learned.

4. Teachers must aid the child in inter-relating newly acquired concepts with already existing knowledge.

5. When concepts are superficially learned in isolation and unrelated to reality, rote learning will result.

6. It is crucial that the child up to age 12 experience a wide range of problematic situations involving concrete operations. This forms the basis for the final stage of formal mental operations, that of abstract reasoning.

7. Manipulation of concrete materials in learning new concepts is appropriate and meaningful at every age/grade level.

Explanation and Enlargement of Language/Concept Learning

> A concept is an abstraction from objects, situations, or events of the attributes these phenomena have in common. The words we use symbolize or stand for those concepts (Wilkinson, 1971, p.81).

Most of what is taught in schools can be classified as concepts. Vygotsky refers to those concepts encountered in formal learning as 'non-spontaneous' concepts, in that they are not 'saturated with experience' (Vygotsky, 1962, ch.6).

> ... the development of non-spontaneous concepts must possess all the traits peculiar to child thought at each developmental level because these concepts are not simply acquired by rote but evolve with the aid of strenuous mental activity on the part of the child himself (Vygotsky, 1962, p.85).

These concepts are not saturated with experience, but must be built on experience.

"Direct teaching of concepts is impossible and fruitless" (Vygotsky, 1962, ch.6).

One of the ways in which teachers attempt to 'direct teach' a concept is by offering, in a reading or listening situation, the definition of a new concept. The use of words is then assumed to be sufficient "experience" with the concept to allow for mastery of it. A simple technique might be useful in demonstrating the difficulty with presenting definitions as a method of teaching a concept...

Purchase some mushrooms from a grocery store; as well, pick some mushrooms found growing wild. Mix both kinds of mushrooms in a container. Read the definitions of 'edible' and 'poisonous' mushrooms and on the basis of the definition, sort, cook and eat the edible mushrooms. Without previous experience and understanding of mushrooms this would be an impossible and dangerous task, and would, no doubt, lead to illness or

death for some if carried out as directed. It would be assumed that a person would refuse to perform the task until sufficient teaching had taken place; that is, until many kinds of mushrooms had been presented. These would then be used by the person teaching to demonstrate and discuss the various attributes of each kind of mushroom; to talk about the similarities and differences in the physical appearances of each kind. With enough experience and discussion, the definitions would then have meaning, and would be a useful tool to mentally 'hold' the concepts of poisonous and edible mushrooms for future reference.

A definition can never be an effective means of teaching a concept; it is useful only in that it provides a means of recalling a concept once it has been learned. Direct experience and language are the only means of learning concepts.

Piaget (1969) concurs with Vygotsky in the conviction that there is a direct relationship between the development of a concept and the level of thinking or stage of cognitive development a child has reached. Further, Piaget determined that a child could not be forced into a stage of developmental thinking before he was ready, nor would a child learn certain concepts, regardless of readiness, unless the opportunity (experiences, language) were present.

Piaget was not concerned with the educational implications of his theory; however, the writer shall attempt to relate certain educational concepts to cognitive developmental stages as outlined by Piaget.

On the one hand, the writer will trace briefly the development of the mathematical concepts of space, time and number from birth to age fourteen, when it is assumed they are fully understood. This will be done in an attempt to demonstrate the duration of time necessary to master concepts.

In addition, the writer will present certain educational concepts in the order in which they occur in the curriculum guides for the Province of Manitoba, Grades 1 & 2, and relate them to one stage of cognitive development as determined by Piaget.

It is assumed by the writer that many concepts, as outlined, are presented to a child before the child is developmentally ready to fully grasp the meaning. However, it is sometimes possible to provide experiences for a child which will enable him to understand certain attributes of a concept at a specific stage of development. Some suggestions will be offered which could be a useful tool in teaching one or two of these attributes.

Development of Concepts of Space, Time, Number

Stage I, Sensori-Motor Period (Birth to 2 Years):

Through interaction with the environment (experiences) and from the language used by the adults in his environment, a child learns about:

a) Space

-himself in space (up, down, over, under, away from);

-other people and objects in space (near, in, inside, around, on top of, underneath).

b) Time

-rhythm in daily life, such as meals, play, sleep, light (day), darkness (night);

-sequence, resulting from the rhythm.

c) Number

The child is aware of 1 nose, 2 eyes, 5 toes on 1 foot, 2 hands, 2 feet.

Up to this point the child is only aware of these attributes. He does not refer to these attributes in language terms, although he may respond appropriately to some verbal terms; nor does he fully comprehend these attributes, despite his experiences with them.

Stage II, Pre-operational Period (2 to 4 Years):

Through interaction with his environment, and from the language used by self and adults, a child learns the broad general concepts of:

a) Space

-himself in space, in that he can manipulate himself and his environment and move about freely, but is limited as to how high he can go into space without assistance (as jumping or swinging) and is aware of danger when he determines that he is a considerable distance from the ground, that is, when he is 'high up' in space. He is using terms of space, such as 'way high up' or 'way far down'.

b) Time

He is aware of such, and uses terms related to meal-time, bath-time, bed-time, snack-time, time to go out to play. Past has little meaning beyond yesterday'; and future means 'tomorrow' or 'soon'.

c) Number (Quantity)

The child can distinguish many objects from a few; he uses general terms such as "all", "lots", "more", "all gone", "none more"; he also uses precise terms, as "1 nose" or "2 eyes". When referring to objects that are numerous (such as stars in the sky or blades of grass), he may say there are "sixty-fourteen" or "lots of million." He can rote count, sometimes to 10.

Stage III, Pre-logical Thought (4 to 7 Years):

Through continued experiences, language of adults and peers and expanded language of self, the child at this age begins to form concepts of:

a) Spatial Relations

Other objects and people in his world are related to him spatially; these relations in space exist for him only as they relate to him in the concrete; thus, everything is measured as being 'near' him, 'far away' from him, 'beside' him , 'on top' of him . By the end of this period he is beginning to understand that he has a left and right side, and he can use this understanding to determine, in a limited way, the relationship of some things to him.

b) Time

This is still a personal concept, in that it is measured as it relates to him. Events are related to his day; thus, cookies take a short time to cook in that they can cook during his day; but peas take a long time to grow, in that they take more than one of his days. Sequence is more firmly established in that he knows dinner comes after breakfast, night follows day; and you eat dinner before you watch television or bathe. By age 7, a child can begin to read a clock, using hour and half- hour measurements. Past, present and future are still determined in relation to self. Anything that happened in the past is referred to as 'yesterday'; here and now is 'today'; and anything that will happen is 'tomorrow'.

c) Number

-he has beginning concepts of conservation of quantity as he can now fill a glass from a larger container of liquid; fill a cake or muffin tin with batter from a large bowl; and serve portions of food to others and self. By age 6 he establishes the concept of one-to-one correspondences, when he knows that he needs 2 boots, 2 shoes, 2 socks for 2 feet, or that each 1 person needs 1 fork to eat. This is the beginning of conservation of number.

Stage IV, Concrete Operational (7 to eleven Years):

Through continued experiences, and with the ability to understand and use increasing amounts of language, the child's understanding of concepts is increased.

During this period he begins to understand part-whole relationships, and classes of objects or things. He does not yet understand sub-classes.

a) Space

During this stage the child gradually learns that objects can be related spatially to other objects and not only to himself. By age eleven, he can project, in his thinking, that an object can be to the left or right of another object; or that it can be before or after another object.

He can accurately measure space with rulers, yardsticks and pedometers.

b) Time

The child gradually comes to a full understanding of past, present, and future. He can read a clock, and can determine to some extent amounts of time involved in performing certain activities. He is aware that it takes longer to eat dinner than it does to

brush one's teeth; and that he can plan how to use his time and the amounts of time he will need.

He understands second, minute, hour, day, night, week, month, and year, and uses the terms appropriately. He can use a calendar and a stop watch.

He can combine his understanding of time and space to determine distance; he can estimate how long it will take him to cross a street of a certain width, and whether or not he can do it before an approaching car arrives at that intersection. He can project somewhat in his thinking to a comprehension of distance which he may never have fully experienced, such as men going to the moon.

c) Number

When dealing with concrete objects, a child can classify (group according to similar attributes) and seriate (order in a systematic way according to size). The combination of the ability to classify and seriate results in the ability to deal with numbers, as both verbal and written symbols. When dealing with concrete objects a child can understand concepts of conservation of number (age 7), length (age 7), liquid quantity (age 7), substance (age 8), and area (age 10), recognizing equivalence despite appearance. With the aid of concrete materials, his thought is logical and reversible. These abilities to classify, seriate, manipulate numbers, conserve and think logically and reversibly result in the ability to perform mathematical operations with numbers, providing manipulatives are used as an aid to under-

standing. By age 7, a child can count meaningfully to twenty, and is capable of simple addition and subtraction. He can rote count to 100. By age 8, a child can count meaningfully to fifty and can add and subtract numbers to fifteen or twenty. By age 9, when he has achieved the ability to conserve in varying tasks, he can perform increasingly complex tasks in addition and subtraction; can understand and perform multiplication and division tasks and can begin to understand place value with respect to ones and tens. He can understand amounts of money as being equal, (that is, a dime is equal to 10 pennies); and can count meaningfully to two hundred or more. He can begin to understand simple fractions, such as one-half and one-third. Terms such as 'hundreds of thousands' or 'millions' merely denote quantities more than he can count, and have no precise meaning.

Stage V, Formal Operations (eleven to fourteen):

During this period a child becomes capable of abstract thinking. He can deal with hypotheses and propositions, and can establish and manipulate relations between things, when they are within the realm of his past experience and knowledge. When attempting to deal in an abstract way with totally new concepts, he initially requires concrete experiences.

a) Space

By this stage, the concept of space is fully understood. He can project, in his thinking, that a symbol can be to the left or right, before or after another symbol; for example, he can fully understand the relationship of number symbols with respect to 'before' and 'after' without using manipulative devises.

He can fully comprehend certain space/time concepts which are

represented only by a symbol. (For example, concepts of longitude and latitude as represented by a line on a map or globe).

He can comprehend measurement of space even when it deals with hundreds of thousands, or millions of miles.

b) Time

The concept of time is fully internalized in all aspects.

c) Number

He achieves the concept of sub-classes in conservation. By age twelve, he can fully comprehend fractions and percentage. He can understand and perform place value tasks dealing with hundreds and thousands, and gradually comes to understand sub-classes extending into hundreds of thousands. Provided that each new mathematical concept is presented using experience and language, and is related to and built on, previously learned concepts, he is capable of understanding and performing complex mathematical operations using written symbols.

The writer has traced the concepts of space, time and number from birth to age fourteen. The concepts of space and time were not fully understood and internalized until about age twelve to fourteen; the concept of number was understood to a limited extent by age 7, with full understanding of many complexities being achieved only by age fourteen. It usually takes about fourteen years to comprehend fully the concepts of space, time and number. At various stages, attributes of each are learned as separate concepts.

Presentation of Certain Educational Concepts As They Relate to Stage III of Cognitive Development.

The educational concepts discussed here are taken from the curriculum guides for the Province of Manitoba, Department of Education, Grades 1 & 2. These will deal with concepts included in the guides for language arts, science, and social studies. Mathematical concepts will be briefly referred to, as the concepts of space, time and number were dealt with in the previous section, and related to cognitive stages.

Stage III of Piaget's Stages of Cognitive Development was selected by the writer as it relates to the age at which a child traditionally enters school, i.e., age 5.

In this stage the child exhibits certain characteristics in his thinking which reflect his ability to cope with the concepts that are presented. Certain of these characteristics will be described so that the educational concepts, as outlined, may be related to the child's ability to understand them.

Stage III Intuitive Thought Period (age 4-7.)

Characteristics of Thinking.

1. Intuitive thinking which is thinking determined by a way of looking- by perceptions; it is based on the most obvious perceptual appearances.

2. Reversibility is not achieved; the child is still unable, in thought, to return to his starting point.

3. Notion of Causality is not internalized;, e.g., the child believes that the moon follows him around.

4. Spatial relations are defined in concrete terms based on relation to self.

5. Child is unable to extend two qualities to the same object at the same time; thus brother can be brother but not a boy; beads can be red or blue, but not wooden and red.

6. Child is unable to conserve; the permanent nature

of things is still not perceived; thus a lump of clay, when altered in shape, is considered to be altered in amount. Quantity is determined by visual perception, which results in faulty thinking.

7. Egocentric. The child is able to consider only one view of a situation, based on his perception.

8. Child thinks intuitively not logically, and thinking is always tied to concrete objects. Beginning of reasoning, but reasoning is faulty (Helmore, 1969, P.10).

Language Arts, Grades 1 & 2

Among the concepts presented are: the beginning sound of a word, the end sound of a word, word, the beginning letter of a word, the end letter of a word, initial consonants, final consonants, the letters of the alphabet, capital and small letters, consonants, vowels, long vowels, short vowels, sentence and paragraph. (Each underlined word represents a concept). Certain of these concepts will be discussed.

Children of this age have no way of auditorially determining the difference between a sound, sounds, and words. The concept of word, for example, has no satisfactory description as a unit of sound. "...in spite of much investigation, there is no fully acceptable, complete, and explicit definition of 'word' as a concept" (Falk, 1973, P.25). Yet a child is expected to comprehend a unit of sound as a 'word' and associate it with printed symbols. Further, he is expected to be able to determine the 'beginning sound' from a group of sounds (a word) and the 'end sound' from a group of sounds, despite the fact that, in verbal communication, "all sounds arrive at the ears at the same rate, with no discernible pauses between each word" (Falk, 1973, P.24).

Word, as a printed symbol, can be demonstrated by putting spaces before and after each word unit.

In addition, the beginning and end letter of a word can be demonstrated by somehow enlarging or adding colour to each to make it appear different visually. But unless a child understands the concept 'word',

and can associate his units with the printed unit, reading cannot take place.

One way to try to determine whether or not a child understands the concept 'word' is to have him put a coin or token in a dish every time he hears a word, or says a word. If he cannot do this fairly accurately, it is unwise to proceed with reading. Using the same technique, attempt to teach the child the concept by varying the speed of the words given from slow to fast, and by varying the lengths of pauses between words, from long to short to imperceptible. Once a child associates the auditory and visual units, he can begin reading.

Breaking up units of known words, such as his and his friends' names, can be one way of indicating that words can be further broken into sounds. Beginning and end sounds should not be taught to a child at this age for the same reasons given above, as well as for the reason that spatial relations at this age are related only to self. The notion that the abstract concept, 'word', has a beginning and end, first, and last or initial and final sound is beyond his comprehension. It can be demonstrated visually, and attempts can be made then to relate the visual to the auditory. This shoud be done slowly and carefully.

With respect to the term 'long vowel' and 'short vowel', there is no way to determine, either visually or auditorially, the longness or shortness of a vowel. In print, "a e i o u" looks the same each time. While there are subtle differences in the sounds, to say one is 'long' and one is 'short' is grossly inaccurate. The terms are incorrect, misleading and impossible to comprehend at this age. (It is the writer's opinion that because the terms are incorrect and misleading, they should not be presented or taught, as such, at any age.)

Social Studies, Grades 1 & 2

In social studies, the concepts of neighborhood, community, city, province and country are outlined. While it is possible to present these terms, it is impossible for a 5 to 7 year old to fully understand them. If, as described by Piaget, he cannot extend 2 qualities to the same object at the same time and if he determines all space in relation to himself, how can he conceive of neighborhood space as being part of community space and as being part of city, province and country space?

Science, Grades 1 & 2

In science, the concepts of plants, mammals, insects, and domestic animals are presented before some children have achieved the ability to classify; air, weather and earth are presented at a time when the child is still certain that the moon follows him around; and seasons can only be rote learned, as the concept of time is not internalized.

Mathematics, Grades 1 & 2

In mathematics, fractions, subtraction, multiplication, and division are presented long before the child becomes capable of reversible thought of conservation, and of complex classification including sub-classes.

All of the above in social studies, science, and math can only be achieved through rote learning, or presented as a variety of experiences from which the child can learn some of the attributes of the concepts. For example, fractions can be referred to repeatedly when cutting any objects into parts for distribution. Definitions can be given so that a child can recite that "to cut something in half is to cut it into two equal parts". A child may also see a picture of an apple cut in half, and call it "two halves". However, if given a candy, and directed to cut it and divide it among three people, he will usually perform the task, and

distribute the pieces saying: "one-half for you; one-half for you; and one-half for me." Thus, three halves, to the child, can equal a whole. While he has determined that fractions are parts, which is one attribute of fractions, he cannot master the concept until Stage V. It would seem more appropriate to teach the attribute of fractions, that is, that they are parts of something, rather than attempt to teach the precise concept of one-half or one-third at this stage.

In this section dealing with concepts the writer has attempted to demonstrate that mastery of a concept takes place over a long period, and is developed and achieved in five progessive stages. As well, the writer has attempted to demonstrate that many educational concepts are presented to a child before he is capable of understanding them. Certain of these concepts have attributes which may be taught and understood; others have no place in the curriculum until a much later stage or grade, if at all, as they cannot be demonstrated in any concrete or meaningful way, and therefore cannot be understood.

SPECIFIC PROCEDURAL IMPLICATIONS

Normal Language Development

1. Read stories and novels aloud to students. This is appropriate through Grade IX.

2. Word games are suitable at all levels. These should include games using homonyms, synonyms and antonyms at the grade IV to IX level.

3. Choral reading can be initiated in primary grades (I & II) and improved through Grade IX.

4. Groups discussions on a specific varied interesting topic should be permitted at all levels of teaching, and in all subject areas. These groups should be small with specific rules iterated prior to discussion.

5. Homework assignments can be given at all levels which

encourage / demand discussion at home or in the community.

6. Provide varied experiences and opportunities for experiences for every class. These could include field trips, arts, crafts, activities, cooking, carpentry and the like. During this time, the teacher must describe, compare, and classify objects and experiences as they occur.

7. Creative dramatics can be used for many subject areas and adapted to suit all ages.

8. Crossword puzzles, anagrams, and word search puzzles are appropriate for grade II and above using varying levels of difficulty.

9. Use of puppets motivates and necessitates language.

10. Scrapbooks incorporating pictures and descriptive words or poems are suitable for all grades.

11. Dictionaries and thesaures are available at all levels of difficulty and are essential for every classroom.

Language and Thinking

1. Arguments and debates are useful for encouraging thinking in speech. Arguments may be informal on an issue of importance to individuals or groups. Debates may range from informal, using a few simple rules; to formal, using appropriate procedures.

2. Jokes, riddles, puns and limericks stimulate thinking on the part of the listener or reader. This could include comedy recordings.

3. Students of all ages should be permitted to formulate rules and rationale for same. These could relate to games, classroom management and behaviour, playground activities, school bus or cafeteria.

4. Encourage critical thinking in older students (Grade VI and above) by having them develop commercials for T.V. or radio.

5. Panel-discussions, in a mock T.V. setting, can be a sounding board for issues relating to school, government, home, and community.

6. Plan strategies to develop specific kinds of thinking; incorporate these strategies into several areas of curriculum, as, for example:

A. Develop divergent thinking abilities through imaginative use of shape and form.

i) Reproduce a shape; make it meaningful by adding lines or colors.

ii) Construct a picture from punctuation marks.

iii) Use letters of alphabet to make a picture.

iv) Write descriptions or poems of shapes in nature.

v) Study shapes, angles and lines in geometry; interrelations of shapes in architecture.

vi) Discuss relation of shape to flight, machines, racing.

vii) Discuss boundaries of land relating to natural shapes.

viii) Study shapes of instruments, choreography, stage design. (Project Implode, 1971, p.23).

This could be used for divergent, convergent, and evaluative thinking; for creativity, planning, communication, forecasting, and decision making beginning in primary grades (I and II) and continuing through all levels of school.

7. Creative story-telling and/or writing should be encouraged at all levels.

8. Read aloud short mystery stories to the class, and leave out the ending. Have students solve the crime from clues in the story.

Language and Formal Grammar

Instruction

1. For students in grades VII, VIII, and IX, 'mad lib' games are entertaining, motivating and provide a basic understanding of some parts of speech. The games are devised by taking a short story and omitting certain nouns, adverbs, adjectives, verbs, and exclamations. The student is then asked to call out, on command, any noun, adjective, or other specific part of speech. These parts of speech are then inserted into appropriate places in the story, (i.e., a noun is substituted for a deleted noun). As the story has not been previously read by the student, the resulting substitutions comprise a 'nonsense story'.

2. Recordings by Victor Borge (R.C.A. Records) in which he uses vocal sounds for common punctuation marks are entertaining. These can be used to stimulate students to devise their own sound symbols. This would necessitate attending to punctuation in a sentence or paragraph.

3. Present students with paragraphs in which all punctuation is omitted. Have students work in groups to try and interpret the paragraph and supply appropriate punctuation. This is useful for grade V - IX.

4. Write sentences on long cards and cut the cards into two pieces. Half the cards are put in one envelope and half the cards are put into a second envelope. Have the students individually, or in groups, match the cards to form a complete sentence. This can be adapted for grades III to VII.

5. Using old formal prescriptive grammar exercises, have grade VI to IX students work in pairs to try to "correctly" underline words or fill in blanks. Some groups should work through the exercises by applying learned rules; others should work through using "intuitive" means. Compare the results of both groups.

6. Children should always 'edit' their own language, spoken and written. This can be done with partners or by using tape-recorders to self-edit.

Language and Reading

1. Any previous suggestions can be applied to reading material as well as to listening/speaking.

2. Levels of reading comprehension should be developed through categories of questions. These levels include:

    1. Recognition or literal comprehension: locating the information and recalling it.

    2. Translation or interpretive level: the reader, using his own words, accurately recounts a word, phrase of sentence found in the material.

    3. Inference or critical comprehension: seeing relationships between facts, events and ideas, looking for implications.

    4. Evaluation: the reader renders his own judgement on a particular aspect of something he read. This could include characters, events, author's style, or mood.

    5. Explanation or assimilation: the reader must be able to offer a rationale as to the "why" of a situation; this must be based on information inferred from the context.

6. Imagining or creative level: the reader discovers new relationships, principles, or ways of looking at things.

Questions relating to these levels must be presented to students to enable reading comprehension to fully develop. Students in grades 1 and 2 should be gradually led through the second level; students in grade 6 and following should be expected to deal with most or all of the levels.

Language and Math

1. Math is basically a language. The concepts of math are developed through experience and language. (See previous section, this chapter, under Development of Concepts of Space, Time and Number).

2. Mathematical understanding has roots in the child's earliest experiences. . . Mathematics exists only in the mind. It happens as the mind seeks to classify objects in the environment and impose order on them. It is created by each individual and can be applied to any situation. . . The rate of development is influenced considerably by the quality of experiences a child meets in his environment (Yardley- 1971, Ch. 2).

Language and Social Studies

1. Social studies deal mainly with mathematical concepts of time, space, and distance; as well, it includes a technical, specialized vocabulary. Terms from geography, political science, anthropology and history are basic to social studies.

2. Space and distance concepts may be developed initially by exploring the environment; this should begin in the classroom, extend to the school yard and neighborhood. Field trips involving transportation to greater distances should be planned.

3. Students in the school who have moved from other cities, provinces and countries should discuss their journey in relation to duration of time, mode of transportation, and distance from present locations.

4. Students of various ethnic origins should be encouraged to demonstrate clothing, rituals, and foods relative to their background.

5. Human resources from the community should be invited to share with the students their memories of childhood times and experiences. This could result in the students mentally spanning almost a century in time and thousands of miles in distance.

6. Visits to museums enable the students to look at artifacts from other eras. These should be related and compared to the equivalent artifects of today.

7. Teachers should assign questions to groups which encourage thinking, and relate living in former times to living in the present. Such questions can be relevant and motivating, as, for example:

   a) What did people do 100 years ago when their home caught fire?

   b) Describe a school day as it might have been for a child in 1776. Compare it with your school day.

Language and Science

1. Most of the concepts of science are observable and demonstrable. Language is essential in helping the students establish a relationship of ideas.

2. Most of the concepts outlined in school science curricula can be done with activities employing home-made, school-made or inexpensively purchased materials and equipment. If a concept cannot be physically demonstrated, no attempt should be made to teach it before a child has reached the Formal Operations Stage of Cognitive Development.

CONCLUSION

Based on the results of this study, several conclusions seemed warranted.

First, the development of language theories presents a logical progression of ideas utilizing existing information.

Second, it is a truism that language and thought develop in the same context of experience.

Third, implications for practical application drawn from research are numerous.

Fourth, educators do not apply what is already known from research.

RECOMMENDATIONS

The writer has attempted to trace the development of language theories and linguistic research to identify those characteristics which are relevant to the field of education. There are many topics in this study which

require additional investigation. These include:

1. Exploration of the stages of cognitive development outlined by Piaget as they relate to a child's readiness for learning at all stages.

2. Exploration of the stages of cognitive development outlined by Piaget as they relate to specific curriculum content at each grade level.

3. Research which concerns itself with how children:
   1. categorize social situations as school, home, playground.
   2. use language within a given context or social situation.

Considering the importance of language to learning, it is imperative that on-going research be supported and evaluated. With experimentation and further creative efforts in program development the task of helping students in all phases of learning could be lightened significantly.

> Up to this point we have been trying to explain and illustrate how we have begun to look at language in school, not as a subject to be taught and tested, but as an approach to learning (Rosen, 1969, p.119).

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