70-26,344

O'ROURKE, Joseph Patrick, 1920-
TOWARD A SCIENCE OF VOCABULARY DEVELOPMENT.

The Ohio State University, Ph.D., 1970
Language and Literature, general

University Microfilms, A XEROX Company , Ann Arbor, Michigan

TOWARD A SCIENCE
OF VOCABULARY DEVELOPMENT

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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The Ohio State University
1970

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ACKNOWLEDGMENTS

The writer respectfully expresses his gratitude to his adviser and mentor Dr. Edgar Dale. The writer is also grateful to Dr. I. Keith Tyler, Dr. Charlotte S. Huck, and Dr. Robert W. Wagner for their guidance.

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CHAPTER I

NATURE OF THE PROBLEM OF VOCABULARY DEVELOPMENT

We communicate in a variety of ways but mainly we communicate verbally, by language. Unlike a photograph, for example, which is representational, language is symbolic. Words do not look like the objects they represent. Words are not things but stand for things. Words are independent units of speech and writing. Bloomfield (1933, p. 178) calls words minimum free forms which "do not consist of lesser free forms." A word is irreducible, the basic unit of language.

Naming and language are in essence synonymous, reciprocal. One does not exist without the other. The importance of the word has been noted throughout human history. Man thinks with words. Berlo (1944) reminds us that "the major unit of thought is the unit of language." Unless we can name an object, a process, we may find it hard to internalize. It will be useful therefore, to examine the naming process, (the use of words) as it relates to vocabulary and language growth.

Vocabulary growth is not at the periphery of the student's life. It is central, focal. We are our words. Words both describe and generate experiences. Learning a new word often has a chain-reaction effect reminding the student of another word or situation, causing him to search for a new application. Thus a word may be not only the means

of describing an experience it may be, in Judd's words (1918, p. 178):

. . .a motive for seeking an idea. If the pupil is aroused by a word to look for further experiences to attach to it, then the word which is at first without meaning may be a very potent instrument of instruction.

Our words are constantly seeking new relationships, consciously and subconsciously. They have momentum.

Importance of Vocabulary

Vocabulary development is a vital part of each student's life. It affects his thoughts, actions, aspirations, and often his success. In general, success with words means success in many areas, particularly in academic achievement. In a world expanding fast in every field the need to expand and enrich students' vocabularies is compellingly apparent. William S. Gray (1938, p. 1) points out that vocabulary:

. . .is an essential means of interchanging ideas and of acquiring new experiences. . .Man's growth in ideas has always been accompanied by a corresponding expansion of his vocabulary.

In and out of school the world is often a world of words. Professionals and workers alike must be well informed. A successful farmer today must be a reader, keep up with business trends, know the needs of the consumer, understand the stockmarket as well as the science of agronomy.

The experiences of the farmer, the factory worker, the students are intimately related to the naming of those experiences. What a person speaks, hears, reads, writes, often what he visualizes and observes -- the whole sensorium of man -- is expressed in words. Dale (1969, p. 89) points out that words are the names we give to experiences. He further

describes "vocabulary as a key to concept development" and notes that "meaningful word-learning. . .is an excellent example of permanent learning in action." (p. 63)

Nila Banton Smith (1955, p. 440-46) considers word perception (word recognition) the most fundamental of the reading skills. Harris (1961, p. 25) points out that "the words children can use and understand give us a good insight into the development of their concepts and ideas." James Brown (1959, p. 80) says, "If our word supply is inadequate, our communication is of necessity inadequate too. . .In essence, word power is reading power."

Loban's (1963, p. 85) longitudinal study of 338 students followed from kindergarten through grade six showed a high correlation between general language ability and reading ability. He suggests that more work is needed in oral language instruction. (p. 88)

Strickland (1957, p. 132) notes the importance of oral language ability and suggests arranging classroom furniture to accommodate small groups to encourage children to talk more.

Carroll in his article "The Analysis of Reading Instruction: Perspectives from Psychology and Linguistics," National Society for the Study of Education, (1964, p. 342) stresses the importance of words in the reading process in terms of the various cues available to the reader within the framework of a hierarchy beginning with graphemes (letters) and proceeding to phonic cues (letter-sound correspondences), intra-word cues, and larger context clues. He suggests the implementation of set

to alert the beginning reader to the variety of word-clues, or confirmable "guesses" at his disposal. He notes that:

. . .the process of learning to read involves the building up in the learner of a 'set' to expect not only variety in the kinds of word recognition problems he will meet but also (and particularly) ambiguity in the cues available to him.

Skill in recognition, analysis, and use of words is important to the student at all levels and in all areas of the curriculum. Durrell (1956, p. 267) points out that:

. . .the intermediate grade child encounters an endless succession of words he has not read before. If he is to be successful in reading, he must be very rapid and accurate in word analysis.

Words may alter our conception of objects and ideas. Lloyd and Warfel (1956, p. 439) emphasize the significant role of words and language in our lives: "Our words stand for concepts that our people have developed. . .we see the world in the terms that our language permits." Likewise Benjamin Lee Whorf (1956) discusses in terms of his "theory of language relativity" (often called the Sapir-Whorf hypothesis) how our individual language influences our perspective -- the way we see things, the concepts we form of the universe.

But language development theories and linguistic treatises are not, in general, directly useful to the classroom teacher in terms of practical application. Laird (1969, p. 1204) notes that:

The problem of sentence structure is. . .complicated, and here modern linguistic study has not given the teacher as much help and direction as I could wish. In fact, some of the new insights have been unintentionally misleading.

The Problem

There is now no science of vocabulary development. There are no effective guidelines to help the teacher use scientific method in vocabulary instruction.

Dale (1969, p. 212) reminds us that:

We do not have a basic system for teaching vocabulary development. There is no systematic program which indicates when certain words -- their roots, prefixes, and suffixes -- are to be mastered.

Curriculum planners have made no concerted effort to present a workable, systematized approach to vocabulary development per se as a means of improving comprehension in all areas of the curriculum, particularly language arts skills.

The typical attitude toward vocabulary development is exemplified in asking students to learn lists of words (often unrelated in context or construction). Another technique is the teaching of words "when they come up," an unsystematic haphazard approach to vocabulary instruction.

The concept of "vocabulary development" deserves greater scope, a wider field of investigation and application than it now receives in the curriculum. Vocabulary instruction has typically been viewed in a narrow context, taught in an unstructured, incidental (or accidental) manner. Teachers are often inordinately concerned with the HOW and WHAT (the mechanics of vocabulary instruction), neglecting the WHY -- the principles at work in vocabulary and language development.

Purpose of the Study

The aim of this study was (1) to analyze key principles operating in language acquisition, (2) propose a theoretical framework, a structure

for the application of these key principles to effective vocabulary development, (3) describe a systematic, practical approach to vocabulary instruction as it relates to concept formation in language development. In constructing a basis for a science of vocabulary development the writer made a series of probes into the literature of educational and language theory to evaluate their relevance to vocabulary and language instruction in the classroom.

Methodology of the Study

A significant aspect of this study is the practical application of key principles to language development. To this purpose the writer analyzed key statements that could be construed as principles. (A principle for the purpose of this study is defined as a generalization that can be used as the foundation of certain predications about vocabulary acquisition.) This definition is based on English and English's definition of principle as "a generalization that is not sufficiently complete to make it acceptable as a scientific explanation but is useful as a guide to further study or to choice of action." English and English, (1959, p. 408)

In probing for principles applicable to vocabulary and language development, the writer investigated a wide field of related literature dealing with the physiological, psychological, environmental, and linguistic aspects of language acquisition and use, particularly in terms of their influence on concept formation and cognition.

Three main investigative procedures were used:

1. Analysis (critically examining appropriate statements for their potential application to vocabulary and language instruction)
2. Explication (explaining and interpreting statements and principles as they relate to effective vocabulary and language acquisition)
3. Application (proposing effective use of defined and developed principles in practical pedagogical situations)

In assimilating statements and principles appropriately applicable to vocabulary and language development, the writer has presented them within the framework of five chapters dealing with 1) Nature of the Problem of Vocabulary Development, 2) Physiological Aspects of Concept Formation in the Language System, 3) Concept Formation in the Language System, 4) A Classification-Concept Theory of Vocabulary and Language Development, and 5) A Systematic Design for Vocabulary Study.

Importance of Vocabulary

It is important for the teacher to understand that many of the problems he faces in the classroom are (1) communicative and (2) are rooted in language development.

In spite of the recent trend of educators to emphasize non-verbal means of learning (by no means to be gainsaid, for example, visual literacy is a significant aspect of communication and comprehension), nevertheless, it is worth remembering Max Müller's (1871, p. 73) aphorism: "Without speech no reason, without reason no speech."

Words are the units of speech, of language. Words are experience-namers, and our stock of words influences our view, our perception and conception of the world. The word fjord evokes rich images for a Norwegian. The word firth (basically the same word) is, in Whitehead's phrase "suffused with suggestiveness" for a Scot. Vocabulary development is a matter of seeing conceptual relationships, putting handles on objects and ideas so we can manipulate them effectively. Our ability to name things sharply influences the extent of our cognitive skills.

Language, and the components of language -- words, are basic to the learning process. Words, as mediating symbols enable the student to move from concrete to abstract thought. There is need for some hard thinking about the role of words, the place of vocabulary development in the perceptual and conceptual structure of the language learning. There is need to examine and evaluate the special relationship of vocabulary to comprehension, to critical listening, reading, observing, and thinking skills.

Before examining the relationship of vocabulary to cognition it will be useful to consider the language system in which the student uses words. The use of language is a shuttling process, a moving back and forth between two strata. First, we speak and write within the circumscription of a precedential, traditional linguistic system (grammar and literature). There are rules for speaking, and traditional literary and utilitarian forms of writing. Second, while conforming to the grammar (involving the use of certain forms of speech and writing on formal occasions), we also use a variety of personal, imaginative phrases, a collection of colloquial expressions for informal purposes.

How does the recognition of these two strata help the teacher? The distinction between these two strata has great implication for the teacher. In the classroom the second (colloquial stratum) is often neglected. The teacher needs to be sensitive to the fact that much variety and verve is added to the language on the colloquial, conversational level. The classroom can be a place for creative use of language. It is understood, of course, that the teacher will not operate at one level and slight the other. By effective instruction and example, he can help the student understand the necessity for conformation in language, the need for structure, for an agreed "standard" of speech and writing to insure clear communication in the society.

However, the teacher should not underrate the beneficial effects of using the language in a light and personal vein, that is, without undue restriction. Samuel Johnson, (1968, p. 239) in the Preface of his Dictionary reminds us of the important role of the colloquial, familiar tone in language:

. . . Sounds are too volatile and subtle for legal restraints; to enchain syllables and to lash the wind are equally the undertakings of pride, unwilling to measure its desires by its strength.

In general, teachers have neglected to provide rich vocabulary experiences at the colloquial level. Language form has taken precedence over language interaction. Language interaction can be started early. For example, the elementary teacher, using the language-experience approach to reading can promote interaction by encouraging conversation, setting an atmosphere in which children can share their experiences, talk about their friends, parents, homes, activities.

Meaningful but informal language activities might involve the use of metaphor, a figure of speech learned early (often unawaredly) by students. (He's an old crab. Keep a stiff upper lip. Don't split hairs. Foot the bill).

Parts of the body give the teacher an opportunity to point up the fact that students often use metaphors (direct comparisons). It is easy to list a number of metaphors related to the body, for example, won by a hair, browbeaten, shoulder the burden, elbow grease, fighting tooth and nail, chin up. The alert teacher sees the opportunity for imaginative vocabulary experiences at the colloquial level.

A girl may be a chick or the apple of her father's eye. Her father's car may be a lemon. Thus metaphor may move into slang, actually a jargon (Fowler, 1965, p. 315) that grows out of word play involving the renaming of things and actions, and the inventing of new words. Slang has notable qualities. G. K. Chesterton notes that "all slang is metaphor and all metaphor is poetry."

Slang is a part of language experience. It is a way of experimenting with language. Slang can be the basis for discussion of different kinds of jargon. It may lead to a closer look at dialect -- a local variety of language that may include peculiarities of pronunciation, vocabulary, and phrasing.

A discussion of jargon can lead to an examination of idiom -- expression native to the speakers of a given language. For example, It rains, is not idiomatic English. It is raining is the idiom.

Natural slang expressions used by students can be analyzed in terms of the strengths and weaknesses of slang. It might be noted that slang

may be useful and colorful. Many slang words and phrases are ephemeral, even though a few become established in the language, such as O.K. and getting down to brass tacks. Sports lingo (a form of jargon) steadily adds colorful words to the English vocabulary, for example, golf (bogey), football (reddogging), baseball, (blooper). Sandburg reminds us that slang is a language that "rolls up its sleeves and spits on its hands."

Therefore slang, a vivid part of living language, is an organic part of a broad system of language design, in terms of the conceptual structure of the student's language growth.

A systematic design for language growth includes within its structure rich, concrete experiences as the key factor in the development of oral and written expression. But the design also requires a teacher, sensitive to the psychological makeup of young students for whom the language is both a means of direct communication and a living, vibrant, imaginative experience. To the young child language is often a plaything, a source of pleasure from the sheer repetition of sounds ranging from babbling to the alliteration and assonance of children's verse.

Language Interactions

Teachers often provide rich language experiences. Children are encouraged to listen to poems and stories, hear records, tape recordings, and radio programs, see slides, filmstrips, and films, watch television, see and participate in skits and dramatizations. The teacher, however, must be aware that enjoyment, comprehension, and reaction may take place inwardly, covertly. Changed behavior is not always seen. Overt reaction is not a requirement of learning. In fact, covert interaction is often

practiced, in a variety of social situations, in non-verbal situations as in the case of a frown, a smile, a wink, a knowing exchange of glances. These signs indicate that the message has been received.

In vocabulary and language development a major role of the teacher is to provide both rich concrete experiences and the opportunities to name those experiences, whether or not the child apparently reacts to those experiences. It may be enough in the case of certain children to be in the presence of words.

The chief point in developing rich language experiences is to provide adequate opportunities for language interaction even though no apparent interaction is taking place.

With certain children (perhaps more than we realize) vocabulary and language growth may be endosmotic. They may learn from merely being surrounded by words. A child, therefore, may have covert knowledge of a word and not display that knowledge even when the opportunity presents itself. Reid (in Downing's "How Children Think About Reading" The Reading Teacher Volume 23, Dec. 1969, p. 223) points out that even though a child does not use a word, it does not mean that he does not know the word. Reid notes that the child may, for instance, understand it when someone else uses it. It would seem good educational practice, therefore, to encourage the use of many words through easy, informal talk in the home and in the classroom thus providing the opportunity for many children to hear and absorb words.

Rich language experiences come from talk and hearing talk but vital experiences also come from books. Children learn words when parents

and teachers read to them (a form of talk). The significance of "surrounding" children with words by reading aloud is brought out in Nancy Larrick's statement: (1960, pp. 3, 4)

. . . Many teachers report that at least half of their first graders show no sign of recognizing a single Mother Goose rhyme. Jack and Jill, Little Jack Horner, and Little Bo-Peep are complete strangers. . . They know Mickey Mouse and Donald Duck from cereal boxes, comic books, and television. . . In some ways, these children are less articulate than the ones who have been read to and who have talked about stories they know. . . Children who have heard stories and poems read aloud are quick to make comparisons and ask questions. They develop the habit of reaching out for new information.

Thus in addition to providing rich, concrete experiences we also encourage children to use words by setting them in a word-environment, surrounding them with concepts. Almy's (1967, p. 228) remark is apropos on this point:

. . . An environment that provides the children with many opportunities for varied sensory and motor experiences is essential. So, to, is the presence of people who talk with (not merely to or at) the child, people who read and write and who share these activities with children.

Thus it is not enough to read to or talk to the child. The experience must be enhanced by talking with the child about what has been read to him.

Early Rich Language Experiences

The theory and application of a systematic approach to vocabulary development encompasses the activities of the preschool child, the elementary, secondary, and college student in an uninterrupted continuum of vocabulary growth. But rich language experiences must come early.

The importance of rich preschool language experiences is borne out by many recent studies indicating that in the early years children are most sensitive to language stimuli. Lenneberg (1967, p. 142) noted for his studies on the biological nature of language development says,

. . .There is evidence that the primary acquisition of language is predicated upon a certain developmental stage which is quickly outgrown at the age of puberty.

Lenneberg's reference to both the biological and sociological aspects of vocabulary acquisition is also apt:

. . .assuming the existence of an adequate environment we have found strong suggestions that the appearance of language is primarily dependent upon the maturational development of states of language within the child. (p. 142)

In addition to Lenneberg's reference to the early years as the best time for language acquisition, Bloom's studies (1964, p. 72) also give import to the conception of adequate environment and early rich language experiences. Bloom says that:

. . .extreme environments can have far greater effects in the early years of development than they can in later years. That is, deprivation in the first four years of life can have far greater consequences than deprivation in the ten years from age 8 through age 17.

Methods of Vocabulary Development

In the past, as now, educators disagree on what methods are best for teaching and learning of vocabulary. Some favor learning words from context and others choose the discrete method. Thorndike (1934, p. 11) preferred the context method.

. . .When a pupil reads and learns the meaning of familiar words by context. . .there is reason to believe that the knowledge will be genuine and important.

Earlier W. G. Chambers (1904, p. 50) had written that:

. . .the commonest way and perhaps the best way to promote growth of context in words is to allow the child to infer the meaning from context.

But Gray (1938, p. 28) points out the weakness of depending entirely on getting the meaning of a word from context: "The fact is also recognized that pupils differ widely in their ability to acquire clear, accurate meanings from context." Unfortunately the context methodists, often fail to realize that the ability to get meaning from context clues requires an inferring ability closely allied to mental ability. Interpreting context clues is not always easy.

Heavy reliance on the context-clue method, of picking up the meaning of words, often results in casual or incidental learning of words with little or no provision for transfer. Gray (1938, p. 36) notes that "Much evidence has accumulated which supports those who question the adequacy of incidental methods of enlarging meaning vocabularies."

Smith's and Powers' experiment (1930, p. 451) involving psychology students (half of whom learned letters that represented words in sentences, while the others learned letters representing words by the discrete method) indicated that:

. . .The effect of discrete word practice is here shown to be much greater than that of sentence practice. The value of vocabulary list learning was 28 per cent greater than the value of sentence learning where the value of sentence learning is the number of words successfully translated from sentence dictation.

Henmon (1921, p. 452) points to an experimental study with three-hundred and fifty sophomores on the value of learning words by the

discrete method. One group studied the words per se, the other group learned the words incidentally in class. Both groups were given the Terman Vocabulary test, and the Thorndike Vocabulary Test. "The results indicated a decided advantage for the study of formal word list."

More recently, Quine (1960, p. 13) pointed out that:

. . .even the sophisticated learning of a new word is commonly a matter of learning it in context -- hence learning by example and analogy, the usage of sentences in which the word can occur.

Investigation of early experimentation in word-study methods, and more recent work done in the field, indicates that teachers should not exclusively choose one method over the other. No one method is best. The effective teacher has need of different methods for different occasions and for individual students.

Vocabulary As a Part of a Language System

Today discussions on the role of vocabulary are less concerned with treating the subject as a separate skill. It is generally viewed as part of the language system and as such is usually discussed within the framework of a reading program in the elementary grades or in the high school English class.

In general, educators agree on the importance of vocabulary to reading, most other academic skills, and social achievement. They note that the results of vocabulary tests correlate highly with those of mental development and reading ability. The size of a student's vocabulary is highly correlated with scores on mental tests. For example, Wechsler reports a correlation of .85 between scores on the 42 words that the subject is asked to define and scores on the entire scale.

As an index of language development vocabulary skills excel most other factors. Klare (1963) points out that vocabulary is the key variable in reading comprehension. He also notes that vocabulary is the most important part of most tests related to academic aptitude and achievement. Johnson (1965) notes that success in academic subject matter depends to a great extent on "the verbal associations that the student forms."

The verbal nature of most classroom work requires adequate word knowledge and language ability. Therefore information on the size of a student's vocabulary has been of interest to educators in the area of language development. Investigations on the number of words known by students have been made by several scholars in the field of vocabulary, for example, Horn (1925), Dolch (1936), and Rinsland (1945). McCarthy (1954) summarizes many of these studies. Many are also included in Dale's and Razik's (1963) Bibliography of Vocabulary Studies.

But the basic weakness of word lists such as Thorndike's and Dolch's is that they do not take into account semantic variation, the multiple meanings of many words. Studies typically point out that the average student enters school with a 2500-3000 vocabulary. By the end of the fourth grade he knows about 4000 words, and by the end of the sixth grade he knows about 8000 words. In general, backed by normal experiences, the rise in the number of words known is phenomenal. Hamlin (1944, p. 27) found that an "absolute curve for vocabulary from seven through fifteen years is so steep that it resembles a straight line."

Dale's long-term, in-depth study (The Words We Know: A National Inventory 1970) -- a 45,000 word list of students' knowledge of words by grade level, is a major contribution to the field of vocabulary development. It not only lists the score of a word at a given grade level, it also lists scores on multiple meanings of many words. The list provides guidance for writers on the difficulty level of various words, and can be used by the teacher as an index of word difficulty in a systematic program of vocabulary development.

One presumed difficulty with analysis of vocabulary and vocabulary instruction lies in the problem of what is meant by vocabulary. Attempts to clarify the meaning have resulted in classifications into speaking, listening, reading, writing, and understanding vocabularies. (Russell 1956, p. 122) Deighton (1960, p. 82) notes that each type of vocabulary "develops in its own way from a separate kind of experience, and. . . must therefore be studied and developed separately."

The writer hypothesizes that undue emphasis on separation of vocabulary into kinds is not, in general, helpful or altogether accurate in explaining the child's vocabulary growth. In regard to vocabulary acquisition and use there is need to take into account all of the student's senses and skills. We need to see the student's development in terms of its wholeness, as a unified growing process in which through speaking and listening, writing and reading, visualizing and observing he acquires an understanding and varied skills in the use of words.

Vocabulary acquisition and use needs to be viewed as an inter-related communicative system used by the student to develop all his

linguistic skills. Thus "speaking" or "reading" vocabularies are not discrete skills but dependent, interrelated organic parts of the student's communication system.

But to view the student's vocabulary development as an interrelated, interdependent system of language skills does not eliminate the importance of examining various aspects of vocabulary development. For example, we might want to know the relationship between the student's hearing of a word and his forming a true concept of the object or idea that the word represents. Duker's (1966) studies on listening have pointed up the importance of listening skills in the acquisition of concepts.

Nichols (1964, p. 57) also stresses the importance of listening:

. . .Of the four language arts -- reading, writing, speaking, and listening -- listening is quantitatively the most important by far. Forty-five per cent of the time we spend in verbal communication is spent listening.

Nichols further notes that experiments conducted at the university level revealed students' poor listening habits. After listening to a ten-minute lecture "the students answered only about half the questions correctly. Retests from two weeks to two months later showed about 25 per cent of the answers correct."

Whether the teacher emphasizes listening or perception, reading or writing, and whatever approach is used to teach or learn more about vocabulary, in the end the average classroom teacher is primarily concerned with teaching students ways to acquire meaning. McCullough (1958, p. 21) points out that "whether a direct approach to word study is superior to a casual approach. . .Both methods have value, and probably neither should be used to the exclusion of the other."

The chief reason for vocabulary study in the classroom is to learn the meaning of words and how to use them effectively. Postman and Conger (1954, p. 671) have pointed out that "seeing a word frequently is not helpful unless meaning is attached to the word." According to Watts (1947, p. 58) the procedure used or the amount of words taught, that is, the size of the student's vocabulary is not critical. He points out that it is not the vocabulary but the mind that needs to be extended. The writer, however suggests that vocabulary size is a critical factor in language development. Vocabulary development is concept development and the greater number of concepts we acquire the greater the number and variety of ideas we can understand and express. Expansion of vocabulary generally accompanies and expansion of thought.

But ineffective learning of words may result in mere verbalism. In recent years educators have tried to broaden the experiences that are productive of vocabulary growth. In the tradition of Rousseau, they have been concerned with the student's interests. Many students today learn a great number and variety of words through the teaching of children's literature in the elementary grades. Children's literature, trade books, and basal readers for example, present easy-to-read material in attractive form. In many schools traditional readers and spellers have been replaced by recently-written texts dealing with linguistic factors in language development. Huck (1968, p. 25) notes this approach: "Research in language development has emphasized linguistic patterns rather than size of vocabulary."

The writer, therefore, proposes that there is need to view vocabulary development in terms of broad experiences in which students expand

their vocabularies through rich experiences, wide reading, and imaginative instruction in linguistic patterns, and the origins, history and growth of language.

General Approaches to Vocabulary Development

In addition to reading, a variety of approaches to vocabulary study are in evidence, many of these techniques are a consequence of recent interest in linguistics. However, some approaches to vocabulary study in the classroom are a result of adverse criticism of narrow linguistic technique, often inapplicable in the classroom.

Regarding the unsuccessful application of linguistic study to language development, Laird (1969, p. 1201) says:

. . .So far as I have observed, structural linguistics is now in effect dead as an elementary and secondary classroom device in this country, except as it has been incorporated into transformational grammar.

Laird (p. 1203) also notes that as teachers and curriculum planners "we have done our least inspired promotion in the general field of language understanding." He suggests therefore that because reading and writing, "require better vocabularies. . .than most of our students command, "it is necessary for us to teach vocabulary. He suggests, furthermore, that:

. . .we shall get farther in the end with broader approaches to vocabulary, and unfortunately we have other approaches that have not, as yet, been much employed, for example, etymology. Probing into the origin and growth of words is so much fun that even the newspapers have taken it up, but curiously the schools have not as yet done much with it.

Some teachers, however, have broadened their conception of vocabulary instruction to include language origin and growth. Moir (1953,

p. 153) describes the interest of his English class when they traced the origin of Old English words found in literature. Mason (1965, p. 318) reports that his class made a practice of discussing new words heard on television.

Thompson (1958, p. 62) describes a vocabulary program as part of a reading course. Students vocabularies improved when they learned key prefixes and roots. Brown (1958) reports the success of students learning vocabulary by studying material presented on transparencies used with the overhead projector.

It is worth noting that whatever method is used to teach vocabulary one chief ingredient needed for success is a well-organized plan of procedure. The Gray and Holmes study (1938) comparing the direct with the incidental approach to vocabulary study showed decisive gains for students taught by the direct method. But the chief implications of the study for teachers today is that regardless of the method used, students need teacher guidance in word study.

A useful analysis of vocabulary instructional methods is presented by Deighton (1959). The author reports that many programs dealing with roots and affixes are inadequate and often misleading. He notes that suffixes such as ance, ence, ation, tude indicate a part of speech (a noun) but do not help the student with the meaning of the word. (p. 29)

In discussing the weaknesses of learning certain prefixes as having a single meaning, he notes that de (down) may also "indicate separation as in depart, or deprive. It may indicate reversal or undoing as in. . .debark, degloss." (p. 17) Actually his analysis here is not quite accurate and somewhat misleading in at least two

respects. First there is nothing to prevent the teacher from pointing out that the prefix de has more than one meaning, as de (down) in descend (literally climb down); de (away from) in depart (part from); and rather than reversal, the original meaning of de in debark is down (get down from the bark (ship)).

But Deighton also asks, "If a prefix may have any one of four distinct meanings, how can you determine which of the four it has in a particular unfamiliar word?" (p. 18) The problem of meaning here can hardly be any more difficult than the problem of multiple meanings of words such as bank, head, bay, etc., which the student learns to handle. In addition, by learning a key prefix such as pro (forward) the student can transfer this knowledge to many words such as proceed, propose, propel, project, etc.

In his analysis Deighton also includes a section (helpful to the teacher) on practical word analysis which deals for the most part with the teaching of roots and affixes with "invariant meaning."

As noted earlier many recent approaches to vocabulary instruction are centered on a broader examination of language -- linguistics. Fries (1952) describes words in terms of structure (or endings indicate nouns, en endings indicate verbs, and so on). Roberts (1956) points out that nouns, for example, are found in a noun position (as after a determiner (the), thus "the apple" "the desk." Words studied in this fashion are seen as part of syntactical structure. Structural linguistic technique also makes use of meaning in roots and affixes. For example, the word propel may be presented in terms of its component parts -- pro (forward) + pel (push), to push forward. Thus the structural linguistic approach

to vocabulary instruction uses context, word order, sentence patterns, structure words (such as conjunctions) and an analysis of word parts, and are in essence an integral part of the structural grammars described by scholars such as Sapir (Language, 1921) Bloomfield (Language, 1933), Fries (The Structure of English, 1952), and Hockett (A Course in Modern Linguistics, 1958). Helpful theories and descriptions of transformational grammar are presented by Chomsky (Syntactic Structures 1957). Using a transformational-generative approach to vocabulary study one can "generate" the word washday from the day we wash clothes, or the word leafletting from the process of distributing leaflets.

Hymes (1967) has pointed out the ability of young children to use the parts of speech with skill in speaking the idiom. Brown (1957) notes that definitions of parts of speech help children more than adults, perhaps because the definitions used for children describe the simple, concrete objects and ideas generally used as examples in children's classroom language activities and avoid abstract definitions and meanings often encountered by adults in their language experiences.

But Berko (1958, p. 150) points out some of the weaknesses in children's acquisition of language patterns. He notes that many young children do not easily learn morphological skills associated with inflection, for example, the addition of endings to form plurals (s, es, en) or deriving new words by adding suffixes (act, actor; fear, fearless). Sapir (1921) has also written about the use of inflection as one of the semantic clues the student gets in reading, for example, the er and or

in worker and actor indicate "agent," the suffixes ette, ule, ling indicate "little" (kitchenette, molecule, sapling).

However, too little has been done to isolate the variables involved in vocabulary and language acquisition. It is not clear, for example, to what extent diagnostic testing affects the student's learning of vocabulary. The field of linguistic study offers fresh approaches to the study of language. Students' knowledge of words and language patterns can be tested in terms of word structure and word order in addition to meaning. Carroll (1956, p. 188) suggests cloze technique (described below) both as a teaching and diagnostic testing technique. Here the student must learn to look for structural and contextual clues.

The implication for teachers in terms of the importance of pronunciation and hearing in language acquisition is pointed up by recent research on the language development of deaf children. Quigley (1969, p. 116) reports using "cloze techniques with deaf subjects by deleting every fifth word from selected reading passages and requiring the subjects to provide the missing words." He also reports that the deaf subjects were significantly inferior to a control group with normal hearing in their response to the task on semantic and syntactic measures."

Summary

The opinions and studies noted above suggest at least five major factors to consider in vocabulary and language development:

- 1) Rich language experiences must come early in the child's development.

- 2) Students can learn words through direct teaching or from contextual clues in reading. Both methods are useful.
- 3) Vocabulary instruction must take into account the speaking, listening, reading, writing, visualizing and observing aspects of word study.
- 4) Student interest and ultimately motivation is a significant factor governing the success of a vocabulary program. There is need for diagnostic testing to assess individual capacity, and the testing must be followed up by goal-directed programs based on each diagnosis.
- 5) The teacher and the techniques he uses are major variables in the student's attitude toward and understanding of the role of vocabulary in his life in and out of school.
- 6) Vocabulary instruction must be seen as an integral part of language development and linguistic study as it relates to conceptual development. But in linguistic study we need to remember that the aim of language teaching is to encourage the student to use language and not merely to learn about the language itself.
- 7) Vocabulary development must be seen as an organic part of a language system involving speaking and listening, reading and writing, visualizing and observing.

CHAPTER II

PHYSIOLOGICAL ASPECTS OF CONCEPT FORMATION IN THE LANGUAGE SYSTEM

The Naming Process: Historical Background

A key question relating to vocabulary and language development is What is the significance of the naming process (labeling) in language acquisition? Naming has concerned man from earliest times. Lucretius in De Rerum Natura speaks of man's inherent need to name things (lines 1027, 1086). Borst (1947, p. 439) notes Aristotle's conception of the difference between the animal's language -- phone (sound) and man's language -- logos (speech, discourse). Marx (1967) discusses Aristotle's idea that a sound is not yet a word. It only becomes a word when it is used by man as a sign.

Men of every age have felt the need and significance of words, of naming experiences. History is a recording of man's educational aim to preserve his culture. The vehicle by which he accomplishes cultural transmission is language -- verbal and written symbols, in short, by words.

The ancients were fascinated with the power of words. Certain words had magic powers. Some tribes never mentioned the names of the Deity. Kramer (1959, p. 5) tells us that "textbooks" at Sumer contained "long lists of names of trees and reeds; of all sorts of animals,

including birds; of countries, cities, and villages; of stones and minerals." In addition he refers to the existence of a number of "long lists of substantive complexes and verbal forms, indicating a highly sophisticated grammatical approach." He also notes that the oldest "dictionaries" known to man were written by Sumerian professors.

The ability to use words effectively and correctly has concerned man throughout history. The cultivation of correct speech for communication was a prime concern of the ancients. Speech, of course, included proper gesture and intonation.

A chief purpose of effective speech, or eloquence, was to persuade or dissuade. Through the use of speech, the effective use of words, man could express, reason, examine, discriminate between good and bad. Thus in one age we find Plato saying, "Imitate the diction of the good man." (Ulich, p. 34), and in another age the Christian St. Augustine writing "Eloquence is necessary to persuade to business and to express one's thoughts to advantage," Confessions, p. 142).

Ancient and medieval educators understood the importance of the right word in the right place. The rhetoricians encouraged imitation. Broudy (1963, p. 15) writes that "The rhetoricians regarded teaching pretty much as systematized imitation."

In Roman education the penchant for imitation of models began with the child learning to read in school. He "imitated" the letter A as he followed it in the grooves cut out for him. He learned the alphabet systematically while he practiced writing. He imitated the master as he learned syllables such as BA, BI, BO. Later he learned

isolated words which he could pronounce easily because he knew the value of each letter and syllable. In short, the imitative procedure was literatim, syllabatim, verbatim.

Imitation of models, therefore, was an integral part of the ancients' education. Horace's advice to aspiring Roman poets was "Thumb the Greek models by day and by night." A Roman boy attending the grammaticus was expected to memorize the placement of words in model sentences, often aphorisms.

Quintilian in his Institutio Oratoria speaking of the Roman pupil says, "He should be made to write aphorisms." Earlier the Sumerians had also prized the memorization of aphorisms as a part of their educational system.

From ancient times until today a distinct thread of methodological continuity seems to run through language instruction and learning. Models are a significant aspect of today's educational theory. Of course, the word model is currently often synonymous with theory, yet the basic meaning of the word still prevails from Latin modus (manner, form). Kaplan (1964, p. 258) writes: "One of the meanings of the term model is 'something eminently worthy of imitation, an exemplar or ideal," (not far removed from the idea of the model-concept of the rhetoricians).

After discussing models as theories, Kaplan points up the significance of the word as often being an organic part of a model. He remarks that:

. . .models have been defined as 'scientific metaphors.' A metaphor, like an aphorism, condenses in a phrase a significant similarity. When the poet writes, 'the morn, in russet mantle

clad, walks o'er the dew of yon high eastern hill', he evokes awareness of a real resemblance, and such awareness may be made to serve the purpose of science.

Kaplan further emphasizes the role of the word as a model by noting that "The scientist recognizes similarities that have previously escaped us, and systematizes them. Electricity exhibits a 'flow', there is a 'current,' exerting a certain pressure (the voltage)." It would appear that analogies, metaphors (actually word comparisons) are "an essential part of theories." (p. 265)

The concept of model, may be viewed in the narrow sense of a likeness to be imitated, a clear exemplar to follow, or in the broad sense of a construct, really a combination of single exemplars seen as a unit used to clarify ideas. But whether dealing with the narrow or broad meaning of model, the imitative factor involved in the use of the model has significant implication for vocabulary and language development. For example, the imitative factor plays an important role in early speech acquisition.

The Naming Process: Biological Background

To broaden the scope and understanding of vocabulary development the writer hypothesizes a conceptual framework for vocabulary growth which includes viewing vocabulary development as an integral part of a language acquisition system. The writer uses system in the Greek sense of the word systema, from sys (together) + histanai (to place). Thus system here has the meaning of assemblage -- placing things together, uniting them by some form of interaction or interdependence, which results in an organized, organic whole.

Educators generally discuss learning problems as they relate to behavior. It will be useful, therefore, to examine the language acquisition problem in terms of behavior.

A key question in an examination of behavior in language acquisition might be: Why is man the only speaking creature? Answers to this question would seem to lie in the physical makeup of man, some physiological differentiation between man and other animals. Therefore, any investigation dealing with the child's behavior in learning language ought to include an examination of his physiological nature of the "child-speaking" we will also be concerned with learning -- the behavior of the child both as a cause and result of speech. Lenneberg (1967, p. 3) reminds us that:

. . .a biological investigation of language must not only study the organism that speaks but must also investigate the behavior itself - - language in much the same way the zoologist who studies the badger must study its physique together with its habits in order to give a complete picture of that animal.

Meaningful vocabulary building is concept building. Through speech (and hearing) concepts are named, internalized, and transmitted. Of course, not all concepts are experienced through words, but most of our concepts are realized through the naming process. The behavior of naming is integrally wound up in the speech mechanism of the child in a reciprocal cause-effect relationship. It is a case of structure and function acting as interdependent agents. Uniquely, man uses language (as no other animal does), and as a result proceeds from the concrete to the abstract as no other animal does.

An interdependent combination of tissues, skeletal and nervous systems result in man, the speaking animal. Coghill (1929) showed that the growth of the nervous system is directly correlated with the emergence of behavior. He concluded that behavior in animals was an integrated whole "involving the entire animal from the start." The idea of an "integrated primordial whole" serves as a model for man born with potential speech apparatus. Lenneberg notes that certain types of behavior are specific to a species, but other types may be the result of plasticity, that is, a result of environmental circumstances (a significant point in language development). Lenneberg says that:

The problems of species-specificity and plasticity of behavior are particularly relevant to investigations of speech and language because. . .there is an obvious degree of plasticity that accounts for divergences between modern natural languages.

Implications for vocabulary and language growth lie in the fact that although we cannot alter species-specificity--the biological aspect of speech acquisition, we can in Dewey's phrase manipulate the educational environment. Lenneberg also notes that "all of life is dependent upon environment and may be modified by it."

If we admit genetic foundations of behavior, as implied by Hall (1951, p. 304), the characteristics of speech are "programmed into the individual." Lenneberg fortifies this concept by noting that studies demonstrate that genetic mechanisms definitely play a role in the development of an individual's behavior "that is, each unique behavior repertoire." A scientific approach to vocabulary and language development encompasses an awareness of the significant aspect of man's unique

repertoire (speech), a behavioral trait inextricably bound to environment, that is, experience. Lenneberg gives us a working principle:

Knowledge of structure alone cannot lead to exact inferences of behavior. . .but once behavior patterns are known, we can understand and explain by hindsight certain specializations of morphology.

Thus the more we know about the biological and behavioral complexes of the child the better we can propose goal-directed plans, and clear instructional objectives. Cronbach (1963, p. 52) reminds us that "we phrase educational problems in terms of behavior." Thus an understanding of the basis of behavior rooted in biological and psychological mechanisms, is central to sound pedagogical practice.

Speech, of course, is dependent on the morphology, the evolutionary, anatomical development of the vocal organs. Kaplan (1960) presents a thorough discussion of the speech organs. Lenneberg points out the biological influence by noting that man's face possesses certain characteristics that influence speech sounds. He notes that the spider monkey's musculature in the corner of its mouth is absent in more primitive types, and that "the complexity, size, and number of muscles originating particularly in the corner of the mouth greatly facilitates oral motility in man." (p. 37)

The musculature affords the build up and sudden release of air pressure which enables us to use, for example, labial stops such as (p and b) -- the earliest sounds that the child produces. This suggests a hierarchy of speech sounds in terms of first and last, easy and difficult sound to learn. Interestingly, Émile Benveniste, quoting Jakobson,

notes that the reversal is true in the case of aphasics, who first lose the last sound that they learned as a child. Beneviste says:

On en trouve une illustration remarquable dans l'analyse, donnée par R. Jakobson, de l'acquisition et de la perte des sons du langage chez l'enfant et chez l'aphasique respectivement: les sons acquis en dernier par l'enfant sont les premiers à disparaître chez l'aphasique, and ceux que l'aphasique perd en dernier sont ceux que l'enfant articule en premier, l'ordre de disparition étant inverse de celui de l'acquisition.

It is apparent, therefore, that language is an intricate physiological process. For example, the child is capable of biological adaptations that allow him to sustain speech while breathing. Lenneberg (p. 118) suggests that "a rhythm exists in speech which serves as an organizing principle and perhaps a timing device for articulation." Linguists using cathode-ray screens have been able to see these rhythmic, linking speech signals. It is useful to point out, incidentally, that in contrast to the concept of closely-linked speech sounds the ancient grammarians viewed language in terms of discrete phonetic units, leading to the invention and use of alphabetic script.

Behavior in the Language System

An effective, systematic vocabulary and language development program will encompass objectives that involve adequate knowledge of and attention to the biological, as well as the acoustical and phonological, aspects of language acquisition and growth. Such a program would involve the teacher's awareness of the child's speech as behavior. It would also involve the general understanding that language is founded in the anatomy, physiology, and environment (experience) of the child who

represents a unique specific function of the species -- an organism with the ability to communicate at the concrete and abstract level through speech.

A physiological basis for language acquisition finds support in the fact that most children begin to speak between a year and a half and two years of age. Lenneberg suggests that no systematic training takes place at a given time. The answer may well be primarily genetic. The child undergoes relevant changes that result in speech. However, environmental innovations also occur. Lenneberg, however, notes that the "changes of the social environment are to a great extent in response to changes in the child's abilities and behavior." (p. 125)

Included in the genetic environmental concept of speech acquisition is the need-hypothesis, that the child will begin to speak when he feels the need. The need-hypothesis, however, seems to be dismantled in studies by Hess (1962) and Lorenz (1958) dealing with maturation, and by Lenneberg's statement that "the needs that arise by eighteen months and cause language to develop are primarily due to maturational processes within the individual," (p. 125). Lenneberg further notes that numerous motor patterns occur spontaneously (or through stimulation) in embryos long before the animal is ready to make use of such behavior.

At six months the child's babbling resembles one-syllable utterances. At eight months reduplication is more frequent and intonation patterns are distinct. By the tenth month some vocalizations are sound-play, such as gurgling. Lenneberg points out that at this time the child appears to want to imitate "but the imitations are never quite successful." By eighteen months some babblings have an intonation

pattern, but there is no attempt to communicate information, (and what is a critical point in the language acquisition) the child does not encounter frustration for not being understood, that is, contrary to later pedagogical habits, the child is not "punished" (for example, derided) for ineffective attempts to master language skills.

It would seem, therefore, that the child at the onset of speech has within his makeup great potentialities of speech behavior which emerge in the maturational process aided by an encouraging environment. Lewis (1957, p. 60) points out that the child will thrive in language "if he is allowed to grow freely and is encouraged, by a favorable social environment. . .".

Observation of the child's early attempts to acquire speech has significant implication for educators involved in language development procedures. Hymes (1967, p. 130) suggests that the manner in which the child is taught or learns is a key to continued success in language skill. He notes that it is important to let the child experiment with sounds and words, allow him to make more use of this seemingly natural ability he has to learn language. Hymes further points out that parents teaching children to speak do three important things often neglected in later language development in the schools: "We take our time. . let children experiment. . .set an example."

In terms of developing vocabulary and language skills, the concept of pleasure in language looms large. The child needs an environment that allows him to create, to play with words. The young child appears to babble for the fun of it. Babbling soon changes to sounds indicative of comfort or discomfort. Lewis (1959, p. 42) stresses the importance

of play in language development: "The child is making sounds for the pleasure of making them -- playing with sounds"

Language Potential in the Child

Why should educators be concerned with the biological function of language acquisition? What are the implications for language development and instruction? Lack of general understanding of the physiological nature of language learning is potentially responsible for the misconception that a poor environment automatically results in poor language ability. Actually, the role of environment in learning is no more clear than is the role of genetics. Both are significant. But the implication has often been that an early inadequate environment causes inadequacy in language skills and as such can be used as false justification for inadequate language programs. That is, the expectancy of teachers of deprived children might be too low and the language program, therefore, inadequate.

Recent studies have shown that an inadequate environment need not efface the child's innate potential. Although a rich social environment can enrich the child's language skills through added stimuli nevertheless, as Lenneberg points out, language potentialities do develop regularly in spite of certain environmental deprivations (but they are nevertheless enhanced by a rich environment.)

A study by LaCivita, Kean, and Yamamoto (1966, p. 73) suggests that "the mechanics of word association and the acquisition of grammar may function similarly for all children regardless of social class." The socio-economic background of children does not prevent their learning of grammatical and syntactical language patterns. Frazier (1963)

noted that children from less favored backgrounds are "not as verbally destitute" as educators once thought.

The implication for instruction here is that despite environmental background the child has great language potentiality, and often skill, which need to be drawn out. The child often lives up to the teacher's expectation, as has been inferred from the "Pygmalion" experiment.

This is not to say that the environment does not influence speech habits either by denying or providing rich experiences. Rather the implication is that (except for physically handicapped cases) the basic physiological nature of language acquisition and skill provides the teacher with potentially capable children at all levels of the socio-economic scale. In working with children in deprived areas our sights are often too low.

We also need to raise our sights in regard to deprivations other than economic. For example, our expectations of what deaf children can accomplish in speech acquisition are too low. Fry (1966) working with the development of the phonological system in the normal and deaf child, indicates that the speech skills of British hard of hearing children are superior to the skills of deaf American children. He attributes this to the fact that, unlike American hard of hearing children who are given hearing aids and sound training sometime after four years of age, the British children are provided with hearing aids, earlier -- at age two, and are also given intensive sound training long before starting school. The expectation is greater, thus the performance is greater.

Conflict of Language Theories

In general, the teacher in the classroom may find value in the direct

application of theories of language acquisition or the inner working of language whether its prime source is in physiology, sociology, or psycholinguistic disciplines. Some language theorists such as Roe and Simpson (1958) believe in the continuity theory of language development, namely that in the evolutionary process of natural selection man's form of communication, his language, his vocalization, ultimately developed from primitive animalistic forms of communication.

There are, however, some theorists who propose a discontinuity theory (Lenneberg's phrase) to explain language origin and development. Lenneberg (p. 237) notes that "animal communication is a discontinuous affair and logical commonalities among communication systems are not necessarily indicators of a common biological origin." For example, vocalization among animals (including man) does not indicate a common origin of communication technique. Lenneberg points out that "the noise-making aspect of language. . . is only one incidental feature of our form of communication (the deaf have language without noise-receiving or making)."

The pedagogical implications of a theory of language origin are not yet clear, but as noted previously, educational problems are phrased in terms of behavior, and speech (language skill) is behavior. The origins of language, the genetic and environmental aspects of language, the antecedents of language may provide clues to the improvement and production of language -- the prime instrument of abstract thought, of conceptualization.

Therefore, there is some value in the investigation of the origin and operation of our communication system (at least as far as instruction

is concerned). Our ultimate aim is greater knowledge of the language system's features, the operational design of the language system as it applies, not chiefly to the mechanism itself, but to resulting behavior.

Relationship Between Language and Thought

The origins of language acquisition and the relationship of language to cognition evoke consideration of conceptual thought. For example, does language precede thought or does thought precede language? What is the relationship between thought and language, between language and concept formation? Koehler (1952, p. 202) indicates that a prerequisite of language is the existence of concepts (un-named thoughts). According to Koehler an analogy to the existence of concept preceding language in man is found in bees and birds. The "language" of bees and studies of bird navigation indicate the existence of spatial concepts, un-named "thoughts." The essence of such concepts in man is exemplified through his ability to attach symbols (names) to his concepts.

In man the process of naming serves many obvious purposes such as the expression, or recording of thought. One key purpose of naming may be related to cause and effect. Young children soon become aware of the effect of their vocalizations, gurgling, babbling, whimpering, crying. They learn the consequences of these noises. The consequences are often rewarding -- fondling, more attention, parental reaction.

If such a law of effect exists in the infant's and young child's vocalizations, it would be in concordance with Bruner's (1963, p. 34) description of the preoperational-stage child whose acts are governed by intuitive regulations, presumably based on the concept of consequence, involving the making of connections between past experience and present

action. Verbalization at the preoperational stage reflects cognitive functioning (mental operations) in the child that lead to higher order concepts in the second and third stage of intellectual development.

However, the three stages of intellectual development (preoperational, operation, formal) described by Piaget are not in reality discrete levels unrelated to one another. Much learning is sequential, one experience being built on another. Ausubel (1968, p. 542) reminds us that:

Despite J. Piaget's assertions to the contrary, the weight of evidence points to the conclusion that some kind of thought processes, logical operations, and problem solving strategies are employed at all age levels, differing principally in a degree or complexity.

Thus a thread of continuity and replication exists in the language-concept formative design. The shuttling process between concreteness and abstraction described by Dale (1970, p. 120) with respect to the cone of experience, serves here as a useful model for language concept development which involves "varying degrees of direct, iconic, and symbolic experiences in a continuous shuttling back and forth from the relatively abstract experience to the primarily physical participation." In addition, Cronbach (1963, p. 329) notes that "a person never leaves the early stages completely. The stranger a problem is, the more he must drop back to the primitive performance and work his way toward understanding."

The early stage of language learning, therefore, is critical in terms of how successful the next stage will be. Bruner suggests that the success of one stage of development depends to a great extent on its predecessor. Thus the significance of early rich experiences. The

implications here for parental actions and attitudes are great. Providing a rich experiential background, helping the child organize objects and names to map his sensory impressions, are crucial for imprinting desired patterns, and attitudes.

Bromwich (1969), p. 741) points out "the increasing realization that the child's experiences before age six greatly influence later achievement and performance." This realization is doubly significant when viewed in relation to the current concept that intelligence is not merely an innate gift but is a process of development.

The necessary mutual, trusting, relationship between the parent and the language-learning child is brought out by Vygotsky (1962, p. 31) who says:

The child's conquest of speech occurs through a constant interaction of inner dispositions prompting the child to speech and external conditions — i.e., the speech of people around him — which provide both stimulation and material for the realization of these dispositions.

But the people around the child must provide not only a model for speech but must also provide a nonfrustrating atmosphere of trial and error, a wide field for experimenting with language. Dewey (1932, p. 368) reminds us of the "importance of primitive unlearned instincts of exploring, experimentation, and 'trying on.'" Thus the kind of experience that parent and teacher offer the child is critical to effective language growth. Much of the child's language experience should be experience in the root sense of the word experiri (to try out), initiating in perception and terminating in conception (the interrelating of perceptions). Dewey reminds us that "the measure of the value of an experience

lies in the perception of relationships or continuities to which it leads up." (p. 164)

Our aim is to provide the child with language experiences in terms of ultimate concepts rather than percepts, which would be mere verbalism. Language concepts are best learned in structures, for example, in phrasal or sentence form, surrounded by and impinging upon other concepts. Words learned in isolation, lacking connections, are not likely to result in ideas or in the transfer of ideas. The need for structure, the ordering and relating of concepts is pointed up by Bruner (1963, p. 8): "Having grasped the subtle structure of a sentence, the child very rapidly learns to generate many other sentences based on this model. . ." Further, Vygotsky (1962, p. 51) points out that "the speech structures mastered by the child become the basic structures of his thinking."

Thus concepts related through a variety of structure are internalized and available for use at will. Structured conceptual learning as it related to vocabulary and language is basic to cognitive development. Language development (concept development) is basic to intellectual growth and a fundamental prerequisite of the higher mental processes. Vygotsky also notes that "the child's intellectual growth is contingent on his mastering the social means of thought, that is, language." In addition, the child's intellectual growth can be thought of in terms of "inner speech" as noted by Vygotsky. Thought therefore can be conceived of as internalized speech, or language, directly related to cognitive development.

Experiences aimed at language enrichment, therefore, must take into account both the overt and covert aspects of language acquisition and

use, both the external and internal functions of language in cognitive development. Cazden (1968), proposes two functions for language -- the interpersonal used to communicate and the intrapersonal used to think. Thus external language processes used in communication are exemplified in speech, and internal language processes are exemplified in thought. Both are vital to cognitive development. Much earlier, of course, Max Müller (1878, p. 384) had noted that language and thought could not be separated, and pointed out that "to think is to speak low, to speak is to think aloud."

Using as a guide Vygotsky's theory of the unique relationship between thought and language we might graphically represent the fusion of speech and thought (Figure 1):

Fig. 1. -- The Fusion of Speech and Thought

Verbal thought, however, does not encompass all speech or all thought. Some thought is not directly related to speech. Dewey (1934, p. 73)

points up the role of nonverbal thought in the affective domain:

There are values and meanings that can be expressed only by immediately visible and audible qualities and to ask what they mean in the sense of something that can be put into words is to deny their distinctive existence.

Oliver Wendell Holmes (1955, p. 541) also reminds us that "there are thoughts that never emerge into consciousness, which yet make their influence felt among the perceptible mental currents."

Summary

In terms of what the writer has discussed in this, and the previous chapter, the theoretical opinions on early acquisition and use of language in general converge at one key point: cognitive processes are fused with language processes. Further the biological or genetic factors that result in the child's innate ability to speak represent potential power that is not completely understood, appreciated, or utilized. In addition, it is clear that the early environment (experiences, encouragement, models) plays a key role in the language development, conceptual learning, self-image, and motivational pattern of the child's intellectual growth.

The ensuing chapters are devoted to the application of previously discussed and forthcoming principles as they relate to the language growth of children in and out of school. Typically, practice lags behind theory. But this does not eliminate the need for theory. Indeed

much "theory" is never put into practice. Dewey (1932, p. 266) points out that:

There is a kind of idle theory which is antithetical to practice; but genuinely scientific theory falls within practice as the agency of its expansion and its direction to new possibilities.

CHAPTER III

CONCEPT FORMATION IN THE LANGUAGE SYSTEM

In proposing a systematic approach to vocabulary and language development, the writer has suggested effective utilization of the child's natural capacity for symbol manipulation. McNeil (1966), speaking of the child's ability to use language, says, "By four years he will have mastered very nearly the entire complex and abstract structure of the English language." He further notes that between the ages of two and four children will have acquired "full knowledge of the grammatical system of their native tongue."

As noted in Chapter Two, instruction which deals with language development should involve as a chief aim the use of the student's natural potential to use language. Genetically the child is fitted to speak. He is innately able to crack the code of communication required by his social environment. He speaks and understands speech through the input-output system of the language structure, that is, through grammatical analysis of sentences. This grammatical analysis is a prerequisite of meaning. Lenneberg (1967) and Chomsky (1957) indicate that meaning cannot be divorced from grammatical structure.

Grammar and Meaning

The grammar of the language forces logic up on the child. He quickly internalizes the signals of grammar -- 1) function words,

2) inflections, and 3) word order. The function word have (a form of the verb to be) may carry no particular meaning but serves the function of relating ideas. For example, in the sentence "The soldiers have arrived," the auxiliary have does not contain the meaning of ownership or possession as in the sentence "The generals have the power."

Inflectional signals, which also show grammatical relationships, are acquired early by the child. For example, the positive degree of the adjective slow is changed in meaning by degree to the comparative form slower by the addition of the inflectional form er, and to the superlative form slowest by the addition of est. The inflectional form 's changes the nominative to the possessive case. Other languages such as Latin also change case-form through inflection.

Latin, a highly inflected language, indicates by inflectional changes the various cases of nouns and adjectives, for example, lex, (law), legis (of the law) legi (to the law, lege by the law), etc. Unlike Latin, however, which depends greatly on inflection for meaning, English depends primarily on word order. The Latin sentence Homo ursam necavit (The man killed the bear), might be written Ursam homo necavit and still mean "The man killed the bear." (The inflectional ending m on ursa denotes it as the accusative (the direct object)). Note, however, that word order is more important in English:

The man (subject) killed the bear.

The bear killed the man (object).

Thus in English we cannot, in general, change word order without changing meaning.

The young child learns the word order and internalizes the linguistic rules of the language before he comes to school. The first grader does not say, He my father is. (Word order is quickly mastered). He does not say, She is my father. (Agreement in gender is soon learned.)

Bateman and Zidonis (1964, p. 30) point out that "The grammar does not permit George is a waitress as a non-deviant structure comparable to such deviant utterances as Golf plays John and a grief ago." The child will say a while ago, or a minute ago, but not a grief ago. The child combines speech signals he hears and interprets them within the grammatical structure. In turn, he reproduces them in the same linguistic form -- sentences.

The child expresses his ideas through the imitation of basic sentence patterns. Chomsky (1963) refers to "strings" of words, noting that even with nonsense material an apparent natural word order can be detected, as in example 2 below:

1. furiously sleep ideas green colorless
2. colorless green ideas sleep furiously

The second sentence, although meaningless, sounds more natural than the first, more like the English idiom. It points up the affinity between grammar and meaning.

The recognition of grammatical strings, therefore, is significant in the child's acquisition, understanding, and use of the language. Lenneberg indicates that every speaker, even the language-acquiring child must make an instant grammatical analysis of every sentence spoken. Implications for language instruction are also apparent in his

statement that "the problems involved in language development cannot be understood in the absence of an analysis of the structure of language." (p. 275)

The unique language potential of the child for internalizing the language structure is shown by the fact that through hearing and imitating, he learns automatically that form classes, that is, nouns, verbs, adjectives, adverbs, have special forms such as endings. (Note the nouns girls, girl's or adjectives such as girlish).

Through imitation and use the child discovers that these form classes are numerous, consist of thousands of words, ranging from aardvark to zygote. Form classes make up the bulk of our vocabulary. But these form classes must be strung together into meaningful form that is, they must be structured into idiomatic phrases, clauses, sentences.

Through practice -- the opportunity to listen and repeat -- the child learns form-class words and also learns the use of structure words (function words). Roberts (1956, p. 293) points out that unlike form-class words, structure words are few in number. These words include, for example, determiners, which pattern with nouns (the book); prepositions, which also pattern with nouns (in the house); auxiliaries, which pattern with verbs (the auxiliary verb to be, may, might; conjunctions (and, but, yet); subordinators (because, who).

We see the special importance of structure words in the language when we deal with nonsense words such as Lewis Carroll's line:

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe.

A rereading of this sentence (or other nonsense sentences) reveals that the nonsense words are form-class words. Nonsense words never take the place of structure words. Thus structure is critical to language understanding.

Structure in Language

How does awareness of the role of structure words affect instruction in the area of language arts? Being aware of the significance of structure words in building sentence patterns gives the teacher additional clues about the kinds of words to stress in a vocabulary or reading program. One of the fallacies wrongly linked with vocabulary instruction is that vocabulary mastery means chiefly learning hard words, new words, long words. However, one reliable test of a student's skill in reading is his ability to understand the meaning and function of a conjunction, or a preposition as it appears in the sentence.

The importance of recognizing structure words such as conjunctions is pointed up by Robertson (1966) who indicates that students who understand the meaning of conjunctions (which are often signals for subordination in sentence patterns) have less difficulty with reading and interpretation.

In unsystematic language instruction, structure words such as conjunctions are often neglected. Not enough stress is placed on their actual importance in the syntactical arrangement and the meaning of the clause or sentence. Often we must study the context of the sentence to know what meaning to ascribe to structure words such as prepositions and conjunctions. The following sentences illustrate this point:

He went home for. . .

The reader must be ready to handle two different ideas when he reaches the word for, that is, he might expect the sentence to be completed as:

- a. He went home for (to get) the money.
- b. He went home for (because) it was late.

Thus the context, the structure, the word order of a sentence influences the meaning of words.

It is useful to note, however, that in language development we are concerned not only with the concept of horizontal structure (word order), but also with vertical, or hierarchical structure, (the deeper, underlying structure of meaning in a phrase or sentence). The child encounters and must internalize semantic variations such as the difference between the following two phrases:

- a.

a. young boys and girls
- b.

b. young boys and girls

Thus sentences that look alike (in their surface structure) may be quite different in their underlying structure (deep structure). A comparison of two sentences that appear alike illustrates this point:

- a. Mary is unable to see.
- b. Mary is easy to see.

On the surface, Mary seems to be the subject of both a. and b. But a closer look at the underlying structure of b. shows that Mary is the object of the infinitive form to see -- the actual subject of the sentence.

The fact that most first graders could understand the right meaning of sentence b. above without transposing (that is, transforming) it indicates that, although there is a difference in the substructure of sentences a. and b., there is no seeming difference in the surface structure, because the average person, without analyzing the sentences, would say that Mary is the subject of both sentences. However, the critical point, in terms of the child's linguistic ability, is that the average first or second grader could hear (or read) Mary is easy to see, and without transposing the order (which he probably could not do) he could clearly understand what is meant by the sentence. He has, as Bruner points out, an intuitive sense about his language. It is what Chomsky (1967, p. 397) calls "linguistic competence." He notes that:

It is quite obvious that sentences have an intrinsic meaning determined by linguistic rule and that a person with command of a language has in some way internalized the system of rules that determine both the phonetic shape of the sentence and its intrinsic semantic content -- that he has developed what we will refer to as a specific linguistic competence.

Thus the young speaker, listener, reader by virtue of his linguistic competence (his ability to associate sounds and meaning in accordance with the rules of his language) is able to transform sentences automatically, that is, he readily acquires a transformational grammar.

But what are the implications for instruction? Nurturing and furthering this linguistic competence is one of the chief aims of effective vocabulary instruction. Of course, the teacher of beginning

will not speak of transformations, and structures to her students, but being aware of these phenomena is important. For example, it is useful to know what inherent skills the pupil brings to school as well as those he is unlikely to bring. A knowledge of the child's linguistic competence can be used as a firm basis on which to judge his linguistic performance (behavior). His observed use of the language can be evaluated in terms of how he fulfills his communicative needs, internalizes and utilizes his experiences.

Language System

However, regardless of the child's experiential background and cognitive skills, he must satisfy his communicative needs within the circumscription of the language system which includes phonetic, symbolic (semantic) and syntactic components. A simple schema might be presented in terms of a communication input-output system. Symbols are transmitted (input) or received (output). Prior to reception the symbols are almost instantaneously separated or combined according to linguistic rules -- the syntax and grammar of the language, as illustrated in Figure 2.

Fig. 2. -- Language System

Thus the speaker's action, triggers the hearer's reaction (his decoding and encoding of the symbols sent within the grammar system). This may result in the hearer's comprehension (another reaction). But the message sent through the system may also result in interaction, for example, conversation between speaker and listener, that is, a reciprocal reversal of input-output roles occurs within the linguistic system, the grammar of the language. In terms of language growth and conceptual development, pedagogical implications for effective use of

the linguistic system lie in providing rich and continuing language experiences that result in the opportunity to increase language interaction.

How is effective and continuing language interaction achieved? The social environment provides the answer. Not the social environment vaguely but the social environment specifically. Vocabulary and language development programs need to be structured into immediate and long-range goal-directed activities aimed at encouraging and fostering early oral expression and critical listening -- a significant part of language acquisition and growth.

One of the important principles of language instruction is discussed by Hymes in, The Child Under Six. He emphasizes the need for parents to play a greater role in language development. He suggests a closer working relationship between parent and child. Hymes points to the skill with which most parents teach words to their children. He notes that a child is usually a year old before he has mastered three words but by the end of two years the average child "has a spoken vocabulary of 270 words." Hymes points out that nouns are usually learned first, then verbs, adjectives, and pronouns, next conjunctions, prepositions and other structure words. Up to age six we "build this very extensive English vocabulary -- we teach all the parts of speech." There is need (1) to make more skillful use of this seemingly natural ability in the child to learn language and (2) to study the instructive processes of parents.

Time as a Factor in Language Development

Parental techniques may be significant. Techniques related to early speech acquisition need to be more closely observed. Hymes suggests that in teaching children to speak we do three important things that are often neglected in later language development in the schools. "We take our time. . .let children experiment. We set an example."

Like Hymes, Carroll (1963) suggests that we need to take more time in teaching specific language tasks. The key to mastery of language learning is the time spent on learning. Bloom (1968) in "Learning for Mastery," reminds us that the student must devote the amount of time he needs to complete the learning task but in addition he must "be allowed enough time for the learning to take place."

Adequate time for mastery of the task at hand is crucial in the early years of language development. Adequate time means adequate practice. The comment of Fries (1963, p. VII) on the teaching of beginning reading also has implications for early language development: "The teaching. . .must be conceived, not in terms of imparting knowledge, but in terms of opportunities for practice."

Practice in language activities, however, must come early. Project Headstart attests to this general belief. The experiences the child gets before he comes to school sharply influence later success in language facility. Underprivileged students, for example find it difficult to recover from earlier sensory deprivation. Their experiences and the naming of those experiences (their stock of words) are lacking in number and in depth.

The dearth of rich, meaningful experiences and the students' inadequacy to name and conceptualize these experiences, result in their inability to develop the conceptual relationships and the generalizations needed for abstract thought. Language inadequacy is traceable to inadequate experiencing. In general, the richer the experience the richer the language. The converse of this is also true.

The relationship between language and cognition as noted by Piaget, Whorf, Vygotsky and others, points up the necessity for rich, early language experience. The child needs adequate language to help him describe and internalize his environment. The words he knows influence his perception and conception of his surroundings. An inadequate vocabulary results in inadequate conceptualization, in an inability to connect discrete concepts, see relationships between ideas. Deprived children with poor vocabularies and poor language skills will lag in the development of cognitive functions. Hess (1965, p. 885) succinctly notes that "the meaning of deprivation is a deprivation of meaning."

Childhood education specialists agree that language development through rich experience must take place in the early years, especially with the disadvantaged child. The early years are best for certain kinds of learning. In the early years the child forms attitudes, motivations, and cognitive styles. Lenneberg (1967, p. 158) says:

After puberty, the ability for self-organization and adjustment to the physiological demands of verbal behavior quickly declines. . . basic language skills not acquired by that time, except for articulation, usually remain deficient for life.

In respect to vocabulary building, however, Lenneberg makes an important point: "New words may be acquired throughout life, because the basic skill of naming has been learned at the very beginning of language development." Using this potential language facility, that is, the basic skill of naming -- word-object, and word-idea relationship -- the student can extensively broaden his vocabulary and conceptual structure, by making conceptual relationships in a variety of ways -- through paradigms, categorization, synonymy, antonymy, transfer, generalizations, and discriminations within the syntactic structure of the language (discussed in detail in Chapter Four).

Structuring Experiences

Acquiring a vocabulary does not consist of acquiring discrete, unrelated symbolic references. There is process and structure in effective vocabulary development -- the process of acquiring concepts and the structure of relating them. The internalization of the student's experiences through related concepts is central to his cognitive style. It makes a difference whether he sees words (concepts) as separate entities or as related, classified components of a synergistic whole.

Carrol (1955) calls concepts "classes of experiences." Lenneberg (p. 332) notes that language is "a sample of labels of categories." He points out that "most words may be said to label realms of concepts rather than physical things." The words father, house, school, university, -- all categorize a variety of concepts having to do with our experiences dealing with a father, a house, a school, a university.

Thus the word house is a categorization of a variety of named experiences (concepts). The symbol house is a depository for those experiences. The categorization of house may include direct experiences, ranging from the house where you grew up to a house recently bought, or it may include indirect, vicarious experiences ranging from The House at Pooh Corner to Bleak House.

The word university may contain a multiplicity of concepts. It may evoke a stereotype image of a serene, ivy-covered group of buildings where research goes on apace, where students calmly listen to lectures or relax placidly on the sward. The word university may also call up the mental picture of a dynamic, restless, disturbing force in the society, where doubt is prized, ideas rejected and the status quo challenged. One concept of the word university may be a place of scientific discovery or philosophical investigation. Another concept might be in agreement with Newman's understanding of a university's object "the diffusion and extension of knowledge." (The Idea of a University, 1852, Preface)

Categorizing Concepts

Throughout history man has been able to handle the enormous number and variety of concepts experienced in his environment through the process of naming. Carroll (p. 133) notes that "philosophers have been concerned with the nature of the concepts embodied in the symbols of language." Furthermore, man has added the categorizing process to the naming process, thus making visible the relationships between concepts.

One of the chief aims of a language development program is to help students form, retain, and retrieve concepts quickly and economically (in terms of amount of energy spent). This means mediating concepts through the eye and ear, for the most part symbolically, by linguistic forms, language units -- words. Concepts are also mediated graphically -- by maps, charts, diagrams, paintings, that is, representationally, often involving the affective domain. But linguistic forms of mediation best enable man to move out of the concrete toward the abstract.

In categorizing his concepts man uses what Zipf (1949, p. xi) characterizes as the "principle of least effort." In short, through the use of symbols we can systematize our concepts for easy referral.

Carroll points up the role of language as a system, a categorizing agent for concepts: "A language is a structured system. . .which rather exhaustively catalogs the things, events, and processes in the human environment." (p. 10)

The importance of vocabulary and language development, therefore, is apparent when we consider that our language "catalogs" symbols to serve as the mediators between the experiences of our environment and our understanding of and relationships to those experiences (conceptualization). When we categorize, or classify our symbols, we classify our concepts and increase the opportunity for making conceptual relationships -- the basis of our cognitive skills.

Our ability to organize sensory data through naming (the use of words) leads to our ability to form global categories, for example, bound printed sheets are symbolized as book. Thus book becomes the

referent of "bound printed sheets." Next a series of bound printed sheets are differentiated from a specific book to the category of books. Further differentiation (discrimination) allows us to distinguish between types of categories (textbooks, paperback books, diaries, etc). Recognition of referent categories and making relationships (transformation) between these categories is crucial for the formation of concepts. Lenneberg (p. 331) says that we:

. . .organize the sensory world by a process of categorization, and from this basic mode of organization two further processes derive: differentiation or discrimination, and inter-relating of categories. . .transformations. . . these organizational activities are usually called concept-formation.

What are the implications of categorization (classification) for vocabulary and general language development? The chief instructional aim in all disciplines is concept formation. In short, effective instruction in vocabulary and language growth means introducing the child to the structure of the language processes. It means, in Bruner's (1963, p. 11) words, "giving students an understanding of the fundamental structure of whatever subjects we choose to teach."

Summary

An effective relationship between vocabulary development and conceptual development can be achieved by viewing vocabulary growth as the extension of the student's natural potential to use language. Provided with rich environmental experiences the student is able to develop a stock of words to be used within the language system.

But the student's vocabulary and language development hinges on his participation in language interaction. Thus parents and teachers must provide the opportunity and allow enough time for learning to take place.

Inadequate vocabulary skills result in inadequate conceptualization. An adequate vocabulary helps the student describe and internalize his environment. He categorizes concepts through categorizing, classifying symbols, words. As a means of utilizing the categorization process in vocabulary instruction, the writer proposes in Chapter Four a classification-concept theory of vocabulary and language development.

CHAPTER IV

A CLASSIFICATION - CONCEPT THEORY OF VOCABULARY AND LANGUAGE DEVELOPMENT

In the previous chapters the writer has presented theoretical statements and principles of learning related to certain physiological, psychological, environmental and linguistic aspects of language acquisition and use as they relate to concept formation and cognition. Based on the foregoing principles the writer proposes a planned, systematic approach to vocabulary and language development aimed at improving the cognitive structure of the learner.

Any practical application of language development theory must be based on the thesis that adequate vocabulary development comes basically from rich experiencing and the continued organizing and re-organizing of these experiences. But without a plan for capitalizing on effective techniques for organizing these experiences, the vocabulary of most students will grow only sporadically, desultorily.

As noted previously, the process of categorization, which is central to speech acquisition, is a way of ordering and organizing concepts. The writer hypothesizes that within the framework of a systematic approach to word study the categorization process may be successfully applied as an operational principle involving the planned use of what the writer will call the classification - concept of vocabulary and language development.

Recognition of Student Word Knowledge

The classification-concept of vocabulary development involves both teacher and student. First, it involves the teacher who must have an overview of the field of vocabulary development to get a taxonomic perspective of the process. Effective use of the classification-concept requires the teacher to develop a broad and varied knowledge of word-acquisition skills. For example, part of the mapping of the field includes the teacher's awareness of students' knowledge of words. This means knowing what words are hard for different students at different grade levels.

Until recently it was difficult to judge the general difficulty of given words. Extensive guidance is now available in Dale's study The Words We Know: A National Inventory (1970), which lists the familiarity of 45,000 words tested nationally at grade levels 4-6-8-10-12-13-16. The study also deals with semantic differentiation. Information on students' knowledge of words is basic to a systematic plan of vocabulary instruction. Dewey's (1954), p. 88) statement is a guiding principle here: "The beginning of instruction shall be made with the experience learners already have," that is, sound pedagogical procedure in a planned program of vocabulary development dictates that the student proceed from the known to the unknown. We start where the learner is. If a student already knows the word telephone he can easily be taught that tele (distant) forms other words -- telegraph, television, telecast, telemetry, etc. -- one example of fruitfulness of the classification-concept approach.

System in Word Study

Therefore, a systematic approach to vocabulary development includes classifying words in a variety of ways to show meaningful relationships. Using the classification-concept in a systematic program, a group of secondary students would not study the words euphoria, antebellum, and monotheism one day, and euphonious, ante-meridien, and monocular the next. This approach is unsystematic.

In a systematic approach the teacher would utilize the classification concept to teach ante meridiem, antediluvian, and ante bellum together; euphoria, euphonious, and eupeptic as a second group; monotheism, monocular, and monomania as a third. Thus the student gets the benefit of transfer of learning, of making meaningful associations. The student sometimes discovers these associations but more often they go unnoticed, resulting in needlessly expended energy in discrete learning tasks. Dewey (1932), p. 81) says that education is "the formation of mind by setting up certain associations or connections of content. . ." Pressey (1959, p. 251) notes that "learning progresses most adequately when the learner perceives some organization in the material he is learning." By classifying verbal material for maximum associational learning we increase the likelihood that the words learned in one context will be transferred to another even though the original context is forgotten.

Transfer Potential

Further, a natural consequence of using the classification-concept approach to vocabulary development involves the principle of transfer in learning. We can begin teaching for maximal transfer potential in

the early grades. Building on words that students already know, for example telescope (according to Dale, known by 78 percent of fourth graders) we can encourage the student to notice other scope words (from Greek skopein, to watch, to look), such as microscope, periscope, radarscope, gyroscopic, horoscope, kaleidoscope, etc. Thus the classification-concept approach also governs the technique of analyzing the structure of words as a means of semantic acquisition and continued vocabulary growth.

A systematic approach to vocabulary study provides students with the opportunity to extend their perspective to see words not as discrete entities but as related components of a language system. A classification-concept approach, therefore, encourages the student to observe and analyze words, and see them in a variety of contexts.

Classifying Context Clues

Typically we have been circumscribed in our understanding of the "contexts" of words. A classification-concept approach to vocabulary study encompasses the examination and categorization of a wide variety of context clues as they apply to the comprehension of word meaning.

It is useful to classify the different kinds of context clues that offer semantic hints:

1) Formal definition:

A phoneme is one group of distinct sounds that make up the words of language

2) Definition by example:

An example of a phoneme is the p in pan or the n in pan.

3) Definition by description:

Burning is an example of oxidation.

4) Definition by comparison and contrast:

a. As sly as a fox.

b. A whale is not a fish.

5) Definition by synonym and antonym:

a. To expire is to die.

b. She was willing but he was loath to go.

6) Definition by apposition:

Sir Lawrence Olivier, the actor, played Hamlet.

7) Definition by origin:

The word iris comes from Iris, the goddess of the rainbow.

External and Internal Clues

Within the system of the classification-concept approach to vocabulary study, the student may make use of the seven preceding kinds of hints on word meaning. These clues may be termed external clues. They relate in general to syntax and logic. However, the writer proposes that, in addition, students be taught to look for internal clues to the meaning of words. The procedure involves teaching students early and regularly that prefixes, roots, and suffixes have meaning.

Through a systematic approach to the classification and study of roots and affixes at various grade levels, the student internalizes a number of key generative word parts. He gets the habit and gains the skill of analyzing whole words by breaking them into their meaningful parts, then synthesizes the parts by again forming whole words.

Key Roots and Affixes in Vocabulary Study

The student who is taught or is led to discover the prefixes non, un, and in mean "not," internalizes the concept of negation when he sees the words nonvoter, nonreligious, nonfiction; unable, unfit, unalterable; inactive, inappropriate, inalienable.

The classification-concept technique provides the teacher with the opportunity to make key roots highly visible through organized display or presentation. For example, the roots graph (write) and cred (believe) might be presented in words in the following manner:

<u>telegraph</u>	<u>credit</u>
<u>autograph</u>	<u>credo</u>
<u>paragraph</u>	<u>creditor</u>
<u>biography</u>	<u>credence</u>
<u>graphite</u>	<u>accredit</u>
<u>stenographer</u>	<u>credentials</u>
<u>monograph</u>	<u>credibility</u>
<u>typography</u>	<u>creditable</u>
<u>choreographer</u>	<u>credulity</u>
<u>seismograph</u>	<u>incredulous</u>
<u>heliograph</u>	<u>discredit</u>

The classification, the arranging of words formed from given roots stresses the fact that these words share a common internal context, a structure that is common to each and transferable to each and to numerous other words not listed above. Thus the classification-concept also provides the student with greater opportunity to notice key roots in words. If he notices and learns the roots scrib or script in words such as in scribe, inscribe, post script, Scripture, prescription, he can infer that all these words have something to do with writing. As noted previously the classification-concept approach also provides the opportunity to learn key word parts from words already

known, for example, learning the meaning of auto (self) in automobile is a means of transferring knowledge to other words -- autograph, autobiography, automatic, autocratic, autistic.

A knowledge of key suffixes also gives internal clues to the general meaning or classification of a word. For example, once the student learns that -less at the end of a word means "without" he can apply the concept to many words -- fearless, penniless, senseless, beardless, etc.

The importance of applying the internal-clue concept becomes apparent if we scan typical material read by elementary, high school, and college students. As the material becomes more abstract, and therefore, more difficult in every subject area, the number of words that are compounds of key roots and affixes becomes greater. Names of inventions, the areas of politics, medicine, etc., often use Greek or Latin words or compounds of Greek and Latin combining forms. For example:

Greek tele (distant) + Latin vis (see. . .television)

Latin gubernator (steersman, governor). . .gubernatorial

Latin appendix (hang on) + Greek itis (inflammation). . .
appendicitis

Latin bursa (purse, sac) + Greek itis. . .bursitis

Reading specialists are acutely aware that the zenith is reached in critical reading at the abstract level of thought (Huck, King, Wolf, 1967) where authors deal with universals, philosophical and psychological problems. The writer does not imply, however, that vocabulary study involves using "big" words. He implies, rather,

that in a planned program of vocabulary development greater attention can be focused on words typically met in reading at given grade levels. (As previously pointed out, this involves knowing what words students already know.)

The writer also hypothesizes that learning to use internal word clues is tantamount to gaining maximum transfer of word learning. This is accomplished through the use of generative word parts, to make effective use of the principle of generalization in language development. For example, the word pygmean might be completely unfamiliar to the student until he is told or discovers that pygmean is merely an adjectival form of Pygmy. Classifying or filing pygmean with Pygmy makes the concept more available, makes the task of retrieval easier. Learning that phobia in claustrophobia means "fear" makes acrophobia and agoraphobia easier to conceptualize.

Word Analysis in the Language System

How does the concept of word analysis fit into the language system? Linguistic studies by scholars such as Bloomfield, Fries, Carroll, and other indicate that the concept of language structures is a significant aspect of language comprehension and use. If the language has structure then the component parts of the language also have structure. An analysis of the language cannot be complete and thorough without an analysis of its parts, its words. Obviously, not all words of the language are analyzable in the basic meaning of the word -- to loosen, to break down. There is, for example, no need to analyze a, an, the, to, etc. However, when roots of words

combine to form other words, for example, horoscope, an analysis of the word parts can be helpful in understanding the meaning and origin of the word.

The teacher of structural linguistics makes use of analysis, and stresses the structure of words. Thus students are told to add s to the verb walk to form the third person walks, or ed to form the past tense walked. Thus ed is a regular past tense ending, the so-called marker of the verb. We also find that by adding s, words are pluralized or made possessives. The point here is that analysis, observation, investigation, systematic interrelation of word parts such as s, es, 's, or ed, reveal them to be, in effect, concepts that suggest categories. Their properties once understood can be transferred to a great number of categories.

In short, a vocabulary principle evolves here, namely, that a given element is seen to have relevant relationship to a series of words. One word tends to recall the other because each contains a structural similarity. Therefore, it is possible and likely that if the student has internalized the linguistic habit of using inflectional endings for given words he will continue to apply the habit to additional words of the same class. The writer proposes that the student can likewise internalize the linguistic habit of using roots and affixes for transfer from one word to another.

In learning key transferable roots the student has the raw material to make a great number of transformational relationships within a variety of syntactic and word structures. These word structures, composed of transferable roots, act as clues in a reciprocal

process, for example, the words incision, precision, excise, scissors contain reciprocal structural clues.

By instilling the habit of word analysis we provide the student with opportunities for discovery of language principles, that is, inductive thinking about language. We thus sharpen the student's ability to perceive relationship and make generalizations -- a key purpose of education.

Collateral Learning

Generalization in one area results in the broadening and extension of concepts to encompass other areas. The consequence of an action is often serendipital. An unpublished study (Dale, O'Rourke, 1966) conducted among junior high school students to determine the effect of word analysis study on vocabulary ability, revealed gains in word skills and also an increased ability to spell correctly those words formed from key roots. (This study and the role of word analysis in vocabulary development is included in greater detail in Chapter Five.)

Thus the process of classification and organization of materials for learning often results in students making subconscious, automatic relationships between concepts. Learning the structure of a task may lead to compatible learning in which one learned concept is an aid in learning another. Further, the learning of organized material is likely to produce collateral learning. Dewey (1954, p. 49) reminds us that:

. . . Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time. Collateral learning in the way of formation of enduring attitudes. . . is

often more important than the . . . lesson in geography or history that is learned.

Ordering and Reordering Concepts

Effective vocabulary development means adding new verbal concepts to our repertoire of experiences. It also means restructuring and reordering concepts. A chief purpose of a planned vocabulary program is to change the student's view of things, to get him to look more closely at words, see things he did not see before. An effective vocabulary program sharpens perceptions and broadens conceptions.

As noted earlier, one of the "structures" of an effective vocabulary program is the process of categorization. Categorizing or classifying words is a means of ordering and structuring verbal concepts. It is a mapping of the verbal field for easier perception. It often involves presenting words in a kind of paradigmatic form to give the student an extensive review or a synoptic view of the concepts he needs to learn. The mapping of vocabulary creates a heuristic atmosphere that lends itself to investigation. It provides the student with opportunities to make comparisons and contrasts, to see the relationships of words in terms of external (context) clues and internal (structure) clues, to make transfers, associations, and generalizations at all levels of development.

But concept formation cannot occur unless it is based in experiences -- named, classified, and connected to other experiences. It is necessary, therefore, to provide the student with rich experiences and the opportunity to name and relate them. Bromwich

(1969, p. 742) referring to some key ideas of Bruner's on concept development writes:

The child makes his world intellectually manageable and meaningful by ordering and categorizing his experiences in the environment. He does this by developing concepts and then learning symbols. . . to represent those concepts. Thus the child makes the highly complex world increasingly simple for himself. He eventually develops a hierarchy of concepts in order to cope meaningfully with his world, ranging from highly specific and concrete objects to generic or supraordinate and abstract concepts.

Effective vocabulary instruction therefore, is not basically a matter presenting discrete words, but of presenting relationships between words, and effective learning of vocabulary is a matter of seeing and making relationships between words, relating concepts. Vocabulary (concept) development therefore is central to the various disciplines of the curriculum. Each subject contains key concepts and successful learning depends on making relationship between these concepts. In economics, key terms are supply, demand, discount, etc. Psychology is concerned with behaviorism, structuralism, reinforcement, etc. Sociology is discussed in terms of diffusion, publics, ecology, etc. These terms can be categorized, classified, field for easy study and comprehension. In fact we might view language cognitive structure as a filing system, a system of storage and retrieval in which experiences are funded, named, and classified (conceptualized) for easy retrieval and use.

The process of classification or ordering of concepts contextualizes discrete, named experiences that provide cues to conceptual relationships (the cognitive structure). By viewing

language development as a filing process we are provided with a system for receiving words, classifying them as easy or hard, known or unknown, noting their part of speech, their syntactical function, their construction, and their relationship to other known words.

Twilight Zone Words

The filing system concept explains and makes allowance for degrees of word cognition. We do not always know a word fully. We may know it only in part. Our partial or whole knowledge of a word has been pointed up by Dale's continuum-concept. He notes that word knowledge may follow these four stages: 1) I've never seen the word. 2) I've heard of it, but I don't know what it means. 3) I recognize it in context, it has something to do with. . . 4) I know the word in one or several of its meanings.

The filing-system concept of learning words dispenses with the either-or-approach. It resembles closely the situation and philosophy of parents who in helping the child learn to talk do not expect complete word mastery at once. It encompasses the idea that many words are not known at all, that experience will result in only slight acquaintance with some words. Certain words will be associated only with certain situations, while some words will be known outright. In using a filing-system approach there is no undue pressure on the student to know completely all the words he experiences.

Using the filing-system concept a teacher would be less concerned with the known-unknown state of words in the student's vocabulary than with the degree of knowledge and use of given words. Thus the teacher would be sensitive to the fact that in the student's

vocabulary there is a twilight zone of words, words hazily cognized, not in sharp focus. The student cannot yet sub-classify these words. They are broadly known, not yet narrowed down to manipulatable concepts.

The student may vaguely know that the word lepidoptera has something to do with butterflies. He may be able to classify cryptomeria as a kind of tree but be unable to sub-classify (discriminate) it as an evergreen tree, or further discriminate it as a pine tree. But the process of filing, of classifying cryptomeria under the broad category of trees, gives a structure to the word, creates in the student a subconscious readiness for further understanding of the word. He is thereby alerted to contextual and word clues that often result in broader perception, seeing relationships between words, making transferable connections and generalizations.

By filing cryptomeria, vaguely, as a tree the student's chance of relating cryptomeria to another word increases. For example, he is more likely to recognize the word cryptograph as having a somewhat similar structure. He is more likely to discover that the common root of both words -- crypt means hidden or secret. His perceptual and conceptual structure broadens if he interrelates the word cryptograph - code writing (secret writing) and cryptomeria -- a pine tree (which conceals the seeds of its cones within bracts).

Synonymy in Vocabulary Development

Suited to the classification-concept approach to vocabulary growth is the linguistic phenomenon of synonymy and antonymy, semantic similarity and dissimilarity in words. Synonymy, from Greek syn

(together, like) + onym (name) means a word like other words, grouped together in the same semantic classification according to a general meaning, as repeat and iterate, walk and saunter, weaken and enervate.

The concept of synonymy allows us not only to convey general meanings, it also enables us to make fine distinctions, subtle nuances in the meanings of words, even though a web of relationship exists between words. (Figure 3)

An example of distinction between the meaning of words symbolizing a general idea is found in the three words, under, below, and beneath. We would not say we are living "beneath a democratic form of government," rather we say "under a democratic form of government." A suspect is not "below the protection of the police," he is "under the protection of the police."

We find therefore that synonymy is a feature of the language that allows us to classify words in general terms but also provides for fine semantic discrimination. For example, dictionaries of synonyms often list satire, sarcasm and irony under the same classification. Although these three concepts might evoke laughter or amuse there are distinct differences in their meaning.

Thus study and use of synonyms can help the student make fine discriminations between the meanings of words, see relationship between words, and also helps the student classify and generalize concepts.

Synonymy is directly related to the previously discussed categorizing process of language acquisition and use. If we do not broadly classify our verbal concepts we lose them. Our minds are

Fig. 3. -- Synonymic Web of Relationship

not able to receive and imprint each new word discretely. The new word is first classified in general terms, filed, and later retrieved for further discriminative use as the need arises.

The classification-concept approach to vocabulary instruction is appropriate for the learning and use of synonyms. On the whole, elementary and secondary students do not easily make fine discriminations in the use of words. They do not note nuances in synonyms without a great deal of experience and practice. Therefore, in vocabulary and language study it is impractical to assume that fine discriminations can be made before gross discriminations are conceptualized. Thus the writer proposes, as a significant part of systematic vocabulary instruction, that students be given adequate opportunity to make gross discriminations, to see broad relationships between given synonyms, to see how words can be classified in broad categories, that is, mental filing systems.

The use of a mental filing system means that words would be presented for students to classify under general topics. For example, synonyms for the word govern might be listed as rule, direct, manage, control, conduct, lead, regulate, guide, steer, supervise, oversee, legislate, administer, take charge, head up, etc. This process gives the student a general storage and retrieval system for remembering words. Careful choice of synonym, finer discrimination will evolve with usage, in terms of denotative and connotative verbal concepts).

In a planned program of vocabulary development, the classification or filing of synonyms, therefore, is a matter of broadly ordering concepts before requiring precise synonymous selection. In terms of

cognition the guiding principle here is: broad classification precedes discrimination. An appropriate analog is found in the child's early acquisition of word knowledge as described by Lenneberg (1967, p. 332). He notes that when the child learns to say the word daddy, it:

. . . appears to be used as the label of a general open category, roughly corresponding to the adult category people or men. Thus categorization by a principle, or the formation of an abstract concept is apparently prior to and more primitive than the association of a sound pattern with a specific sensory experience. The same thing may be expressed in different words: stimulus generalization is prior to stimulus discrimination.

Creative Aspect of the Classification Process

Paradoxically, the act of categorizing a word does not make it definable by only one criterion. Classifying a word does not put it in a straitjacket. Indeed it extends the word's utility, makes it more flexible, results in a greater number of concepts being attached to the word. Classification is at the heart of the metaphoric process. For example, we classify or categorize the word mind as having something to do with thinking and the intellect. But this basic concept of mind has peripheral, metaphorical extensions that enable us to use it to express a variety of ideas such as:

bear in mind

be of one mind

brings to mind

changed my mind

have a mind to

on my mind

pay no mind

never mind

a mind reader

puts me in mind of

takes my <u>mind</u> off	a <u>mind</u> reader
<u>Mind</u> your p's and q's	peace of <u>mind</u>
in the <u>mind's</u> eye	gave him a piece of my <u>mind</u>

Lenneberg point out that categorization is "a creative process of cognitive organization." The process of classification is a convenient linguistic process for ordering concepts. It is a means of grouping the concrete objects and abstract ideas encountered in the environment. But the classification process is unique in its flexibility, its bending tolerance. It allows contexts from a variety of sources to build up around the word. It is therefore, a prime source of concept formation, which in turn, is the chief source of cognitive functioning. Lenneberg feels that "conceptualization is the cognitive process itself."

The habit of classifying words (concepts) under general categories (for example, the synonyms scarlet, cardinal, vermilion, crimson, cerise indicate "redness") is, in effect, a process of cognitive organization. It is not a matter of filing the concepts away but of filing them for use. The categorization process (as exemplified in classifying synonyms) is not static, it is dynamic. Meanings and concepts can be extended and often fused with other meanings. In the juxtaposition of these words a semantic transfer may even take place. Bloomfield (1933, p. 443) points out this synonymic phenomenon when he writes:

This parellism of transference accounts for successive encroachments in a semantic sphere. As soon as some forms like terribly, which means 'in a way that arouses fear,' has been extended into use as a stronger synonym of very, the road

is clear for a similar transference of words like awfully, frightfully, horribly. . .Poetic metaphor is largely an outgrowth of the transferred uses of speech.

Antonymy in Vocabulary Development

In addition to exercising linguistic cognitive functioning through the technique of classifying synonymous words, we can also perceive and internalize words through antonymy (the process of semantic dissimilarity).

Thus, pointing out both similarities and dissimilarities, teaching and learning both similarities and dissimilarities in words, that is, synonyms and antonyms is another effective instructional application of the classification-concept technique. An illustration is seen in the positive-negative semantic classification of the following words: atypical, atheism, acentric, apathetic, amoral. These words are semantically dissimilar, but structurally similar in one respect -- their inflection. They all contain the Greek negative prefix a (not). Thus the words can be classified as similar in their negation concept. Graphically we can classify such words for study:

<u>NEGATIVE</u>	<u>POSITIVE</u>
atheism.	.theism
acentric.	centric
achromatic.	chromatic
atypical.	typical
aseptic.	.septic
apathetic.	.pathetic

NEGATIVEPOSITIVE

amoral. moral

asymmetrical... . symmetrical

abranhial. branchial

The classification study of antonyms can be used to master the concept of opposites in language. This concept can be taught at all levels of learning, according to the theory of complexity, that is, on a continuum from easy to hard to fit the capacity of the learner. For example, first or second graders might learn to conceptualize opposite pairs such as up and down, hot and cold, high and low. In terms of a hierarchy of learning tasks as suggested by Gagne (1965) students at different levels of development might learn opposite word pairs ranging from dirty and clean to maculate and immaculate, or from praise and blame to eulogy and dyslogy.

The learning of opposites of given words provides the student with additional contexts in which to make verbal associations, and furnishes clues for learning, remembering, and applying words.

In terms of the classification-concept approach the student (depending on his level of development) would learn opposites at appropriate times. For example, the best time to teach the word female is when the student is learning male, and thus masculine with feminine, gander with goose, or pessimism with optimism, substructure with superstructure, omega with alpha, perigee with apogee, diurnal with nocturnal, postlude with prelude, eutrophy with dystrophy, Brobdingnagian with Lilliputian.

The concept of antonymy can also be a significant part of word analysis technique. Word pairs may illustrate antonyms formed by inflection, for example, by negative prefixes: happy - unhappy, formal - informal, proper - improper, legal - illegal, regular - irregular.

By learning antonyms as a part of systematic word analysis the student can master two concepts at a time instead of one. This technique is in accordance with a systematic approach to vocabulary instruction that involves the continued use of transfer and review, relating one concept to another, making verbal comparisons and contrasts, building new knowledge on old.

Theory of Opposition

Is there a theoretical basis for using the concept of opposition in vocabulary and language development? Historically, the theory of opposition has been discussed as a significant part of language and logic. Aristotle in his Metaphysics (1943 Edition) discusses the opposition of various concepts such as being and not-being, finite and infinite, whole and part, small and great, presence and absence. In fact, Aristotle sees every concept as proceeding from contraries, or opposition. For example, he says, "Everything potential is at the same time a potentiality of contraries. . .the possibility of being and not being." (p. 31-32) He discusses the presence or absence of something as being the cause of something:

We call the absence of the pilot the cause of the shipwreck, when his presence was the cause of safety. Both his presence and his absence are causes as sources of motion.

Thomas Aquinas deals with the theory of opposition in Summa Contra Gentiles (Book 3, Part 1, p. 53). He lists some of the chief opposites (according to Pythagoras) that exist in life. Some are: limited - unlimited, odd - even, left - right, motion - rest, light - darkness, good - evil. Aquinas himself utilizes the theory of opposition to reason out the formation of his dogmatic principles of spiritual being and material being. He emphasizes the opposition of intellectual substance and material substance. Speaking of the nature of contraries, he says that "one contrary is the intelligible ground of another, since one is understood through the other." (Book 2, p. 151)

Hegel (1955, p. 476) uses the theory of opposites in much of his philosophy. In "The Nature of the Spirit" he says "The nature of the spirit may be understood by a glance at its direct opposite -- matter."

Opposition theory, therefore, has a place in language and thought. Numerous concepts taught at all grade levels deal in essence with opposites: direction (north and south), shape (convex and concave), emotions (love and hate), mathematical concepts (positive and negative), chemistry (acid and base), etc.

The presentation and study of "opposite" ideas is an important part of concept building, and is a significant aspect of the classification-concept approach to vocabulary development. The opposition theory can be the basis for effective instruction dealing with general ideas as well as words, for example, apogee and perigee, or the idea of reciprocity in the fact that two opposite halves of a circle make up a whole. C. K. Ogden (1932, p. 28) emphasizes the

concept of the area of neutrality existing midway between two opposites: "Between the positive and negative quantities of algebra there is a zero, "that is, there may be a neutral point between two opposites which lacks the characteristics of either extreme.

The theory of opposition, therefore, through the study of antonyms, can help the student understand the concept that words are not unidimensional and static but multidimensional and dynamic. One word leads to another. Opposition implies relationship. The study of antonyms, is not only a means of internalizing the opposite meaning of a given word, it also leads to the comprehension of latent relationships between concepts, that is, without dark there is no concept of light, without heat there is no concept of cold. Ogden points out that "every real opposition implies a relationship between two forces, tendencies, or directions." (p. 32)

Within the framework of the classification-concept approach to vocabulary development, the learning of "opposites" can be an important part of word growth and concept formation.

Summary

In this chapter the writer has proposed a classification-concept theory for vocabulary development. The theory is based on the previously discussed process of categorization as a means of ordering and organizing concepts.

Practical utilization of the classification-concept theory involves (1) an awareness of children's knowledge of words, (2) an instructional process that proceeds from known to unknown knowledge, (3) the study

of vocabulary as part of a language system, involving the planned teaching and learning of external and internal context clues, including the systematic teaching of key roots and affixes for maximum transfer of learning, (4) utilization of the twilight-zone -- the continuum-concept of learning words by degree, (5) the learning of words by broad classification, through synonymy and antonymy.

In Chapter Five the writer presents a framework for the utilization of the classification-concept approach to language development specifically in terms of the systematic building of vocabulary through planned instruction in the use of word analysis and synthesis. He emphasizes the importance of clear learning-objectives, in terms of goal-directed language activities. He discusses the role of morphology in the language structure as it relates to the learning of key, generative roots and affixes. The writer also describes the findings of a related study dealing with the systematic teaching of specific word elements at the junior high school level.

CHAPTER V

A SYSTEMATIC DESIGN FOR VOCABULARY DEVELOPMENT

As noted in Chapter One, there is now no systematic, general approach to vocabulary instruction, no attempt to look at vocabulary development as an integral part of the language system. Vocabulary as such is not now conceived as an organic part of curricular planning. If there is need for a master plan in the teaching of social studies, English, French and history, the unique importance of vocabulary development to all these disciplines suggests that there also be a system, or design for teaching vocabulary skills.

Design in vocabulary instruction does not imply a cut and dried, regimented, unimaginative approach to word study. Design, rather than a narrow, circumscribed program of word study, will more likely result in rich and varied vocabulary experiences. The experiences will be richer because the design will ensure thoroughness (depth) of treatment, and the program will be more varied because the design will also ensure a wider scope (breadth) of treatment.

The writer, therefore, hypothesizes that the instruction and development of vocabulary as an integral part of a language design, or system, will result in greater breadth and depth of learning. He further proposes that depth in vocabulary development equals breadth,

and reciprocally, breadth in vocabulary development equals depth. The writer calls this the BVD-concept as illustrated in Figure 4.

Fig. 4. -- BVD-Concept

Thus the BVD-concept implies that the more a student learns about a given vocabulary concept, the broader his knowledge of the concept becomes. The depth of his knowledge uncovers additional knowledge. For example, the BVD-concept may be illustrated synonymically: The greater the breadth of synonyms for a given concept, the deeper the conceptual understanding, and ultimately the finer the discrimination potential between the nuances in the meanings of words.

The broaden the student's knowledge of synonyms for a concept such as "old," the deeper his knowledge of the basic concept. In turn, the deeper his knowledge of the concept "old," the broaden his knowledge of synonyms that aptly describe the concept -- as illustrated in Figures 5 and 6.

Fig. 5. -- BVD-Concept

Fig. 6. -- BVD-Concept

The BVD-concept may be applied to other aspects of vocabulary development. For example, the student studies the word anthropolgy and learns thoroughly (depth) that the root anthropo means "man," each time he sees the root in another word his knowledge of the root becomes deeper and his knowledge of its application becomes broadder. Conversely, the more words he learns, the more he deepens his knowledge of the concept (in this case the root) itself.

Thus the student is better able to generalize the meaning of unfamiliar words formed from the root. The process is reciprocal. Breadth = depth: depth = breadth, as illustrated in Figures 7 and 8.

Fig. 7. -- BVD-Concept

anthropography anthropocentric anthropomorphic
 misanthropy philanthropist anthropozoic anthropolatry

.....
 B

D
(anthropo)

Fig. 8. -- BVD-Concept

The BVD-concept of vocabulary growth and enrichment is a key component of the classification-concept theory of vocabulary and language development discussed in Chapter Four.

Design in Vocabulary Instruction

A systematic approach, a design for vocabulary instruction as an organic part of the curriculum will ensure breadth and depth of treatment, variety and comprehensiveness in teaching, scope and thoroughness in learning.

A systematic design for vocabulary development would stress the importance of words in all areas of the curriculum. It would involve getting teachers and students to notice words, pay greater attention to their meaning and structure. A design for vocabulary development would provide for effective word study procedures and learning habits through the structuring of materials for study. Dewey (1954, pp. 100-101) reminds us that:

There is nothing in the inherent nature of habit that prevents intelligent method from becoming itself habitual.

In thus structuring vocabulary materials for effective study, students would not be doomed to an automatic, iron-clad system lacking in rich and varied language experiences. Rather students would learn a variety of effective, economic methods of attacking unfamiliar words and of utilizing their knowledge of known words.

Thus the system would be artfully, humanely structured around the needs, interests, and aspirations of the students. The artful designer, in this case, would be the knowledgeable teacher, who best knows the

students' needs, and who shapes the system to those needs within the framework of his own imagination and creativity. The significance of the "human" factor in any system or design is noted by Wagner (1968). He describes the "thoughtful, artful, organic application and creative control of system." He also describes the important role of the teacher and goes on to say that:

Any thoughtful, organic, artful, humanistically-oriented applications and controls of necessary system that emerge will be directly proportional to the skills, abilities, and understandings of the human beings involved.

The role of the teacher, therefore, in any system or design for vocabulary development is vital to the success of the learning process. In whatever system the student is required to learn the general "set" of the learning tasks at hand is often given impetus by the teacher. I. Keith Tyler (1964, p. 74) discussing the role of the teacher (a key person in "new media" systems, in this case instructional television) notes that the classroom teacher "is the essential element which determines the success or failure of instructional television."

Tyler (1962, p. 55) also points up the managing role of the teacher by saying that:

The teacher must arrange the appropriate situations in which pupils can learn -- that is, those in which they can best achieve the desired educational objectives.

In addition, his delineation of the teacher's significance and responsibility is appropriate to any classroom situation:

He must know his pupils well enough to be able to diagnose their needs, appraise their growth and progress, and prescribe the appropriate learning situations. He must know his subject matter so

thoroughly that he can relate it to effective learning activities.

As a prescriber of appropriate learning situations in a systematic design for vocabulary development the teacher's role, therefore, is central. But an effective program requires a teacher who is interested in continued vocabulary growth, both his own and his students'. The teacher must also play a key role in setting up the clear-cut, long-range goals and immediate objectives of the program -- as an integral part of the curriculum. It is useful, therefore, to present a construct for a systematic program of vocabulary development in terms of the desired objectives.

Objectives, of course, must be built upon needs. The need for vocabulary development is clear. But an effective program must also suit the individual needs and interests (or wants) of the student. The program must also be designed to get the student to look at words more closely, note their semantic content and structure, that is, the student must notice words.

The program must be designed to provide maximum active participation by the student, clear-cut, goal-directed language activities. The student must do something. In addition, the program must have built-in motivation. It must have appeal for the student and be specific on how a knowledge of vocabulary skills is specifically and broadly connected with success or reward in the student's life, in and out of school.

A systematic program of vocabulary development, therefore, must be guided by the drive-cue-response-reward principles as set forth by

Neal Miller (1957) in reference to principles related to achieving maximum learning from motion pictures. In short, the student must want something, the student must notice something, the student must do something, and the student must get something.

Vocabulary Development in the Curriculum

The needs of the student are thus at the focal point of an effective, systematic program of vocabulary development. Goal-directed objectives based on needs of students' and on the learning experiences that the students already have, are at the heart of any effective instructional program and are in keeping with Ralph Tyler's Basic Principles of Curriculum and Instruction (1965). He reminds us that:

. . .if an educational program is to be planned and if efforts for continued improvement are to be made, it is very necessary to have some conception of the goals that are being aimed at.

A systematic program of vocabulary development with long-range goals and specific short-term objectives would necessarily differ somewhat in content taught and teaching technique. But before discussing specific content and instructional technique it is useful to illustrate the place of systematic vocabulary instruction within a proposed curriculum construct. (Figure 9)

Fig. 9. -- Vocabulary Instruction in a Curriculum Construct

The preceding curriculum model identifies the integrated place of vocabulary instruction in the curriculum construct and suggests the concerted use of certain basic learning principles and guides related to vocabulary and general instruction as noted below:

Survey

Diagnostic information needed to create optimum learning conditions (Taba 1962, p. 237). Various types of data -- general, comprehensive, select

Manipulation

Creating the best learning environment - providing social and individual guidance, leading to greater conception of self in society. "Continual adaptation" -- Dewey (Democracy and Education 1916, p. 2)

Intended audience

Know and define the target population -- levels of learning, individual differences

Organization

Need for careful organization and selection of procedures and materials. Dewey says "the problem of selection and organization of subject-matter for study is fundamental." (Experience and Education, pp. 95-96)

Success Vehicles and Success Barriers

Using the knowledge and skills possessed by professional educators, theorists and practitioners, to teach most efficiently and avoid known pitfalls and ineffective teaching techniques

Vocabulary Instruction

Fits within the general instruction schema and is affected by curriculum processes such as feedback and continuous evaluation

The Place of Vocabulary Development in the Curriculum

The preceding construct implies that in a systematic approach the design of the vocabulary system must be guided by the key principles of the curriculum design -- ranging from needs to evaluation. For example, the researcher and the practitioner analyze the purpose of the research, the methods of analysis, and establish objectives.

Objectives are evolved within the framework of societal and individual needs. They include immediate and far-range goals.

Specification is made in regard to process and content in terms of needs and goals. Skills to be acquired are stated in relation to specific content areas, for example, integrating vocabulary study with history or geography. Thus provision is made for integration of disciplines wherever practicable. "It is recognized that learning is more effective when facts and principles from one field can be related to another. . ." (Taba, p. 298).

Concepts and skills are taught with a view to the learning and application of principles rather than discrete facts, that is, teaching for generalization -- a "sequence of learning experiences as Taba says (p. 422). Dewey also speaks of the "principle of continuity of educative experience." (Experience and Education, p. 89).

Instruction is not a one-way process, but a two-way activity. Teaching to elicit imitative action is replaced by teaching that encourages creative interaction.

Teaching and learning objectives must be clear. Terminal behavior is established before instruction begins.

Provision is made for individualized instruction and self-identification, but also for the necessary interaction of group dynamics.

The effective study of vocabulary and language development takes into account the experiential background of each child and the general and particular environment of each both in and out of school. Environmental aspects include relationship with parents, variety of experiences, encouragement in self-expression. Biological aspects may include glandular balance, energy, physical facility in speech, motor controls, visual and hearing acuity — all factors to consider in a proposed vocabulary and language development program as an integrated part of the curriculum.

Evaluation in the vocabulary program must be continual and cyclic in terms of needs, objectives, procedures, and outcomes. Feedback, and reaction to the feedback are necessary.

Testing for the purpose of evaluation must reflect the philosophy of the program, that is, the terminal objectives must be consistent with the internal structure of the vocabulary and language program. The tests must test what is taught in terms of facts, generalization, concepts, attitudes.

The Teacher As a Model

In a systematic approach to vocabulary development the exemplars or models of language we present for the student must be models that encourage freedom of thought, self-expression, and inventiveness. The student often imitates what he sees, he will use the methods he is taught, whether good or bad. Taba reminds us that "an individual learns by imitation and identification. Language is learned by imitation. . . Learning by imitation requires the presence of models, and the effect of these models is strongest if they represent significant persons to the learner." (p. 132) The performance quality of the teacher is central to an effective vocabulary program.

In setting up a system of vocabulary and language development within the curricular framework, the teacher also needs to be aware of the significant part that vocabulary plays in various disciplines of the curriculum. In a systematic developmental vocabulary program the teacher would make particular use of the principle of transfer. Thus vocabulary skills would cut across all areas of the curriculum.

Broad Effects of Vocabulary Skills

A developmental program of vocabulary instruction would affect the application of word skills in various areas of study. For example, a planned, effective vocabulary program would sharply influence student's reading skills at all grade levels. It would affect the general perception and comprehension of words -- lexical, syntactical, structural -- and be reflected in the students' level of reading sophistication as pointed out by Dale ("The Critical Reader," The

Newsletter, 1965), that is, duplication (reading the lines), implication (reading between the lines), application (reading beyond the lines).

The importance of vocabulary to the reading process and to comprehension in communicative situations in general is emphasized by Downing (1969, p. 217) who, in discussing research on children's reading and thinking says that children often "cannot handle the abstract technical terms used by teachers in talking about written or spoken language." This would indicate that there is need to enrich and refine students' vocabularies toward an understanding of the general and technical concepts language at all levels of learning.

Secondary students, as well as students in the elementary grades, can improve their reading abilities through vocabulary enrichment. Contance McCullough in her article "About Practices in Teaching Reading" (1958, p. 19) reminds us that:

. . .the high school years are years of tremendous vocabulary challenge and a time when all students can benefit by help and encouragement in vocabulary development.

In short, it is generally agreed that vocabulary enrichment is an asset in and out of school. We must learn to use words to understand and communicate ideas. While it is true that students learn many words "passively" (in the general environment of home and school activities) it is also possible for students to learn words "actively" (in the specific environment -- set up by the teacher with a planned, systematic program of language development in mind).

The prepared teacher can enrich the student's vocabulary and broaden his cognitive structure by making him more aware of his world, alerting him to the various ways in which he learns -- through speaking, listening, writing, reading, visualizing, and observing.

In a systematic program of vocabulary development the teacher maps the field for the student, lays out the learning strategies, identifies the success vehicles and the learning barriers. In short, the effective teacher helps the student understand the relationship between his vocabulary and his life.

A systematic approach to vocabulary instruction is heuristic, involves the student in discovering things about words. It involves problem solving and the use of the higher mental processes. It includes encouraging (and providing the opportunity for) the student to observe, compare, classify, interpret, hypothesize, criticize, create. In short, the student is asked to learn about words and learn words in a variety of ways aimed chiefly at forming concepts.

An effective vocabulary program is the basis for teaching students to think critically. Thus students who learn to observe are likely to have a reason to describe, to talk and write about their experiences.

Students who learn to compare, see the similarities and dissimilarities in objects, ideas, and ideals. They learn to see the synonymous and antonymous nature of things.

Students who learn to classify develop the habit of arranging, filing concepts for easy retrieval. They learn to file bat, glove,

strike, double, balk, fungo under baseball. Classifying is a way of funding experiences.

By getting practice in hypothesizing students develop the ability to arrive at the solution of a problem in different ways. For example, the meaning of a word may be discovered through a variety of contextual and structural clues.

Students who are encourage to criticize are laying the basis for evaluative thought, setting up standards of judgment. For example, they might decide whether an author might have chosen a better word or phrase to describe a person or event. Their evaluation might go beyond semantic problems to value judgment involving the action of a character or the consistency of a characterization.

Finally the student who is encouraged to create, to use his imagination must retrieve his concepts, relate them in some way, and then structure them into a product. The product might be a combination of the concepts of cubes, spheres, and cones into a Picasso like drawing representing forms in space, or it may be the fusion of word elements that describe an imaginary combination of concepts that result in "coining" words such as a "solometer" (measures the sun, or "phonophobia" (fear of sounds). This process is described later in this chapter.

Extending the Scope of Vocabulary

As noted in Chapter One, the basic factor operating in the creation of a systematic, structured approach to vocabulary development is the need for broadening the scope of our concept of "vocabulary." We need to see vocabulary not as a matter of learning occasional

lists of unrelated words but as an organic part of general language development. To achieve the scope needed to view systematic vocabulary in its proper perspective it is useful to examine the concept of "vocabulary" in terms of the wide variety of concepts and activities that are an integral part of vocabulary study.

The systematic study of vocabulary brings the student into contact with the following concepts that have wide implications for transferability to other fields of study. This involves learning:

1. How to use contextual clues
2. The difference between external and internal context clues
3. The use of compounds
4. Structure words, for example, conjunctions, involving clauses of condition (provided that); clauses of causation (because); clauses of concession (although)
5. Homonyms, synonyms, antonyms
6. Denotation and connotation
7. Semantic discrimination
8. Rhyming words
9. Etymology
10. Proper nouns, common nouns
11. Origins of names and places
12. Adjectives made from proper nouns (Herculean)
13. Inflection (use of suffixes) to change word meaning
14. The use of prefix to form a variety of meanings such as ante (before) anti (against)

15. The systematic use of number prefixes (mono, bi, tri, etc.)
16. The concept of negation, for example, through negative prefixes and antonymic forms (dis, dys)
17. Derivations of words from roots and affixes
18. Combining qualities of roots to form words
19. The role of cognates in language (pater, Vater, father)
20. Spelling and spelling hints
21. Pronunciation
22. Malapropisms
23. Spoonerisms
24. Word games including puzzles, anagrams, acrostics, etc.
25. Problems of word ambiguity
26. The process of assimilation in language
27. Multiple meanings of words
28. Contractions
29. Contracted forms (cab from cabriolet)
30. Acronymic forms
31. Semantic change - amelioration, pejoration
32. Figures of speech, including
 - a. personification
 - b. simile
 - c. metaphor
 - d. hyperbole
 - e. metonymy
 - f. synecdoche
 - g. litotes
 - h. allegory
 - i. euphemism
 - j. oxymoron
 - k. alliteration
 - l. assonance

33. Portmanteau words (smog, brunch)
34. The place of slang in language
35. Literary and Biblical allusions
36. Key foreign words and phrases
37. Onomatopoeia

Many more related subjects can be added to the preceding list which could form the basis for an effective vocabulary program. But in general a systematic approach to vocabulary study would provide for wide experiences in the three major aspects of the language structure -- phonological, (the sounds of the language) syntactical or semantic (word order and meaning) and morphological (word formation in terms of combinations of phonemes in meaningful units -- roots, affixes, and inflection). In this chapter the writer stresses, particularly the morphological aspects of language as they affect vocabulary instruction. He discusses the nucleus of a systematic program of vocabulary study -- word analysis and synthesis, the study and use of generative roots and affixes.

Word Analysis and Synthesis in Vocabulary Instruction

As noted earlier, in the past we have made no systematic attempt to learn how well student know the component parts of the words they know. The Dale list (1970) indicates that bibliography is known at the tenth grade level (70 percent), but graphic meaning lifelike (from the same root) is not known at the twelfth grade level (51 percent). Stenographer is known by a score of 64 percent at the eighth grade level. The student is not generally taught to associate

stenographer with other graph words that he may have learned as a fourth grader, such as paragraph (69 percent at the 4th grade level), autograph (79 percent at the 4th grade), and telegraph (83 percent at the 4th grade).

What is the purpose of singling out the graph root (or other roots) in known words in the fourth or sixth grade? First, it will fix the meaning, second, it will make the root available for transfer to more difficult words, third it will improve spelling.

It is useful to discuss the first and second points (meaning and transfer) together. Spelling is discussed later in this chapter. One of the most effective ways to utilize the principle of transfer is through word analysis and synthesis, the systematic study of key prefixes, roots, and suffixes. Knowing the root meaning of a word helps the student mnemonically. It helps him develop memory patterns that educe concepts with wide applicability. For example, knowledge of the root path (feel, suffer) can be easily transferred to additional words formed from the same root -- pathos, apathy, sympathy, empathy, etc., as illustrated by the root web of relationships in Figure 10.

Practical Word Analysis

Inferable roots and affixes can be taught and easily mastered in a systematic, practical program of word analysis. Practicality, of course, is the key word here. In a practical approach the student would not be required to learn, say, the root cap (take, receive) and be expected to make the transfer to inflectional variants words such as perceive, receive, deceive, receipt, recipe, etc. The root

PATHOS (suffer)

Fig. 10. -- Root Web of Relationships

cap is present but it is not highly visible. High visibility would therefore be one of the prime requirements of a practical word analysis program. Thus the student would learn the practical transfers of cap, that is, such words as capture, captive, captivate, captivity, captious, etc.

Therefore, an effective systematic approach to the study of word analysis means (1) teaching key word elements as a regular part of the vocabulary program, and (2) fitting into the system only the most generative and easily transferable word elements. Thus the student who learns the element ectomy (cut out) is able to make associations between tonsilleectomy, appendectomy, gastrectomy and neurectomy. Here the principle of transfer is working and the student is not expending energy on discrete learning tasks. He moves more easily from familiar to unfamiliar words.

A student in the early grades who learns the element sub (under) in submarine carries the concept with him as he moves up the curriculum ladder and meets other sub words that carry the basic meaning of under or below, for example, subsoil, submerge, subnormal. As Dewey (1945, p. 98) notes in Experience and Education:

. . . new facts and new ideas thus obtained
become the ground for further experiences. . .
The process is a continuous spiral.

The idea is not unlike Bruner's concept of the spiral curriculum. Teaching for transfer is more-likely to result in more permanent learning than the teaching of single unstructured concepts.

Vygotsky (1962, p. 115) discusses the role of transfer in the student's cognitive progress:

In this as in other instances of passing from one level to the next, the child does not have to restructure separately all of his earlier concepts which indeed would be a Sisyphean labor. Once a new structure has been incorporated into his thinking -- usually through concepts recently acquired in school -- it gradually spreads to the older concepts as they are drawn into the intellectual operations of the higher type.

In a systematic approach to the study of roots and affixes, therefore, the student learns to make practical associations, to form combinations of meaningful word elements -- prefixes, roots, and suffixes -- that result in (1) enlarging and (2) refining his vocabulary. He sees difference in apparent likeness and likeness in apparent difference.

The importance of learning key combining forms is clear when we consider that as the student moves up the grades and becomes involved with the higher mental processes, he must use appropriate words to convey his ideas. Many of these words are highly technical in nature, often dealing with biology, zoology, anthropology, psychology, and are often combinations of Greek and Latin roots. Carroll (1955, p. 156) says that:

. . .the vocabulary of English. . .is made unnecessarily difficult for the common man because of its dependence on a large number of foreign roots -- mainly from Latin and Greek.

Carroll goes on to say that "progress can be made only by prolonged and systematic effort."

The need for students to learn word parts systematically as part of a developmental program of vocabulary growth is pointed up by the statement of Greenough and Kittridge (1961, p. 9) that our language is "constantly subjected to what may be called mechanical processes of growth." These processes include roots, affixes, derivations, inflections, and compounds of words and roots. In the language-growth process we find that these parts combine to form a synergistic whole, that is, the parts continue to connect and correlate to form a whole -- the language. In turn the language greatly benefits from this synergy in which the sum of these generative parts is, in fact, greater than the whole.

Transferability of Word Elements

The student learns many words through rich experiences -- engaging in conversation, and through wide reading. But in addition he can increase his vocabulary, expedite its growth through the systematic learning of key roots and affixes.

Systematic word analysis gives the student an effective method of attacking unfamiliar words. For example, learning to recognize key roots and word families derived from those roots provides the student with a method of transferring learned concepts from one word to another.

Knowing the Greek root phil (love) as in philosopher (lover of wisdom) helps the student generalize or remember the meaning of other phil words such as philanthropist (lover of mankind). Thus a philatelist "loves" stamps. People who "love" harmony or good music

may listen to a philharmonic orchestra. A flower that "loves" the shade is the philodendron -- from Greek dendron -- tree (i.e., tree-loving). Philadelphia is called the "city of brotherly love," from phil (love) + adelphos (brother). The transfer potential is great. The list may go on -- Anglophile, Francophile, philology, philogeny, philander, etc. Knowing the roots of words is both an effective memory device and a short cut to learning thousands of words. A knowledge of key roots is highly transferable knowledge, as illustrated by the sample list of roots and derivative words in Table 1.

Building on Previous Knowledge

Students are not in general aware that this present experience already contains the basis for learning many roots and affixes. For example, they may know the word exit but not have generalized the meaning of ex (out of) in related words such as export, (carry out); exhale (breathe out); expel (push out); extract (pull out); exclude (close out). Planned systematic vocabulary instruction in word analysis is highly productive because it draws interest from the capital fund of meaning the student already possesses.

When the student learns that words can often be put into logical groupings (an example of the classification-concept theory discussed in Chapter Four) based on the meaning of roots and affixes, he is already in the process of building a rich vocabulary. One such logical classification is number. We might therefore file number words

TABLE 1

LISTS OF ROOTS HAVING AT LEAST 5 APPLICATIONS

<u>ROOT</u>	<u>MEANING</u>	<u>EXAMPLE WORDS:</u>
magn	(great)	magnify, magnitude, magnificent, magnanimous, magnate
mal	(bad)	malice, malicious, malady, malign, malignant
man	(hand)	manual, manuscript, manipulate, manufacture, manacle
mand	(order)	command, demand, remand, mandate, counter- mand
mania	(mad)	mania, maniac, kleptomaniac, bibliomania, monomania
mari	(sea)	marine, submarine, marines, maritime, aquamarine
mater, matr	(mother)	maternal, maternity, matriarch, matricide, matrix
med	(middle)	medium, mediate, medium, mediocre, medieval
mega	(large)	megaphone, megacycle, megalith, megalomania, megalopolis
merg	(sink, swallow)	merge, submerge, emerge, immerge, merger
mers	(sink, dip)	immerse, emersed, submerge, submersion, immersionism
meter	(measure)	diameter, barometer, perimeter, centimeter, hexameter
metr	(measure)	metric, geometric, metrics, metrical, diametrically
micro	(small)	microphone, microfilm, micrometer, microbe, micron
mim	(imitate)	mimic, mimeograph, pantomime, mime, mimicry
min	(small)	minute, miniature, minor, minimize, minuscule
miss	(send, let go)	mission, missionary, missive, missile, dis- miss
mit	(send, allow)	admit, remit, transmit, permit, commit
mob	(move)	automobile, mobile, mobility, mobilize, immobilize
mot	(move)	motion, motor, promote, demote, emotion
morph	(shape)	metamorphosis, morphology, metamorphic, amorphic, anthropomorphic
mort	(death)	mortal, immortal, mortality, mortician, post-mortem

in terms of the number indicated by the prefix. For example, mono (one) produces monorail, monogram, monocle, monotony, etc.

Students in the early grades know the word bicycle. If they are taught to notice the prefix bi in bicycle they can transfer the meaning of the prefix to other words they meet -- biweekly, binocular, bisect, bipolar, bigamy, etc.

In a systematic program of vocabulary development the student would learn to notice and classify key prefixes as an effective way of remembering and relating them to a variety of words. Thus mono (one), as noted above, would yield additional words such as monarch (one ruler); monk (one who lives alone) monotheism (belief in one God); monotone (one tone); monoxide (has one oxygen atom).

The prefix bi (two) would yield bicorn (two horned); biannual (twice a year); bicuspid (two-pointed); bifocal (having two focuses); bivalve (two-shelled animal). Additional number prefixes would include tri, quad, pent, sex, sept, oct, novem, dec, and cent (100). Table 2 illustrates the transfer power of key prefixes.

Students' Knowledge of Word Parts

Up to now teachers have not developed a systematic technique to teach key prefixes, nor do they in general know the state of their students' knowledge of the meanings of prefixes. Before an effective system for teaching prefixes, roots, and suffixes can be established it is necessary to diagnose the students' knowledge of these important word elements.

TABLE 2

LIST OF PREFIXES HAVING AT LEAST 5 APPLICATIONS

<u>PREFIX</u>	<u>MEANING</u>	<u>EXAMPLE WORD:</u>
a-an	(not, without)	atom, anemia, aseptic, apathy, atheism
ab	(from)	absent, abduct, abdicate, abnormal, abstain
ad	(to)	adhere, adjoin, adverb, adjacent, adjunct
ambi	(both, around)	ambidextrous, ambiguous, ambient, ambivalent, ambilateral
amphi	(both, around)	amphibious, amphibian, ampitheater, amphibiology, amphipod
ante	(before)	antedate, anteroom, antewar, antecedent, antechamber
anti	(against)	antifreeze, antisocial, antidote, antislavery, antiseptic
auto	(self)	autograph, automobile, automat, automatic, autobiography
bene	(well, good)	benefit, beneficial, benediction, benefactor, benevolent
cent	(hundred)	centery, centenary, centipede, centigrade, centimeter
circu	(around)	circus, circuit, circular, circuitous, circumference
contra	(against)	contrast, contradict, contrary, contraband, contravene
counter	(against)	counterclockwise, counterattack, counterbalance, counteract, counterrevolution
de	(down)	descend, degrade, depress, deject, debase
dia	(through, between)	diameter, diagonal, dialog, diaphragm, diagnosis

Many students at various levels of learning do not know the meanings of prefixes and suffixes in the words they use and, therefore, are not making use of the great transfer potential for relating one concept with another. An unpublished study by Dale and O'Rourke (1966) reveals the inadequacy of instructional efforts and student knowledge in regard to the use of prefixes and suffixes. The study involved the use of matching tests in four classes at four levels in four sections of Columbus, Ohio. From an analysis of the data presented in Table 3 and Table 4 it might be inferred that:

- 1) Many key prefixes and suffixes are not well known.
- 2) Prefixes, on the whole, are better known than suffixes.
- 3) The meanings of prefixes are either not taught or not well taught.
- 4) Many affixes not known in grade school are still unknown in high school. There is lack of steady progression in knowledge gained in terms of affixes. There is little evidence of the utilization of the principle of transfer.
- 5) One would normally expect greater gain by grade in knowledge attained by the students.
- 6) Certain prefixes such as ab, ante, de, ex, ir, per, peri, which show low scores could easily be taught in the sixth grade. For example, ex (out) could be taught in familiar words such as extend, expand, exclaim, exhaust, express, exterior, exclamation (point), exclamatory (sentence), etc.

TABLE 3
PREFIX MATCHING TEST SURVEY
 Columbus Schools - 1966

Scores show average % correct.
 Four classes tested at each
 level in four sections of city.

<u>Prefix</u>	<u>Grade Level</u>			
	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
ab (from)	11%	24%	50%	44%
ante (before)	16%	19%	54%	65%
anti (against)	54%	78%	90%	95%
auto (self)	46%	50%	72%	71%
bene (well, good)	29%	33%	85%	83%
bi (two)	67%	74%	97%	98%
con, co (with)	36%	39%	60%	83%
de (down)	13%	11%	20%	29%
dis (not)	10%	9%	24%	55%
equ (equal)	71%	74%	90%	97%
ex (out of)	30%	32%	47%	52%
geo (earth)	59%	60%	95%	93%
inter (between)	26%	31%	84%	87%
ir (not)	14%	24%	43%	43%
mal (bad)	11%	29%	70%	78%
mis (wrong)	41%	51%	71%	72%
mono (one)	14%	24%	78%	90%
per (through)	6%	5%	17%	39%

TABLE 3 -- Continued

<u>Prefix</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
peri (around)	11%	19%	41%	40%
proto (first)	29%	43%	59%	57%
circum (around)	51%	62%	97%	96%
contra (against)	21%	33%	85%	84%
di (two)	14%	19%	60%	70%
in (not)	10%	15%	23%	35%
omni (all)	9%	21%	69%	67%
phon (sound)	39%	38%	77%	82%
poly (many)	17%	21%	69%	82%
post (after)	17%	29%	72	85%
pre (before)	46%	48%	80%	95%
pro (forward)	9%	15%	20%	19%
re (back)	37%	41%	75%	74%
sub (under)	63%	70%	90%	95%
super (over)	31%	41%	40%	64%
tele (distant)	17%	32%	60%	52%
trans (across)	49%	53%	71%	87%
tri (three)	60%	81%	90%	98%
ultra (beyond)	10%	19%	42%	53%
uni (one)	26%	41%	60%	87%
pseudo (false)	14%	21%	67%	68%
quasi (seemingly)	10%	18%	20%	33%

TABLE 4

SUFFIX MATCHING TEST SURVEY

Columbus Schools - 1966

Scores show average % correct.
Four classes test at each
level in four sections of city.

<u>Suffix</u>	<u>Grade Level</u>			
	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
able, ible (can be done)	51%	70%	80%	85%
ess (female)	46%	50%	48%	43%
ette, et (small)	19%	20%	31%	48%
ic, ical (dealing with)	11%	10%	23%	31%
ing (the act of)	13%	20%	62%	71%
ish (like)	6%	5%	10%	30%
ist (one who)	7%	20%	48%	65%
fy (to make)	6%	10%	15%	20%
ly (in what manner)	9%	10%	21%	37%
ment (result of)	16%	18%	28%	33%
al, ial (related to)	9%	14%	35%	34%
ism (belief in)	21%	43%	60%	65%
less (without)	29%	42%	69%	69%
let (little)	7%	20%	33%	31%
logy (science of)	30%	60%	70%	85%
ness (state of being)	11%	19%	44%	42%
or, er (one who)	10%	23%	60%	57%
ory, ery (where some- thing is made)	7%	8%	10%	26%
ward (in direction of)	20%	40%	66%	65%

A planned, systematic approach to vocabulary development would provide for an overlapping of prefix competency, a kind of over-learning through planned, thoughtful practice and built-in review. For example, the seventh grade teacher, knowing that sixth graders have learned the prefix ex, can review and test the student's knowledge of the meaning of ex. He can then progress to harder words formed from the same prefix such as exile, expeditionary, excavation. High school students would review and renew by testing prefix skills learned at the earlier levels and continue to add additional ex-words such as extrude, exhume, etc.

Knowing the state of the student's knowledge of affixes is advantageous for several reasons but it is particularly useful in the process of grade placement of affixes to be learned. This means, that on the basis of empirical data and sample testing, we can place specific appropriate roots and affixes to be learned at a specific grade level. That is, in a given grade, students can be taught the meaning of key word elements in terms of familiar words typically learned in that grade.

Through a systematic program of testing, the teacher would have a general classification of the ease or difficulty of certain prefixes and thus know when best to teach them. Therefore, what is needed is a taxonomy of generative combining forms, hierarchically arranged according to the principle of complexity -- from easy to hard. Teachers could then use the taxonomy as a guide in the judicious selection of roots and affixes to be taught and learned at various grade levels.

The writer includes a suggested taxonomy (Table 5) presented merely as an illustration, not a bona fide taxonomical instrument for instruction. It is merely a prototype of a potentially useful instrument. It should be noted, however, that the taxonomy is based on the writer's study and research in students' knowledge of combining forms and also on the familiarity of words containing those forms (as listed in Dale's The Words We Know: A National Inventory (1970.)) The "levels" to the various roots and affixes are not to be confused with grade levels. They are levels of familiarity.

In a systematic approach to the study of word analysis the teacher would find a classification of roots and affixes (such as the one found in Table 5) useful as a guide in teaching key word elements. Guided by the taxonomy, the elementary teacher might teach un, mis, tele in words such as unable, misspell, telephone. However, the elementary teacher would not in general attempt to teach the elements eu, dys, or pseudo. These elements belong to a higher level of word complexity and would be taught in words such as eulogy, dysentery, and pseudopod. A master list of combining forms would be a useful guide for planned, effective teaching of prefixes, roots, and suffixes.

But can roots, prefixes, and suffixes be taught and learned systematically with some degree of success? The writer proposes that the systematic teaching of key word parts can measurably increase the student's vocabulary and language skills. In an unpublished study (Dale and O'Rourke, 1964) reports success in students' ability to form words from key roots learned in the systematic study of word parts.

TABLE 5

A SAMPLE TAXONOMY OF GENERATIVE COMBINING FORMS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
sub (under, below)	in, im il, ir	mis (wrong)	homo (same)	a, an (not without)	mega (great)	proto (first)
un (not)	per (through)	dis (not, oppo- site)	trans (across, over)	mal (bad)	ambi (both)	gyne (woman)
non (not)	tele (distant)	port (carry)	auto (self)	penta (fice)	eu (well, good)	anthropo (man)
tri (three)	phon (sound)	scope (sight)	post (after, behind)	dys (bad)	omni (all)	neo (new)
bi (two)	cycle (wheel, circle)	spect (look)	ultra (beyond)	epi (upon, outside)	mega (great)	iso (equal)
over (above, beyond)	vis (see)	thermo (heat)	bio (life)	tetra (four)	hyper (over, above)	hetero (different)
under (beneath, below)	graph (write, record)	photo (light)	uni (one)	quinque (five)	hypo (under, beneath)	pseudo (false)

In a city-wide vocabulary program in the Columbus, Ohio Public Schools, eighth grade students studied word elements presented in self-instructional books. In a thirty-minute pre-test given in September, the students were asked to write words formed from eighteen given roots. For example, from the root graph, the students wrote words such as telegraph, autograph, stenographer, etc.

After using the vocabulary books, the same students were given the same test again at midyear as a post-test. The results of the study show that these students made gains in their ability to write words from given roots. Table 6 presents synoptic data from one higher, one average, and two lower socio-economic group schools, representative of a socio-economic cross section of eighth grade students in the city.

In general, the study indicates that systematic teaching of key roots results in students' ability to form words derived from given roots and in students' ability to combine these roots to form additional words.

The study also produced evidence that systematic word study results in more than mechanical learning (duplication). Systematic word study also influences the higher mental processes (implication and application) such as student creativity.

In addition to combining roots to form bona fide words, eighth grade students in the program also combined roots and meanings to "create" words not found in the dictionary but whose roots combined in meaningful forms. These "words" and their meanings, created for the most part by inner-city students, are presented in Table 7.

TABLE 6

GAINS IN ABILITY TO FORM WORDS FROM GIVEN ROOTS

SCHOOL	PRE-TEST	POST-TEST	"New" words written in post-test but not found in pre- test
Dominion	53	89	59 gain 66%
Indianola	44	61	37 gain 61%
Everett	48	61	34 gain 56%
Champion	32	64	43 gain 67%

Table 6 shows the average number of words written by each pupil in their respective schools.

TABLE 7

"WORDS" DEVELOPED BY 8TH GRADE STUDENTS IN COLUMBUS

grapher (writer, recorder)	scriptograph (written recording)
benedictorial (kind, blessed)	linograph (written line)
audvision (can see and hear)	perspect (something seen)
tracted (pulled, hauled)	solarscope (sun viewer)
graphometer (measures, records)	disinject (take out)
scalegraph (records, weights)	jector (hurler)
graphomatic (writes by itself)	astrometer (measures stars)
unigraph (one recording, letter)	astrocraft (spaceship)
phonomatic (makes sounds by itself)	barophone (measures weight by sound waves)
autometer (self-measuring device)	autocraft (self-steering boat)
autovision (see one's self electron- ically)	midform (center of a figure)
formatic (molds things automatically)	intraction (pulling from within)
metergraph (records measurements)	transmeter (measures across a figure)
retrometer (measures re-entry thrust)	audiograph (changes writing into sound)
audium (small hearing room)	audioscope (shows voice patterns)
audict (likes to hear records)	armobile (armed vehicle)
armatory (where weapons stored)	telescribe (records writing at a distance)
telematic (remote control)	telewaves (far off waves)
telescript (written telegram)	telesonic (distant sounds)
monocar (car on one rail)	monoscript (written once)

The creative process of forming new "words," of combining meaningful roots into meaningful word-forms indicates that the students understood not only the content but the process. A chief aim of the systematic program presented to the eighth grade students was to create an interest in words primarily by helping the students to understand the principles involved in systematic word study, particularly the principle of transfer.

As noted earlier, conceptual understanding is closely related to one's ability to make meaningful relationships between concepts. Vocabulary development is concept development. Noting the relationships between words helps students conceptualize their experiences, build new concepts on known concepts.

If the student knows the word equality, he can easily learn that the root equ- means equal in many other words, such as equator (divides the globe into two equal parts). He also learns that an equilateral triangle has equal sides (from the root lat-, side) and equal angles (equiangular); that he may solve an algebraic problem by an equation (an equality of two things); that when two items are equivalent in price they are of equal value, from the root val- (worth). Thus one concept fuses with another.

Students who learn word parts systematically have a method of remembering learned words and of attacking new words. They develop the habit of looking closely at words, analyzing whole words, breaking them into meaningful parts and synthesizing word elements to form words.

Thus the word misanthropy (hating mankind), from Greek misein (to hate) + anthropo (man) is part of a web of relationships which includes misogynist (woman-hater), from gyne (woman) as in gynecologist, and misogamist (hater of marriage), from gamos (marriage). Note also bigamist, and trigamist. Thus one root, one concept leads to another in a root web of relationships as illustrated for example, in Figure 11.

It is thus clear that a word, a concept, is not unidimensional, it is multidimensional. A given word may call up another word, or a variety of words -- names we give to experiences. The systematic study of words encourages the student to look at words, to make him word conscious. This word consciousness extends beyond "vocabulary" as such and influences other skills such as thinking, speaking, reading, listening, writing, and spelling.

Systematic Word Study and Spelling Skills

Dewey (1954, p. 49) has pointed out the importance of "collateral learning." I. Keith Tyler (1939, p. 1) in his study on Spelling As a Secondary Learning, notes that:

Children learn not only those things for which a learning activity is primarily arranged, but many other things as well, during the course of the activity. The term 'secondary learning' may be applied to these more or less unforeseen changes which take place in boys and girls. . . . Some kind of secondary learning is an inevitable accompaniment of every educational experience.

The previously noted systematic program of word study involving Columbus eighth grade students resulted not only in the students'

Fig. 11 -- Root Web of Relationships

ability to form additional words and "create" new words, it also resulted in secondary, or collateral learning, that is, the improvement of spelling.

Thus students who (in the pre-test) wrote benefit, photograph, and thermometer, spelled such words correctly in the post-test. In short, they had learned the meaningful elements bene (well), photo (light), and meter (measure), and transferred this knowledge to the spelling of words in the exercises. The students were provided with the knowledge and the opportunity to discover and apply the existing relationships between key word parts and spelling.

Hodges (1964, p. 16) says that spelling:

. . .can be learned more readily when children are given the opportunity to discover for themselves that basic structural properties underlie the spellings of many words.

Hanna and Hanna (1964, p. 25) note that in spelling activities the student should be guided:

. . .to go beyond the phonological analysis to examine the morphological elements such as compounding, affixation, or word families.

The writer views spelling as word formation. Spelling is an important, integral part of vocabulary study. Vocabulary acquisition precedes reading skill. The student must know words to read (decode written symbols.) But if the student is to go beyond decoding to encoding (writing), he must gain skill in letter-discrimination. The student must spell (place the graphemes of a word in conventional order) before he can write, or encode with skill.

But the student who studies word parts systematically can go a step further beyond recognizing grapheme-patterns. He also sees many

syllables and syllable-combinations as representing key parts of words -- roots and affixes. He can discriminate between the meaningful elements ante (before) and anti (against) in the words antewar and antiwar, or bi (two) and dis (apart) in bisect and dissect.

Hanna and Moore (1951) showed that 80 percent of the 12,000 phonemes in a 3,000 word list are spelled with predictable regularity. The linguists Bloomfield and Fries have noted the regularity in English sounds and corresponding symbols and the linguistic approach to reading is based on this assumption. This means that many prefixes, roots, and suffixes (actually meaningful syllables and compounds of syllables) appear in predictable positions in respect to phoneme-grapheme correspondence and, therefore, have implications for spelling skill.

Hanna (1966, p. 130) reminds us that:

. . .morphological factors. . .will become increasingly important in his study as the pupil matures and acquires greater sophistication in his attack upon spelling problems.

In general, students have not been taught how to classify meaningful syllables as a useful way to remember the spelling of words. A systematic approach to word study would provide this added help.

The need for a systematic approach to vocabulary development as an aid to spelling becomes apparent when we consider that many dictionaries do not supply word-element information. For example, dictionaries give the syllabication of telegram as tel e gram.

An approach to spelling emphasizing meaningful syllable combinations would stress not tel but tele, meaning "distant." Such an approach would tie in directly with a systematic study of key word parts in the early grades.

Thus the teaching of key combining forms such as tele, as a meaningful element, offers an effective way of attacking the spelling problems pointed up by Gates (Spelling Difficulties in 3876 Words, 1937), who notes that 59 percent of the spelling errors in the word telegram result from a misspelled syllable -- telagram. Students learning the meaningful syllable tele as a unit meaning "distant," would be unlikely to spell telegram and telagram, telegraph as telagraph, and telephone as telaphone -- all common spelling errors according to Gates' study. In short, the student who learns about the structure of words, the relationships between combining forms, can apply these relationships to spelling and other language arts activities and skills.

GENERAL SUMMARY

In laying the foundation for a proposed systematic approach to vocabulary development, the writer has presented some key principles related to language acquisition and growth and has made some suggestion for the practical implementation of those principles. For example, the student proceeds from known to unknown knowledge, learning new words on the basis of words already known, such as palace and palatial, example and exemplify, cone and conical, ether and ethereal.

The writer has also discussed the importance of vocabulary development in terms of its effect on cognition and its contribution to the success of the student in various areas of the curriculum. He has pointed out that vocabulary development is concept development and that the cognitive functioning of the student depends to a great extent on his ability to name his experiences, make conceptual relationships. The broader the vocabulary, the broader the perceptual and conceptual range.

The writer has noted that so important an area as vocabulary development should not be given intermittent, sporadic, desultory attention. In the past vocabulary instruction has been left too much to chance. Incidental and accidental methods have been offered in place of structured programs and models of language excellence.

The writer has, therefore, discussed the general need for a systematic general approach to vocabulary growth. The unique relationship between language and thought suggests the need for systematic, planned programs of vocabulary development, based on early, rich, concrete and vicarious experiencing.

Rich language experiences can best be realized in goal-directed learning situations that give students time to listen, reflect, and speak, that is, become actively involved in creative language interaction. It was pointed out for example in Chapter One that much creative language interaction can be carried on in the classroom at the colloquial level.

It has been noted that adequacy or inadequacy of vocabulary skills sharply influences the student's life in and out of school. Words may alter the student's view of objects and ideas, influence his perspective of society, his perception and conception of the world.

It has been noted that in effective vocabulary development rich language experiences must come early, and that student interest and motivation are key variables in effective vocabulary instruction. Thus adequate diagnostic testing, and subsequent goal-directed programs based on each diagnosis must be devised. Vocabulary development must, therefore, be seen as an integral part of general language development.

The writer has discussed the importance of viewing vocabulary development as a significant part of the communicative process, as an instrument for understanding and expressing ideas. Thus the

language system has been presented here in terms of a communication design, an input-output, action-reaction process of reciprocal, continuing language experiences that results in the opportunity to increase creative language interaction. Because it is necessary to provide students with adequate opportunity for language interaction, there is therefore great need for teachers to provide rich language experiences in a variety of ways -- through encouraging children to listen to poems and stories, to listen to recordings and radio programs, see slides, filmstrips, and films. Children get practice in language interaction by watching television programs and reacting to them, by watching, and participating in skits and dramatizations. Thus creative language interaction involves the whole sensorium of the student -- speaking, listening, reading, writing, visualizing, and observing.

There is need to view vocabulary instruction as an organic part of language growth. The naming process is basic to language acquisition. Language, and the components of language, words, are important aspects of the learning process. Through words -- mediating symbols, we move from the merely concrete to abstract thought, from percepts to concepts.

Throughout history man has realized the power of words, has recognized verbal symbols as a prime means of preserving and transmitting his culture. Man has used words to persuade and dissuade. Thus the naming process, historically and biologically is important to individual and social progress.

The naming process--vocabulary growth, is an integral part of the language acquisition system. When viewed as behavior, language acquisition and use can be examined in terms of the biological nature of man, for example, the physiological difference between man and animal that allows man to speak.

A systematic program of vocabulary development would take into account the physical and environmental circumstances that help or hinder the child in learning to speak, and the behavior of the child as a cause and result of speech. Knowledge of the child's speech viewed as behavior would be applied to the implementation of goal-directed plans and clear instructional objectives.

In a systematic program of vocabulary development the teacher would be aware of, and take into consideration the great potentialities of speech behavior that emerge with the child's maturation and would seek a variety of ways to encourage this potential through providing an encouraging environment. This means supplying excellent speech models, talking with and reading to the child, allowing time for easy conversation, letting the child experiment with the language.

Educational problems are usually phrased in terms of behavior. Speech, vocabulary, language skill, and thought are behavior. A chief aim of education is to provide the child with language experiences that cause him to think, help him move from percepts to concepts. It has been noted that through a structured program of vocabulary development (as opposed to an unstructured program) we can help the student conceptualize his experiences. Structured

conceptual learning as it relates to vocabulary and language is basic to cognitive development and a prerequisite of the higher mental processes. Cognitive processes fuse with language processes.

An effective approach to vocabulary development would provide for the utilization of the child's natural potential to use language and would enhance this potential with rich environmental experiences. The environment is a key factor in the child's language development and must provide the opportunity for his active participation in language interaction.

The process of categorization is central to speech acquisition. It is a means of ordering and organizing concepts. In a systematic program of vocabulary development the process of categorization can be successfully applied to word study. The writer has discussed the categorization process in terms of a classification-concept theory of vocabulary and language development.

Utilization of the classification-concept theory involves the teacher's possessing a taxonomic perspective of the vocabulary instructional process. It involves, for example, the teacher's awareness of the student's knowledge of words, knowing what words are unfamiliar for different students at different grade levels.

Implementation of the classification-concept theory would therefore mean that the teacher would make use of existing data on students' word knowledge. As noted in Chapter Four, these data are now available in Dale's study The Words We Know: A National Inventory (1970). Using this knowledge, the teacher can start where

the learner is, follow the key learning principle that the student should proceed from the known to the unknown.

The classification-concept theory also includes the classifying of words in different ways to illustrate meaningful relationships. For example, the words fidelity, infidel, confide, bona fide, fiduciary, confident, and confidant could be classified or filed under the Latin root fid (trust, have faith in).

Thus the fid- words are arranged, structured, classified for maximum associational learning. These words learned in a meaningful context are more readily remembered and transferred to another. The classification in this case is a context. The words are not discrete entities alone but related components of a language system.

Within the system of the classification-concept approach to vocabulary study the student may learn about and make use of a variety of context clues. In attacking new words he might use such external context clues as definition (1) by example, (2) by comparison and contrast, (3) by synonym and antonym, (4) by apposition, etc.

But the student might also learn the meaning of words through internal context clues -- the analyzing and synthesizing of meaningful word parts -- roots and affixes that often have high transfer potential. Thus the student gets the habit and profits from the experience of noting relevant relationships existing between a wide variety of words. The process encourages the student to make generalizations -- a chief aim of education.

The classification-concept theory also involves the use of synonymy and antonymy, the learning of concepts in terms of their

similarities and differences. The procedure involves classifying words broadly in terms of their general meaning. Thus under the concept beginning the student might file the words launch, initiate, alpha, nascent, debut, prologue, prelude, etc. Under the concept ending the student might list finale, omega, expire, epilogue, penultimate, etc. Thus paradoxically the student senses a real connection between opposites -- light and dark, positive and negative, alpha and omega, zenith and nadir. He learns that opposition implies relationship.

A systematic approach to vocabulary development, therefore, would involve the structuring of language activities suited to students' individual capacities, through "modifications in instruction in order to meet the needs of individual students" as Bloom (1968) puts it. This suggests not only large group instruction but also small groups of students meeting regularly in natural (not formal) situation, to discuss points of difficulty, perhaps helping each other in a tutorial situation, working on specific language-learning tasks, catching the learning rhythm.

Whitehead (1929, p. 31) reminds us that learning tasks need to be presented and carried out in natural situations. He notes that much learning does not take place because:

. . .our tasks are set in an unnatural way,
without rhythm and without the stimulus of
intermediate successes and without concen-
tration. . .

The significance of effective vocabulary development is clear when we consider that words both describe and generate experiences, and can motivate discovery, the search for new ideas, new relationships. New relationships, however, are built on previously internalized concepts. Thus an effective systematic vocabulary program would provide adequate opportunity for thoughtful practice and review the overlearning of significant processes, mastery of key concepts for maximum transfer potential.

A systematic program of vocabulary study would thus involve chiefly the principle of transfer. For most children in the fourth grade the words audience and auditorium are in sharp focus. These words are known and used. However, audible and inaudible are out of focus for most junior high school students.

In general students have not been taught the relationship between auditorium and audible as being derived from the same root aud (hear). The importance of the principle of transfer in vocabulary learning is recognized by many scholars, among them Thorndike (1934, p. 11) who says that:

Words may be grouped by any logical, psychological, or linguistic affiliations. Derivatives and compounds may be put into orderly relations with root words.

Grouping or classification as a means of association in vocabulary development is suggested by I. A. Richards (1940, p. 10). He favors a taxonomy of vocabulary that would:

. . .make families of words related in some way; for example, words that show the different degrees of feeling with which one may regard a person: tolerate, accept, like, love, adore.

The concept of association, of conceptual relationship, is, therefore, vitally important in a systematic approach to vocabulary instruction. Association is significant whether the student is learning to use a completely unfamiliar word or an almost-known word.

Therefore, a systematic approach to vocabulary study would bring almost-known words out of limbo, put into sharper perspective words that the student hears on radio and television, sees in newspapers and magazines but hesitates to use in conversation. As noted in Chapter Four the great gain in vocabulary study is not in learning new words but in bringing into sharp focus words in the penumbra of the student's speech, reading, and writing.

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