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**The effect of context clues and grammatical classes on the
ability of undergraduate international students to identify
meanings of unfamiliar words in English texts**

Sakakini, Adel Omar, Ph.D.

The University of Arizona, 1988

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**300 N. Zeeb Rd.
Ann Arbor, MI 48106**



**THE EFFECT OF CONTEXT CLUES AND GRAMMATICAL CLASSES ON THE
ABILITY OF UNDERGRADUATE INTERNATIONAL STUDENTS TO IDENTIFY
MEANINGS OF UNFAMILIAR WORDS IN ENGLISH TEXTS**

by

Adel Omar Sakakini

**A Dissertation Submitted to the Faculty of the
DIVISION OF LANGUAGE, READING AND CULTURE**

**In Partial Fulfillment of the Requirements
For the Degree of**

**DOCTOR OF PHILOSOPHY
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1988

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2

As members of the Final Examination Committee, we certify that we have read
the dissertation prepared by Ade1 Omar Sakakini

entitled The Effect of Context Clues and Grammatical Classes on the
Ability of Undergraduate International Students to Identify
Meanings of Unfamiliar Words in English Texts

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I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

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A handwritten signature in cursive script, appearing to read "A. Sahabing", is written over a horizontal line.

DEDICATION

I would like to dedicate this study to my parents in Lebanon for their love, support and encouragement.

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ABSTRACT

The purpose of this study is to examine the ability of undergraduate international students to use context clues and grammatical classes to identify unfamiliar words from context.

It investigates the difficulty of (a) five types of context clues (contrast, language experience, synonym and/or appositive, direct description, cause-effect relationships), (b) four grammatical classes (nouns, verbs, adjectives and adverbs), and (c) specific combinations of both.

Two hundred and two English compositions students participated in this study. They are native speakers of a language using a Roman alphabet such as French and Spanish (Group 1), and native speakers of a language using a non-Roman alphabet such as Arabic and Japanese (Group 2). This language classification was based on semantic, syntactic and cultural considerations.

The instrument, originally devised by Dulin (1968), consists of 25 short paragraphs, each of which is followed by five multiple choice items.

The analysis of variance (ANOVA) and the analysis of covariance (ANCOVA) were the two techniques chosen for this study. A 2x5x5 analysis of covariance with repeated measures was conducted.

Significant differences in the performance of (Group 1) and (Group 2) were found, and levels of difficulty were established among the five context clues and the four grammatical classes.

This study is significant for several reasons. First, it is one of the few exploratory investigations of context clues in the field of English as a second language. Second, this research provides insight into the processes second language readers use to identify

unfamiliar words from context. Last, this study provides a basis for further research on context clues, grammatical classes, ESL readers, their instruction and materials.

CHAPTER 1

INTRODUCTION

Authorities and researchers in the fields of reading and English as a second language (ESL) education recognize the importance of context clues as a strategy and a tool for determining word meaning. A reader's ability to use context clues is considered one of the important skills of reading: "word sense and ability to recognize words in isolation as well as in context are linguistic prerequisites to reading" (Strang, 1976). Smith, Goodman, and Meredith explained that the lexical meaning of words must have added to it a contextual meaning if a reader is to make sense of what is read. "Only larger units of language, sentence or groups of sentences, convey meaning, and this meaning is always more than the sum of its parts". Thorndike (1917) explicates the role of context clues when he wrote, "reading is a very elaborate procedure invoking a weighing of each of many elements in a sentence, their organization in the proper relations one to another, the selection of certain of their connotations and rejection of others, and the cooperation of many forces to determine final response".

Authorities in the field of English as a second language also recognize the importance of context as a source for interpreting problematic or ambiguous utterances. They believe that readers rely upon context in making sense of what is being read. Researchers such as Brown (1980), Croft (1980), Chastain (1980) and Wilkins (1976) contend that vocabulary knowledge and reading comprehension are interactive and that context promotes vocabulary learning. Wells (1976), discussing reading comprehension and context, agrees that "comprehension is the result of an interactional process between the cues provided by the reader's utterance and the knowledge the receiver can bring to bear in interpreting those clues".

Some Definitions of Reading

During the last two decades, attention has been directed to constructing a definitional and theoretical explanation of the reading process. The following overview of definitions of reading is presented to establish the strong ties among reading, meaning, and context.

Several views of reading are held; however authorities in the field of reading agree that the outcome of reading is meaning. Readers must actively use a variety of knowledge sources or clues to acquire meaning through reading. According to Gray (1960a), the reader directs attention on the printed page with the mind fixed on meaning. Thus, meaning is the target of all reading, and one should use all available clues; context is one such clue. Likewise, Gough (1972), La Berge and Samuels (1974), Mattingly (1972), and Norman (1972) assume that word recognition proceeds through a linear series of stages of analysis beginning with sensory representation and ending in meaning.

Alternatively, Goodman (1970) describes reading as a selective process which involves partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectations. Reading, then, is an active process of creating meaning from language represented by graphic symbols. The reader is perceived by Goodman as a language user who constructs meaning by interacting with print. To do so, the reader must use certain available cues, one of which is context clues.

In contrast with the previous definitions, Holmes (1970) considers reading as a process based upon a number of interacting visual, auditory, linguistic and mental abilities. These factors or variables, which function together, are broadly categorized as word recognition, word meaning and reasoning, and vocabulary in context.

Finally, Rumelhart (1977) and Stanovich (1980) define reading as an interactive-compensatory process in which good information at one level of processing can compensate

for poor information at another level. Thus, word recognition is said to depend on information provided from all levels of processing.

In conclusion, reliance on surrounding words to infer the meaning of unfamiliar words or the use of context clues appears to be crucial. It often happens in the reading situation that a two-fold task must be accomplished by the reader: 1) (s)he may need to determine the meaning of a word with more than one meaning, and 2) (s)he may need to determine meaning from the context. Thus, using context becomes a circular process--the meaning is derived from different clues in unlocking words in context, and the context itself acts as a background and stimulus for unlocking meaning.

Professional Opinion of Reading Experts Regarding Context Clues

The importance of context clues to identify unfamiliar words has been promoted by reading experts. The adequate use of context to attack new words, they believe, is neither infallible nor simple. It is a highly unreliable, guessing technique either when used for the first time in connection with a given word or when used without the supplementary aid of other techniques (Edwards, 1959). Dolch (1981), for example, recognized the essential role that use of context plays in independent reading: "There cannot always be a teacher or adult to ask questions of. In high school or college work, strange words must be attacked in this new way, as dictionaries will not be used as often as they might be. In fact, all adults use guessing from context in their reading of semi-technical material".

Gates (1935) considered context as the most intelligent and rapid device for learning new words. In addition to this, Zahner (1940) thought of context as a two-fold concept. It may either refer to the total occurrence of a particular word in the past experiential background of the reader, or to the specific setting in which a particular word may be investigated.

According to Betts, systematic use of context involves a "process of examination and evaluation - of basing the probable answer on the facts of the situations" (1946). Gray called context clues "perhaps the single most important aid to word perception" (1960b).

Other early researchers were also aware of the importance of context. Thorndike (1917), in a classical study on reading as reasoning, stated that "a word may produce all degrees of erroneous meaning for a given context from a slight inadequacy to an extreme perversion". That is, the meaning the reader constructs may not be the meaning the writer meant to convey. This may be caused by the complexity of a text or the degree of vagueness of a word or the ability and prior knowledge of a reader.

In conclusion, many experts in the field of reading have emphasized the importance and usefulness of context as a skill to be used by mature and independent readers. They have indicated the importance of utilizing context clues to gain meaning in reading.

Professional Opinion of English as a Second Language Experts Regarding Context Clues

Like the reading experts, many authorities in the field of English as a second language (ESL) have also discussed the importance and value of the ability to draw inferences from context and have made similar recommendations. However, none of these experts have attempted to study the effects of context clues on the ESL reader's ability to identify unfamiliar words.

According to Rivers (1968), the number of words one can learn in a foreign language is seemingly endless and since it is difficult to know exactly which word a reader will need next, predicting the meaning from context is the most efficient skill to teach international students. Additionally, Rivers says that international students often fail to realize that meaning is expressed in groups of words and in combinations of language

segments, and that the meaning of an individual word is usually difficult to determine when it is separated from a context of other words and phrases. Paulston and Bruder (1976) build on this view and add that, in reading, the emphasis is on content words and on the ability to recognize the meaning of a word in context.

According to a survey done by Yorio (1971), international students rated vocabulary as their greatest difficulty; that is, they did not comprehend the meaning of words in a sentence. The rationale behind this is that they looked at words in isolation. The reader, Yorio believes, must go from the surface structure to the deep structure of the text to capture the meaning. The emphasis, then, is on the need to teach vocabulary in meaningful situations and in relation to other grammatically or semantically related words.

Bridges, Sinha and Walkerdine (1978) also emphasize the importance of context. Comprehension, they write, is much more than just the ability to understand isolated linguistic messages. To understand an utterance, they believe, the listener must be able to represent the context to which it refers.

Finally, Croft (1980) and Twaddell (1970) view the use of context clues as an effective strategy for inferring word meanings. That is, contextual aids, they claim, should help readers to infer the meanings of unknown words and thereby facilitate comprehension without the need for readers to interrupt the reading act with diversions to dictionaries, glossaries or other external sources of information. In short, the idea that the use of context clues is an effective strategy for inferring word meanings becomes an important phase of foreign language acquisition.

The general conclusion one can draw from these studies and writings by experts in the field of English as a second language is that the use of context is an important and useful technique to teach students in reading, and that vocabulary should not be taught

in isolation. The implication is that since context appears to be such a help to the reader, giving students specific instructions and practice in how to use this technique might facilitate their handling of unknown words when reading. Although context clues are recognized as important to comprehension, little is known about ESL students' use of them. This study explored that issue.

Language Classification

International students who are native speakers of a language using a Roman alphabet and native speakers of a language using a non-Roman alphabet were compared. This section explains this chosen language classification in addition to other language classifications discussed by different linguists.

In his Language Typology, Horne (1966) lists four approaches to language classification: genetic, areal, sociolinguistic and typological.

According to the genetic approach, languages are grouped in terms of common ancestors and by the closeness of their historical relationships as shown by the presence or absence of shared features. Under the areal approach, languages are grouped by their location. This approach is commonly used when information concerning genetic relations is lacking. The basis of the sociolinguistic approach to language is function. Languages are grouped in such a way as to reflect their use in the community. Finally, groupings based upon common structural features are characteristics of the typological approach. The main concerns of this approach are structural similarities.

According to Comrie (1987), some languages are closer to one another than are others. For instance, English and German are closer to one another than either is to Russian, while Russian and Polish are closer to one another than either is to English. Comrie also believes that there are several other possibilities for the explanation of any

particular similarity besides the genetic relatedness. First, two languages may happen purely by chance to have some features in common. Second, certain features shared by two languages might turn out to be manifestations of language universals. Third, somewhat similar to universals are patterns whereby certain linguistic features frequently occur in the same language. Finally, two languages might share some features in common because one of them has borrowed from the other.

As was mentioned before, international students who are native speakers of a language using a Roman alphabet and native speakers of a language using a non-Roman alphabet were compared. The rationale for comparing these groups was the cultures and whether the languages were prefixing or not and on structural similarities. It was also based on language families.

Native speakers of Spanish, French and Portuguese were grouped as speakers of languages using a Roman alphabet because they belong to the Indo-European group of languages which have similar cultural settings, customs, artifacts and social structures. Native speakers of Arabic, Japanese and Chinese were grouped together as speakers of languages using non-Roman alphabets because they belong to the non-Indo-European group of languages and because this classification was appropriate and suitable for the purposes of this study. Native speakers of Spanish, French and Portuguese have the Roman alphabet in common, while native speakers of Arabic, Japanese and Chinese have a different non-Roman alphabet.

The rationale for comparing these groups was, also, the linguistic nature of each group of languages; that is, the difference in the number of letters and sounds of these languages, and the difference in the semantics and syntax of each language. It was, also, because reading strategies of students whose native languages were written in Roman

alphabets may be different from those students whose native languages were written in non-Roman alphabet. The Roman alphabet languages and strategies for reading, then, might be more similar to English than to the non-Roman since the sound/symbol relationships would be similar. Further, a contrast can be made between the two language groups lies in the way they are written and read. Two major distinctions can be made in this area: horizontal vs. vertical, and left to right vs. right to left.

Finally, the thought patterns that distinguish people coming from the East and Far East where Arabic, Japanese and Chinese are spoken and those coming from the West where Spanish, French and Portuguese are spoken have been generally thought to be in contrast (Kaplan, 1980).

In conclusion, different alphabets and different writing systems may be related to the ability of international students to identify meaning of unfamiliar words in English texts.

Statement of the Problem

The present study is a modified replication of a study investigating "The Role of Contextual Clues in the Acquisition of Specific Reading Vocabulary by Mature Readers" (Dulin, 1968). Dulin investigated the relative prima facie reader-difficulty of a) five general types of contextual clues, b) four major grammatical classes, and c) specific combinations of both when word-meaning is generated solely through context.

This study is a modification of Dulin's because it differs in terms of instrumentation and subjects. Dulin's design included five forms of twenty-five items each. Through an item analysis of all five forms, one instrument of twenty-five items was created. Also, the subjects of this study were ESL undergraduate international students. Dulin's sample population was native tenth-grade speakers of English.

The problem investigated in this study was to examine the ability of undergraduate international students to use context clues which vary by grammatical class to identify unfamiliar words. It was also to determine the relative effectiveness of each of five context clue types for these international students when reading in English.

Research Questions and Hypotheses

The purpose of this study was to investigate the effects of context clues, in conjunction with different types of grammatical classes, on undergraduate international students' ability to identify the meaning of an unknown word in reading passage.

The following five specific research questions and corresponding null hypotheses relate to the purpose of this study. Each hypothesis was tested at the .05 level of probability.

1. Is there a significant difference between subjects' use of each of the five context clues when identifying the meaning of an unknown word as measured by the context clue test?
HO1. There is no significant difference between subjects' use of each of the five context clues when identifying the meaning of an unknown word as measured by the context clue test.
2. Is there a significant difference between subjects' use of each of the four grammatical classes when identifying the meaning of an unknown word as measured by the context clue test?
HO2. There is no significant difference between subjects' use of each of the four grammatical classes when identifying the meaning of an unknown word as measured by the context clue test.

3. Is there a significant difference between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) as measured by the context clue test?
- HO3. There is no significant difference between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) as measured by the context clue test.
4. Is there a significant difference in the use of each of the five context clues between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test?
- HO4. There is no significant difference in the use of each of the five context clues between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test.
5. Is there a significant difference in the use of each of the four grammatical classes between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test?

HO5. There is no significant difference in the use of each of the four grammatical classes between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test.

Significance of the Study

Since the use of context clues is reportedly an important means for identifying the meaning of vocabulary while reading, it appears that a descriptive study which investigated the various types of context clues used by international students reading materials written in English would be of value to reading theoreticians, practitioners and English as a second language instructors. In a review of the literature, one study was found investigating the ability of international students to use context clues.

It is true that investigators such as Siebert (1943), Carton (1966) and Greenwald (1974) have examined English speakers' use of context clues when reading a second language. Nonetheless, the question posed in this proposed study - the effects of context clues on the ability of students for whom English is a second language and their native language vary by alphabet systems to identify unfamiliar words in context when reading in English - has not been previously investigated.

This study is significant for at least four reasons: First, this study is significant because it is one of the few exploratory investigations of context clues in the field of English as a second language. Second, the knowledge gained through this type of research provides insight into the process which the second language reader uses to identify unfamiliar words in reading materials written in English. Third, this study provides baseline data for related investigations, specifically, for studies related to instruction of

context clues. Fourth, based on the outcome of this research, instructional materials with a research base may be developed for undergraduate international students.

Definition of Terms

The following definitions have been developed for this study.

Context: is the written setting within which the target word appears.

Context clues: refers to the parts of the written text that aid a reader in determining the meaning of an unfamiliar word.

Grammatical class: in the present study includes nouns, verbs, adjectives and adverbs.

A passage: is meant to consist of one to four sentences.

Roman alphabet: the alphabet used by the ancient Romans, from which most modern European alphabets are derived: it consisted of twenty-three letters (J, U, and W were added later). Examples: French, Spanish and English.

Non-Roman alphabet: any alphabet that is not adopted from the Roman alphabet; a system of characters, signs or symbols used to indicate ideas, letters or speech sounds which is not adopted from the Roman alphabet. Examples: Arabic, Russian, and Japanese.

International student: any student who is a non-native speaker of English; in this case, English is considered to be a second or foreign language.

Assumptions

For the purpose of this study, the following assumptions apply:

1) The instrument of the present study consisted of 25 items, which are selected from Dulin's instrument, were found to have the greatest discriminatory power, and were also found to be the most appropriate and suitable for the purpose of this study.

- 2) The content of the instrument is appropriate for the subjects in the study.
- 3) The five context clues tested by the Dulin instrument are the most important clues since they are included in most context clue classifications.
- 4) A score of 450 on the TOEFL and a minimum grade point average in the final semester of the pre-university full-time study of English courses of 3.00 on a scale in which 4.00 is the highest grade and zero is the lowest or a total of 500 or above on the TOEFL is a measure of language proficiency.

Limitations

The study is subject to the following limitations:

- 1) The results of this study are generalizable to similar populations of international students, but may not be generalizable to other populations of English as a second language readers.
- 2) No consideration was given to subjects' number of years studying English.
- 3) The testing materials made use of only five context clues. Results might differ if other context clues were used.

Summary

Reading is viewed as a high level thinking process utilizing words within a text to build meaning in the readers' minds. Experts in the fields of reading and ESL have recognized the importance of context to acquire meaning. Various studies in the field of reading have attempted to study the problem empirically, but none have been carried out in the field of English as a second language. Little is known about the specific clues which may help the international student understand unfamiliar vocabulary items when reading in English.

The purpose of this study was to investigate the ability of college freshmen international students to use five context clues described by Dulin (1968). In addition, it examined the relationship between the use of context clues by college freshmen international students and their native language alphabet system.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Educators and researchers in the fields of reading and English as a second language teaching have emphasized throughout the literature the importance of a reader's ability to effectively use context clues as an aid to determine word meaning. It has been postulated that the use of context clues is perhaps a reader's most important word attack skill, for it is a relatively rapid technique for predicting word identification and meaning within text. Researchers have attempted to describe and measure the effects of directly teaching the use of context clues to students.

The literature reviewed in this chapter is divided into four sections. In the first and second sections, the literature which classifies types of context clues in the fields of reading and English as a second language, respectively, will be presented. Section three will focus on the ability of specific types of readers to utilize context clues and Section four will examine the importance of grammatical class to context clues.

Context Clues Classifications in the Field of Reading

There have been a number of theoretical attempts to classify the various types of context clues available to readers in the field of reading. Although the proposed classifications do not duplicate each other exactly, many do include very similar clue classes (See Table 1).

Artley's Classification

Artley (1943) generated a set of context clues. Artley admitted that his classification of contextual aids to meaning was an arbitrary one containing a great deal of overlap

Table 1
Summary of Context Clues Mentioned by Authors in the Field of Reading

Types of Context Clues	Reading Authors					
	A R T L E Y	M C U L L O U G H	D E I G H T O N	A M E S 5	D U L I N 8	J P O E H N S O N
Direct Explanation		X	X	X	X	
Experience		X		X	X	
Figures of Speech	X	X		X	X	
Graphic						X
Inference	X		X			
Paragraph Organization				X		
Pictorial Representation	X					X
Structural Aids	X		X	X	X	
Substitute Words	X	X		X	X	
Syntactic and Semantic Clues						X
Subjective Clues	X	X		X		
Typographical Aids	X					X
Word Elements	X					

between classes. He justified it by claiming that a classification of types of clues is necessary for systematic teaching, even though each clue rarely occurs in isolation.

But what does the term context clue mean according to Artley? According to Artley, the term

has been extended to include not only the words that surround a given word, but also those clues to meaning that exist in the past experience of the writer and reader, and those subtly expressed in the tone, mood and intent of the writer. Moreover, it is not only imperative that children know of the existence of context clues, but they utilize them automatically in their everyday reading. Only by doing so will they be able to transcend ordinary sense-meaning, and come to a complete understanding and full interpretation of what is being read (p. 73-74).

In other words, Artley classified context clues in three major categories: 1) "hints" given by the words surrounding a new or unfamiliar word; 2) the relevant past experiences of the reader; and 3) the author's tone, mood and intent. His specific categories were as follows:

1. typographical aids, such as quotation marks, italics, and boldface print;
2. structural aids, such as appositives, non-restrictive or interpolated phrases and clauses;
3. substitute words, such as linked synonyms and antonyms;
4. word elements, such as roots, prefixes and suffixes;
5. figures of speech, such as similes and metaphors;
6. pictorial representations, such as accompanying photos and drawings, diagrams, charts, graphs and maps;
7. inferences, for example, cause-effect relationships which help clarify the meaning of the new or unfamiliar word;
8. direct explanation, that is, examples preceding or following the key word;

9. background of experience, where previously acquired knowledge provided a clue to the new word or expression; and

10. subjective cues, such as the writer's tone, mood and intent.

McCullough's Classification

Like Artley, McCullough (1943) was interested in contextual aids in reading to determine the meaning of an unknown word. The use of context, she reported, is a technique adults rely upon most often. In later studies, McCullough concluded that "context clue" was a vague concept and the ability to use such clues was inconsistent. She also mentioned that unless context clues were studied directly at all reading levels by students and examined by researchers, vocabulary programs would be incomplete (McCullough, 1958).

McCullough reported a classification scheme the same year Artley produced his; however, hers was somewhat briefer. It consisted of only seven types of context clues:

1. comparison or contrast, where simile, parallel expressions, certain connectives or verbs may declare the relationship of the unknown word to the known one;

2. cliché, where a synonym is substituted for an outworn word;

3. mood or condition which is obtained in a previous sentence and is reflected in a subsequent word;

4. summary, where a new word might summarize several preceding lines;

5. linked synonym or definition;

6. the direct use of the reader's past experience; and

7. a combination of several of the preceding clues.

McCullough later justified her classification of context clues by referring to unpublished research, conducted by Ruth Strang and herself (1967) and to additional

experimentation conducted at Columbia and Case Western Reserve University where she taught. The results of these investigations showed that guessing is an unreliable technique to predict unknown words. Two years later (1969), she revised her original classification. The major clues in the revised system were as follows: a) definition; b) past experience; (c) comparison or contrast; d) synonym; e) familiar expression or language experience; f) summary; and g) reflection of mood or situation.

Deighton's Classification

The third theoretical attempt to classify context clues was reported by Deighton (1968). The data analyzed consisted of more than 500,000 running words of reading matter varying from technical books such as medical texts to an anthology for retarded eight-graders.

According to Deighton, context reveals meaning far less frequently than had been supposed. "To avoid misunderstanding", Deighton reported, "it is worth stating that while context always determines the meaning of a word, it does not necessarily reveal that meaning". Deighton suggested four general principles of context operation. 1) that context reveals the meaning of unfamiliar words only infrequently; 2) that context generally reveals only one of the meanings of an unfamiliar word; 3) that context seldom clarifies the whole of a meaning; and 4) that vocabulary growth through context revelation is a gradual matter.

Although Deighton concluded that context revealed the meaning less frequently than supposed, he identified five categories of contextual aids: a) definition; b) example; c) modifiers; d) restatement; and e) inference.

Ames' Classification

Ames (1965) reported the first empirical study in the literature of context clues and the categorization of context clues. He conducted an introspective study in which he attempted to classify student responses into specific context clue categories. He used an introspective interview technique with 20 advanced graduate students. His goal was to analyze their thought processes as they completed modified cloze exercises. A variety of selections containing all possible contextual situations were gathered from articles published in the Saturday Evening Post and The Reader's Digest. Nouns, verbs, adjectives and adverbs were deleted according to an every fiftieth word pattern. Simulated words were developed to replace the deleted words, but the author kept the morphological characteristics of real words.

As previously mentioned, the Ames study used the introspective technique in collecting data. Gray (1960) also utilized this technique. He described it as one of the most useful devices for understanding the nature of the reading processes. Ames asked his subjects to verbalize their thought processes and explain how they arrived at replacing the substituted nonsense word.

Unlike previous investigators, Ames arrived at a list of context clues by investigating student responses, finding fourteen clues. Individual interviews with 20 advanced graduate students were used to derive the classification scheme. The fourteen context clue categories were as follows:

1. clues derived from language experience of familiar expressions;
2. clues utilizing modifying phrases or clauses;
3. clues utilizing definition or description;
4. clues provided through words connected or in a series;

5. comparison or contrast clues;
6. synonym clues;
7. clues provided by the tone, setting and mood of a selection;
8. referral clues;
9. association clues;
10. clues derived from the main idea and supporting details of paragraph organization;
11. clues provided through the question and answer pattern of paragraph organization;
12. preposition clues;
13. clues utilizing non-restrictive clauses or appositive phrases; and
14. clues derived from cause and effect pattern of paragraph and sentence organization.

Finally, Ames used an independent judge who looked at the classification scheme to reevaluate a random sample of the subject's responses. An .80 coefficient of agreement was found between the judge and the investigator.

Ames concluded that; 1) considerable overlapping existed among categories; and 2) some categories may be more useful than others.

Dulin's Classification

Dulin (1968) reported the second empirical study in the literature of context clues. Since the present investigation is a modified replication of the Dulin study, an extensive review of the latter will be presented.

Dulin investigated the relative prima facie reader difficulty of: a) five general types of contextual aids; b) four major grammatical classes; and c) specific combinations of both

when word meaning is generated entirely through context (Dulin, 1968). The five context clues are the following:

1. contrast;
2. linked synonyms and/or appositives;
3. direct description of the new word;
4. language experience, and
5. cause-effect relationship.

The four grammatical classes are nouns, verbs, adjectives and adverbs.

Dulin constructed a five-form data-gathering instrument. Simulated words were formed to replace the real words which were presented in context. Each form consisted of twenty-five short reading selections, each followed by a five-foil multiple choice test item. Within each form, five different contextual devices were used, each in specific combination with a simulated noun, a simulated verb, a simulated adjective, a simulated adverb, and a non-word for which the correct text response was none of the above.

The instrument was administered to 315 tenth-graders who were identified by test scores and teachers' recommendations as good readers. Each form was given to 63 students. Subjects were divided approximately equally by sex and were from predominantly white, middle class homes.

Dulin reported that all inter-type differences were significant ($p < .05$) except between language experience and cause-effect relationships. In addition, the following significant differences ($p < .05$) were observed when specific combinations of context clues with grammatical classes were made.

1. contrast functioned better with nouns than with any other class;
2. direct description functioned better with adjectives than with any other class;

3. language experience functioned better with adverbs than with any other class;
and

4. both linked synonyms and/or appositives and cause-effect relationships functioned less with adjectives than with any other class.

Dulin found that no significant differences in difficulty were observed between grammatical classes generally, but each class varied in some significant way when specifically combined with a context clue. He also found that girls were better at using context clues than were boys. Finally, Dulin concluded that the ability to use context in acquiring word meaning is clearly related to other verbal abilities such as grammar knowledge and verbal reasoning abilities.

Johnson and Pearson's Classification

Contextual analysis and the use of context clues, according to Johnson and Pearson (1978), are terms which refer to a reader's attempts to understand the intended meaning of a word by scrutinizing surrounding context. They refer to "figuring out a word by the way in which it is used". Using context means an educated guess about a word's meaning.

Johnson and Pearson identified four types of context clues: typographical; pictorial; graphic; and syntactic and semantic. They claim that these four types of clues are often used concurrently and in conjunction with the other word identification skills in phonic and structural analysis.

Other Studies

Other studies have also investigated the topic of context clues, most of which were a modified replication of either Ames' or Dulin's studies. These studies are described in the following discussion.

In a modified replication of Ames' studies using his classification system, Quealy (1969) tested 72 high school students in grades 10, 11, and 12. Quealy found that the senior high school students were able to utilize the 14 context clues used by Ames' subjects. However, Quealy's subjects supplied correct responses only 42% of the time, while Ames' subjects supplied correct responses 60% of the time.

Another replication of the Ames study was reported by Thomas (1977). He hypothesized that the materials used by Ames were not representative of varying types of discourse. Therefore, Thomas repeated the introspective technique with reading matter classified into narrative prose, dramatic prose, narrative poetry, dramatic poetry, and lyric poetry in order to find whether or not the use of context clues was discourse specific. Thomas found that eleven of the fourteen context clues common with Ames' study were common to all discourse forms. He also found the mean percentage of correct responses for all poetry forms to be 32.04% and 53.54% for prose forms, a difference which was significant at the .05 level. This means that subjects' responses corresponded with an author's actual words more often in prose than poetry.

Finally, Keith (1980) attempted to investigate the ability of high risk college freshmen to use the five context clues investigated by Dulin to derive the meaning of unknown words. She also studied the effects of test format and grammatical class on subjects' ability to derive word meaning through the use of context clues. The five context clues the investigator studied were: contrast; direct description; language experience; linked synonyms and/or appositives; and cause-effect relationships. The four grammatical classes; nouns, verbs, adjectives and adverbs, were considered in relationship with each context clue. Keith concluded that there were no significant differences regarding the hierarchy of difficulty for the context clues. She also found that there were no significant

differences among grammatical classes. This is an interesting finding in light of Dulin's study. The latter study was with high school students and the former with college students. Thus, one might predict that use of context clues is related to reading development.

Context Clues Classifications in the Field of Foreign Language

Studies which are frequently cited in the field of foreign language are reviewed below. The purpose of these studies was to investigate the ability of native speakers of English to study a foreign language. In fact, only one study attempted to investigate the ability of undergraduate foreign students to understand unknown words in context when reading in English.

Like the reading experts, several foreign language specialists have also attempted to classify the context clues they found in prose texts (see Table 2).

Hagboldt's Classification

The earliest classification of context clues in foreign language was done by Hagboldt in 1926. He studied different types of inferences which French, Spanish, and German students had come across while reading an English passage. Hagboldt's classification consisted of nine inference related context clues, many of which overlap. The clues he identified were the following: 1) inference from cognates; 2) cumulative inference; 3) inference from a typical action or an object's distinctive characteristic to its behavior under certain conditions; 4) inference from the situation; 5) etymological inferences; 6) onomatopoeical inferences; 7) inference from action or use to perform or object, and vice-versa; 8) inference from the general to the specific, or the reverse; and 9) inference based on the similarity of a common expression found in both the foreign language and native language.

Table 2

Summary of Context Clues Mentioned by Authors in the Field of Foreign Language

Types of Context Clues	Foreign Language Authors		
	Hagboldt (1926)	Seibert (1943)	Carton (1965)
Direct Explanation: definition or similar expression			X
Examples: examples with words: such, such as, either			X
Structural Aids: sentence structure modifiers: words, phrases, clauses		X	X
Restatement: expansion of ideas			X
Inference: 9 types of inference clues found in general meaning of paragraph using key words, connecting of words	X	X	X
Subjective Clues: association of ideas		X	
Use of Deduction		X	
Word Association		X	

Seibert's Classification

Seibert (1943) was interested in investigating the area of context clues in connection with the teaching of a foreign language. In order to better understand how to teach the use of context clues in learning French, the nature of context clues was studied in written English. She constructed passages in which certain words were replaced by blanks. Her purpose was to analyze the strategies used by readers inferring meaning from context. Her subjects were 53 college freshmen who were asked to read the passage and fill in the blanks. Seibert found that the students were able to infer correct words from context approximately 60% of the time. Seibert did not attempt to find how the students arrived at their choice of answers. She only examined and analyzed the student's responses and then arrived at five general categories.

1. word association--that is, a) words frequently coupled in use, b) words known from their function or part of speech, c) words suggesting a known quality, d) common series of words, e) words appearing in familiar expressions, f) words used as synonyms, g) words used as antonyms;

2. sentence structure--that is, a) the same idea repeated in two forms, b) opposite ideas, c) comparison of ideas, and d) a logical chain of actions;

3. associations of ideas--that is, a) clues provided by the background, b) clues found in the following sentence, and c) clues due to everyday experiences;

4. use of deduction--that is, a) repetition of the same word in context, b) the process of elimination, and c) the use of definition and description; and

5. clues found in the general meaning of the paragraph--that is, the logical expectation that certain outcomes will be produced as a result of preceding conditions.

Seibert was joined later by Crocker (1958) to review her proposed classification. They re-examined the students' responses and attempted to deduce the thought processes which had been used. The modified classification consisted of the original five categories plus three new context clues. They were:

1. Definition, description,
2. Synonyms,
3. Antonyms,
4. Word associations; that is, the unknown word is so closely related to the words in the rest of the sentence that the reader is able to guess them by simply imagining that they have been left out of the sentence,
5. Deduction; that is, relationships of purpose, cause, effect, result, etc., link the unknown word to the surrounding known words,
6. Experience; that is, the reader's knowledge of daily experiences leads him to the meaning of the unknown word,
7. Approximate guesses; that is, the reader is unable to pin-point the meaning, but he knows, for example, that the unknown word is, say, some kind of "fabric", although he is unable to determine that it is "linen" rather than "cotton".
8. Enumeration; that is, the reader extracts from a listing of specific objects the general category to which they belong.

Carton's Classification

Inference making or inferencing, as Carton (1966) called it, seems to be one process through which language learning is extended beyond the classroom. An inference is defined as a particular variety of response. It may occur when an individual encounters an unfamiliar stimulus; such as an unfamiliar word. The inferential response is characterized

by the fact that familiar attributes of the novel stimulus, or the context containing the stimulus, elicit a concept on the part of the individual.

A taxonomy of inference cues was established to facilitate the exploration of the function of inferencing cues in foreign language learning. This taxonomy was organized around the assumption that in language study the possibilities are determined by:

1. the nature of the target language;
2. its relation to the background language; and
3. the content of the message or linguistic material under consideration.

Thus, the descriptors intra-lingual, interlingual and extra-lingual are suggested for categorizing cues.

From this analysis of inferencing cues, Carton concluded that instruction in context clues may enhance language learning. He tried to broaden this analysis by extending Deighton's conceptual scheme of context clues from English to French. This extended scheme consisted of: 1) definition; 2) examples; 3) modifiers; 4) restatement; 5) inference; 6) conjunctions; 7) key words, and 8) parallel structures.

Other Studies

Greenewald (1974) investigated the effects of context clue training on the ability of high school seniors to utilize context in their reading. Two hundred third-year high school students learning French were asked to respond to contrived context in cloze passages. Students were assigned randomly to one of the five treatment groups that were designated by treatment as 1) context clues--English, 2) context clues--French, 3) cloze--English, 4) cloze--French, and 5) vocabulary. Pre-tests and post-tests were administered which consisted of contrived context and cloze subtests in French.

Greenewald found that the groups trained with context clues in French made significant gains on the contrived context subtests, while the treatment group that utilized cloze exercises in English showed significant improvement on the cloze subtest. The investigator concluded that training in the recognition and use of context clues increases the student's ability to read and comprehend a foreign language passage which contains new vocabulary items.

Finally, Medley (1977) examined the impact of instruction in word recognition and context clues to facilitate reading comprehension and to compare and contrast the attitude and achievement among groups who were learning to read Spanish. The instrument consisted of four tests; the Modern Language Aptitude Test, parts III and IV; an English vocabulary test; an interest-attitude-motivation inventory; and the test of Spanish 101 at Berkeley. This instrument was administered to 42 native speakers of English who had never previously studied Spanish and who were divided into control and experimental groups. The analysis of the data revealed that there were significant differences ($p < .05$) in favor of the control group over the treatment group. Medley reported two major conclusions in relation to context clues;

1. instruction designed to alert the learner to recognize and understand derivatives and context clues in English does not hinder the native speaker's ability to develop reading strategies in Spanish; and

2. that there is a positive correlation between the learner's knowledge of English language vocabulary and the ability to derive meaning from a Spanish-language text.

To summarize, a number of authorities in the fields of reading and foreign language have classified the importance of context clues when identifying unfamiliar words. Some of these authorities attempted to classify the various context clues. Table 3 shows how

frequently the context clues are mentioned. As shown in this table, synonyms, past experience, direct explanation, mood or tone and inference clues are common to most classifications.

The Ability of Different Groups to Use Context and Context Clues

The following section focuses on the ability of different groups to use context and context clues. Very few studies were found which investigated undergraduate college students' ability to use context clues. In fact, very few studies have been reported on the subject with different levels of instruction, and only one has been found investigating context clues and international students learning English as a second language.

Research on the Importance of Context

According to Gibson (1940), constructing word meanings through the use of context represented only one possibility for improving vocabulary. In a study of college freshmen, she attempted to determine the extent to which college freshmen possess this vocabulary skill. Gibson found that 48% of the college freshmen were unable to use context to determine the correct meanings of words.

Strang's findings (1945), on the same subject, agreed with Gibson. She conducted an exploratory study in which she asked a number of high school and college students to explain the strategy used when confronted with unfamiliar words. Their responses, generally, were to ask someone for the meaning of the word and to look up the word in a dictionary. Strang hypothesized that students' attempts to get the meaning of unfamiliar words from context were negative because context provided them with vague clues. However, Goodman (1965) conducted a study in which words were presented first in isolation and later in a sentence. He found that children were able to recognize considerably more

Table 3

**Frequency (F) of Context Clues Mentioned by Thirteen Authorities
in the Fields of Reading and Foreign Language**

Clues	F	Clues	F
1. Association clues	2	18. Past experience	4
2. Appositives	1	19. Pictorial representation	1
3. Comparison or contrast	3	20. Preposition clues	1
4. Cliches	1	21. Question and answer	1
5. Clue combination	1	22. Restatement	1
6. Cause-effect relationship	1	23. Referral	1
7. Definition	7	24. Synonyms	5
8. Equivalent phrases or sentence design	1	25. Situation summarized by a strange word	2
9. Equivalent phrases or sentence design	1	26. Sentence structure	1
10. Examples	1	27. Summary	1
11. Figures of speech	2	28. Structural aids	1
12. Familiar expression	2	29. Substitute words	1
13. Inference	4	30. Subjective tones	1
14. Mood or tone	4	31. Topographical aids	1
15. Modifiers	2	32. Words association	1
16. Main idea and details of paragraph organization	1	33. Words connected in a series	1
17. Non-restrictive clauses or phrases	1		

words when words were presented in context. Goodman reasoned that when the word appeared in a sentence rather than in isolation, the child had a rich source of syntactic and semantic cues that could be used for word recognition. The use of context to identify unfamiliar words then, is not agreed upon. Context was considered by many experts to be crucial while others believed it was not.

Perfetti, Goldman and Hagaboam (1979) compared the ability of skilled fifth-grade readers to use context when identifying words presented in varying degrees of context. The purpose was to examine directly the relationship between reading skill and the use of ordinary discourse context in word identification. Less skilled readers were thought to have difficulty using context when obtaining the context depended on reading. They concluded that interaction of context with reading skill indicated that context was more helpful to less skilled readers than to skilled readers.

Ehri and Roberts (1979) continued investigating the same issue but studied effects of teaching when words were presented in isolation and in context. Their findings showed that context-trained children learned more about the semantic identities of printed words, whereas flash card trained children could read the words faster and learned more about orthographic forms. Gross (1979) also studied the ability of first and second grade pupils to read in context words that had previously been missed in isolation. Gross concluded that the degree to which sentence context contributes to word recognition by first and second grade pupils may be less than Goodman (1965) reported. He recommended that more research on the relationship of context cues for word recognition by beginning readers is needed.

Other researchers investigated the importance of context. Merrill, Sperber and McCauley (1980) found in a study on the effects of context on word identification in good

and poor readers that differences between good and poor readers in word decoding skills are not necessarily related to differences in the ability to extract and utilize the semantic content of written material.

Schwartz (1980) investigated the relationship between lower level code availability and top-down contextual processing in word recognition. Context was manipulated in terms of coherent versus random passage organization and the presence or absence of prior thematic framework information. The utility of context information was measured by means of a word boundary task. Findings of the experiment suggested that both sentence organization and framework contribute to word recognition processing of connected text.

Finally, Carmine, Kameenui and Coyle (1984) attempted to evaluate students' ability to utilize conceptual information in learning of unfamiliar words. The general conclusions were that students were better able to determine the meaning of unfamiliar words when a) contextual clues were provided, b) students were older, c) the clues were in synonym rather than inference forms, and d) contextual clues were closer to the unfamiliar word.

The literature reviewed in this section was focused on the importance of context. Some researchers suggested that context is important while others concluded that context made little difference.

Research on the Importance of Context Clues

Many experts in the fields of reading and foreign language have assumed that context is important and then have emphasized the importance of context clues to unmask unfamiliar words. Authorities such as Betts (1946), Smith (1963) and Heilman (1964) agreed on the importance of context clues to identify strange words.

In a study on context clues and word mastery of junior college students, Edwards (1959) concluded that the effective use of context clues in word learning depends upon a

complex of other abilities and conditions. Edwards also found that there were individual differences among junior college students in their abilities to use context in helping to understand unfamiliar words.

In similar studies, Rankin and Overholser (1969), Emans and Fisher (1969), and Olson (1971) attempted to find the importance of context clues with different subjects of different ages. Rankin and Overholser investigated the utilization of thirteen types of context clues in relation to reading ability. They concluded that intermediate grade children can respond adequately to certain types of clues but not to others.

Emans and Fisher (1969) found that context clues, when used along with phonetic and structural analysis, provide one of the best means for achieving the recognition of a word. They also found that context clues can be used for determining the meaning of a word. On the other hand, Olson (1971) studied the ability of sixth-grade pupils to use context clues for identifying unknown words in science and social studies reading materials, and the types of context clues most frequently used. Results of his study showed that experience or familiar expressions were the context clues used most frequently and that summary was the context clue used least frequently.

Other researchers investigated the importance of context clues; among them were Greenewald and Gipe. Greenewald's (1974) study, also discussed in a previous section, examined the effects of training on the ability of high school seniors to utilize context in reading a foreign language. The five treatments tested included a) training involving English and French versions of contextual clue exercises, b) training involving English versions of cloze exercises, and c) a control treatment consisting of vocabulary exercises in French. Although statistically significant treatment group gains were found, they were not considered to be of great pedagogical significance because the post-test performances

remained far too low to be indicative of true skill mastery. Thus, Greenwald qualified her results because of the difficulty of the test instruments and possibly inadequate training materials.

Finally, Gipe (1978) investigated the effectiveness of four methods for teaching word meanings. This study involved an attempt to examine the influence of language, cognitive development, and memory processes on word learning in elementary school children; as well as the influence of sex and level of reading achievement (good and poor readers) on the performance of the subjects.

The four methods Gipe investigated were: association; category; context; and dictionary. Her findings were supportive of vocabulary instruction and associating new words with familiar synonyms, while not supportive of category labels and dictionary practice. Gipe's main conclusion was that an interactive model for cognitive processes might provide useful information for studies investigating vocabulary development.

The Importance of Grammatical Class to Context Clues

The purpose of this section is to review studies which investigate the effects of parts of speech on reading comprehension.

Morgan and Bonham (1944) attempted to investigate this issue. They wanted to determine the extent to which words, as affected by their parts of speech, differ in learning difficulty. The parts of speech studied were nouns, pronouns, verbs, adjectives, prepositions, articles, conjunctions and interjections. One hundred forty-eight seventh and eighth grade native speakers of English constituted the sample of the population studied. All pupils in the sample learned all the words created for the study. An effort by the investigator was made to equate the different parts of speech on the basis of frequency of

English usage, unfamiliarity of foreign equivalent, length of foreign equivalent, ease of pronunciation and spelling, frequency of exposure sequence, and purity of grammatical form. Morgan and Bonham found that nouns were easier to learn than verbs, adjectives, adverbs, pronouns, prepositions, and interjections. They also found that adverbs appear to provide the greatest difficulties of word association. Other differences in ease of learning of verbs, pronouns, prepositions, adjectives, and interjections appeared to be either inconsistent or so small as to be unreliable.

Aborn, Rubenstein and Sterling (1959) investigated the effect of grammatical class on the ability of 24 high ranking college freshmen to predict omitted words in sentences of different length. They chose 1,380 sentences from different widely read magazines. One word was deleted from each sentence and replaced by a blank of standard length. The 24 students met over a period of 4 weeks to complete the task of supplying the missing word in each sentence. The exact word replacements were counted as correct. The results of the study showed that grammatical class has a significant effect on predicting the exact word replacement, and that the following hierarchy of difficulty, from easy to most difficult, was supported by the study: function words; pronouns, verbs; adverbs; nouns and adjectives.

Louthan (1965) also attempted to research the importance of grammatical class in reading comprehension. To measure the effects of deleting certain grammatical classes of words, twenty-four prose passages of 500 to 600 words each were selected or written and then prepared in seven cloze forms. An eighth passage was left in tact as a control form. All forms of each test were followed by twelve comprehension questions, the first six of which were factual and the second six inferential. The passages varied widely in subject matter and were excerpts of fiction or non-fiction. Seven types of grammatical classes

were deleted: type one was a deletion of the last word of each ten-word segment, regardless of class or function. Type two was a deletion of nouns, proper and common, as determined by morphology and syntax. Type three was a deletion of specific verbs, exclusive of function. Type four was a deletion of specific modifiers, adjectives and adverbs. Type five was a deletion of prepositions and conjunctions. Type six was a deletion of function words which linguists usually call "noun determiners". Type seven was a deletion of substantive users of pronouns. The population of the study consisted of 236 seventh grade pupils in a suburban school in upstate New York. Each pupil was given a form and was asked to fill in the words which were missing and answer comprehension questions.

Louthan found differences in the ability of children to answer comprehension questions when different deletions were made according to specific grammatical class. He also concluded that of the single class deletions, type two, that is the deletions of nouns, had a significant effect on the ability to provide correct answers.

Ames (1965), Dulin (1968) and Quealy (1969) also found that grammatical class plays a major role in reading comprehension. The results of Ames' study indicated that it is possible "to place the types of context clues that are useful in helping reader derive the meanings of unfamiliar words into a classification scheme having substantial reliability". Ames found that there is a relationship between grammatical class and types of context clues. Nouns were found to be the easiest and adjectives and adverbs the most difficult.

In his study on context, Dulin did not find any overall significance for grammatical class. But a certain hierarchy of ease of meaning acquisition was found to exist among the five context clues Dulin investigated. Contrast functioned better with nouns than with other classes; direct description functioned significantly better with adverbs than with

other classes. Cause-effect relationships and linked synonyms and/or appositives were found to function less well with adjectives than any other class.

Finally, Quealy, utilizing Ames' instrument with a high school population, found significant differences between the ability to use context clues and grammatical class. Analyzing that relationship, Quealy reported significant differences between nouns and adjectives, verbs and adverbs. He did not find any significant differences between verbs and adjectives and nouns and adverbs.

To summarize, the general conclusion from these studies and other studies reported by Aborn, Rubenstein and Sterling (1959) and Levin and Kaplan (1970) on the relationship between context clues and grammatical class is not clear. As we have seen, some studies found an overall significance between grammatical class and context clues while others concluded that certain parts of speech such as nouns and verbs were easier to learn than adjectives, adverbs and prepositions.

Summary

Four distinct areas of research in the fields of reading and foreign language have been discussed. Though each is relevant in some way, none provided clear-cut answers to the questions raised in this study.

In the first two sections, the literature related to context clues classifications in the fields of reading and foreign languages has been reviewed. The studies reported could be classified into research investigations and wisdom writing. The leading figures of empirical research were Ames and Dulin; while Artley, McCullough, Seibert and Deighton were the masters of wisdom writing on context clues.

The ability of different groups to use context clues was investigated and the relationship of context clues to grammatical class were examined in the third and

fourth sections. No overall conclusions could be drawn. The ability of different groups to use context clues is still being studied while the relationships between context clues and grammatical class have not been clearly resolved yet.

CHAPTER 3

DESIGN OF THE STUDY

This was an exploratory study to determine the types of context clues employed by undergraduate international students when reading an English passage. Thus, the problem to be investigated was the effect of context clues on the ability of undergraduate international students, who vary by the type of alphabet system of their native language, to identify unfamiliar words.

The purpose of this chapter is to present the research methodology employed in this study. The methodology includes the following components: the instrument, the pilot study, the sample, procedures, and a summary.

The Instrument

In his 1968 study on the "Role of Contextual Clues in the Acquisition of Specific Reading Vocabulary by Mature Readers," Dulin devised a multiple choice test using four grammatical classes and five context clues. Nouns, verbs, adjectives and adverbs were the four grammatical classes examined. The five context clues used, as described by Dulin, were the following:

1. CONTRAST; that is, the developing, through the use of specific antonyms or definitive phrases and clauses, of the exact opposite or logical antithesis of the meaning of the new words.

2. LINKED SYNONYM AND/OR APPOSITIVE; that is, the pairing of the new word with presumably understood synonym or synonymous phrases in series, or the linking of it with a synonym, appositive, or appositive phrases through punctuation.

3. **DIRECT DESCRIPTION**; that is, the describing, through the use of definitive and/or descriptive passages preceding or following the new word, of what the meaning must be.

4. **LANGUAGE EXPERIENCE**; that is, the introduction of a new word in such a linguistic or experiential setting as to guide the reader to the appropriate mental construct.

5. **CAUSE-EFFECT** relationships; that is, the development of a dependent relationship from which the meaning of the new word could be inferred by reasoning from cause to result. (See Appendix A for detailed definitions and examples of each of the five context clues.)

The initial test was a five-form multiple choice test with a total of 125 items. Each item consisted of one to four sentences in which one word was replaced by a nonsense word. An inflectional or structural endings of the original words were retained on the nonsense word. Five possible choices were provided, including a "none of the above" option. In this way, each of the five context clues appeared once in combination with each grammatical class and once with the "none of the above" option in each form of the test. Dulin submitted these items to five judges who were experts in the field of reading. They were asked to respond to them in terms of correct answer, context clues and grammatical class. Dulin reported that new items were constructed and examined when there was less than complete agreement. The final items represented complete agreement among the judges.

Dulin chose the five types of context clues because they appeared in the classifications of McCullough, Artley, and Ames. The four grammatical classes were chosen because "they are apparently more amenable to meaning generations solely through context than are 'function' words such as prepositions, conjunctions, and the like".

After analyzing his data, Dulin found the estimate of reliability of each form of the instrument. The reliabilities obtained for forms A, B, C, D and E were .54, .73, .78, .77 and .79 respectively.

Item Analysis

Dulin did not report an item analysis on his five forms test to find the most reliable items. This was important to the present study because one form of 25 items was constructed, similar in format to Dulin's forms. It was also preferred to give one form to all students rather than five different forms. The low reliabilities obtained for Dulin's forms and the limited number of subjects available for this study suggested the need for 1) an item analysis of all the items in Dulin's forms, and 2) the creation of one form for use in this study.

The item analysis consisted of the following two steps. First, the five-form multiple choice test constructed by Dulin was administered to 175 tenth grade native speakers of English, with each form being given to 35 students. Second, the responses to each item of each form were analyzed and those items clustered around the mean were selected to create a new form (see Table 4). The new form consisted of 4 items from form A, 10 items from form B, 4 items from form C, 3 items from form D and 3 items from form E were found to have the greatest discriminatory power and were also found to be the most appropriate and suitable for the purpose of this study. These 25 items were selected to create the one form to be used in the present study.

The newly constructed form (see Appendices C and D) was then evaluated for its difficulty and appropriateness as a data gathering instrument for the proposed study. To do so, a pilot study was conducted by examining reactions of 18 undergraduate international students.

Table 4

Means and Standard Deviations of the 5 Forms and the Total Mean

Form	Mean	S.D.
A	7.57	2.29
B	8.06	2.72
C	8.17	2.48
D	6.60	2.00
E	7.43	2.19
Total	7.56	2.34

The Pilot Study

The purpose of the pilot study was to determine the appropriateness of the instrument for use by undergraduate international students. The following questions were investigated: 1) would undergraduate international students be able to read the instrument? and 2) did the items in the instrument present topics which were generally familiar to international students?

Answers to these questions were sought in two different ways: first, through a written test which consisted of 25 items which were found to be the most appropriate on Dulin's instrument; second, through an interview with each international student participating in the pilot study.

Reaction of 18 Undergraduate International Students

The instrument was administered to 18 undergraduate international students at the University of Arizona in the Fall of 1985. Six students were native speakers of languages with Roman alphabets, such as Spanish and Portuguese, who came from Mexico (two women and a man), Brazil (two women), and Venezuela (one woman). The others were native speakers of languages with non-Roman alphabets such as Arabic and Japanese who came from Jordan (two women and a man), Saudi Arabia (two men), Japan (three women and a man), and China (two women and a man).

The results of the pilot study suggested that these students were able to read the items on the instrument. Fourteen of the 18 were able to satisfactorily answer at least half of the items. During an informal interview, all subjects were asked about their familiarity with the content of the items. All subjects reported that their background in English and their background in a culture other than the United States did not limit their understanding of the items. In other words, it appeared that the items in the instrument were of a very general nature.

Upon completion of the pilot study, it was assumed that the one form was appropriate for undergraduate international students and that it was a valid instrument for this investigation.

The Sample

Selection of the subjects was restricted to undergraduate international students who were native speakers of languages with Roman alphabets such as Spanish and Portuguese and native speakers of languages with non-Roman alphabets such as Arabic and Japanese. Table 5 shows the number of subjects from each country participating in this study, while Table 6 shows the mean scores and standard deviations of each group in the TOEFL. Table 7 shows the number of cases, total section score means and total score means of those who took the TOEFL from July 1982 through June 1984. The sample of this study came from the countries mentioned in this table.

The subjects participating in this study were 202 male and female students who attended the University of Arizona during the Fall semester of 1985 and who were required to enroll in English composition courses 106, 107, and 108, which are equivalent to freshman English for native speakers. All undergraduate international students are required to take one, two or three courses of English composition according to the result of a placement test given before they register. The English courses are: 106, expository writing of paragraphs, grammatical review, and reading of literature; 107, expository and argumentative essay writing based on extensive reading of literature; and 108, critical essay writing based on several works of literature. In addition, the undergraduate international students are required to have scored a total of 450 or above on the Test of English as a Foreign Language (TOEFL) with a minimum of 3.0 grade point average in the final semester of pre-university full time study of English courses, or a total score of 500 or above

Table 5

Native Country and Number of Students Participating in This Study

Subjects who are native speakers of a language using a non-Roman alphabet		Subjects who are native speakers of a language using a Roman alphabet	
<u>Native Country</u>	<u>No. of Students</u>	<u>Native Country</u>	<u>No. of Students</u>
China, P.R.O.	5	Belgium	2
Hong Kong	7	Bolivia	2
Iraq	4	Brazil	8
Japan	18	Chile	4
Jordan	6	Columbia	3
Korea	6	France	3
Lebanon	11	German, F.K.O	5
Oman	2	Greece	2
Qatar	3	India	4
Saudi Arabia	22	Italy	3
Syria	4	Mexico	21
Taiwan	13	Norway	1
United Arab Emirates	<u>4</u>	Panama	3
		Peru	4
		Poland	3
		Portugal	2
		Spain	4
		Sweden	2
		Switzerland	1
		Venezuela	<u>8</u>
Total	101	Total	101

Table 6

TOEFL Means and Standard Deviations of Subjects who are Native Speakers of a Language using a Roman Alphabet (Group 1) and Native Speakers of a Language using a Non-Roman Alphabet (Group 2)

Variable	Group	Mean	S.D.
TOEFL	1	533.45	43.79
TOEFL	2	512.25	27.82
TOEFL	1 & 2 (total)	522.85	38.10

Table 7

TOEFL Total Section Score Means -- All Examinees Classified by Native Country

(Based on 669,691 students seeking admission to institutions in the United States who took TOEFL from July 1982 through June 1984)

Native Country	No. of Cases	Listening Comprehension	Structure and Written Expression	Vocabulary and Reading Comprehension	Total Score Mean
Belgium	2251	58	57	58	576
Bolivia	2554	53	49	51	512
Brazil	8440	52	51	53	520
Chile	3094	52	50	54	521
China, P.R.	3406	49	50	48	491
Columbia	9863	52	50	52	515
France	10604	54	55	57	554
Germany	9238	59	58	57	582
Greece	22350	53	51	50	514
Hong Kong	117622	51	51	51	511
India	47616	54	57	57	562
Iraq	4788	50	46	46	476
Italy	4388	54	55	56	552
Japan	85523	49	50	49	495
Jordan	26269	49	46	44	463
Korea	60228	48	51	52	503
Lebanon	18141	52	49	49	495
Mexico	15980	54	51	54	532
Norway	3793	59	55	54	554
Oman	656	50	45	44	464
Panama	2793	52	49	51	508
Peru	4560	52	50	53	516

Table 7--continued

TOEFL Total Section Score Means -- All Examinees Classified by Native Country

Native Country	No. of Cases	Listening Comprehension	Structure and Written Expression	Vocabulary and Reading Comprehension	Total Score Mean
Poland	1817	55	52	53	534
Portugal	933	56	54	55	552
Qatar	939	48	42	41	437
Saudi Arabia	20370	48	44	43	448
Spain	3246	55	54	56	547
Sweden	2904	62	57	57	588
Switzerland	2719	58	56	56	568
Syria	5966	51	47	46	482
Taiwan	137975	49	50	50	499
U.A.E.	2291	50	43	42	451
Venezuela	31606	50	46	49	483

Note: From TOEFL Test and Score Manual (p. 24), Educational Testing Services, 1986 Edition, Princeton, NJ

in the TOEFL. Since the Test of English as a Foreign Language is a requirement for acceptance to any university in the United States, and since it is used as a covariate in this study, it is important to shed some light on its content, construction and validity.

Reliability and Validity of the TOEFL

The Test of English as a Foreign Language (TOEFL) is a standardized test designed to measure the international student's proficiency in English. In 1976, the Educational Testing Service, which prepares and publishes the test, revised it by reducing it from five to three subtests: listening comprehension, structure and written expressions, and reading comprehension and vocabulary. The old test consisted of 200 four-choice questions on which examinees were allowed to work for two hours and twenty minutes. The new format consists of 150 questions. The old test is now being used locally at most colleges and centers of English as a second language, while the new format is given internationally.

The reliability of a test is the extent to which it yields consistent results. The standard error of measurement is an estimate of the probable extent of the error inherent in a test score due to the imperfect reliability of the test. Table 8 shows average international consistency reliabilities and standard error of measurement of the scaled scores for the three sections and the total test for the twenty-four forms administered between July 1982 and June 1984.

The three sections of TOEFL are designed to measure different skills within the general domain of English proficiency. It is commonly recognized that these skills are interrelated; persons who are highly proficient in one area tend to be proficient in the other areas as well. Table 9 shows the correlation coefficients measuring the extent of the relationships among the three sections and with the total test score. It also shows average correlations over the twenty-four forms administered between July 1982 and June 1984.

Table 8
Reliabilities and Standard Error of Measurement of the
Test of English as a Foreign Language

Section	Reliability	S.E. of Measurement
1. Listening Comprehension	.89	2.1
2. Structure and Written Expression	.86	2.7
3. Vocabulary and Reading Comprehension	.90	2.3
Total Scores	.95	13.8

Note: From TOEFL Test and Score Manual (p. 25), Educational Testing Services, Princeton, NJ, 1986.

Table 9
Intercorrelations Among the Scores of the
Test of English as a Foreign Language

Section	1	2	3	Total
1. Listening Comprehension	---	.67	.68	.86
2. Structure and Written Expression	.67	---	.78	.92
3. Vocabulary and Reading Comprehension	.68	.78	---	.92
Total Scores	.86	.92	.92	---

Note: From TOEFL Test and Score Manual (p. 26), Educational Testing Services, Princeton, NJ, 1986.

In addition to being reliable, the test appears to be valid; that is, it actually measures what it is intends to measure. For the TOEFL, then, validity relates to how well the test measures a person's proficiency in English as a second language.

Establishing the validity of a test is admittedly one of the most difficult tasks facing those who design tests. For this reason, validity is usually confirmed by analyzing the test from a number of perspectives. The validity of TOEFL is reflected in three different but interdependent kinds: content, criterion-related and construct. Thus, it appears that the Test of English as a Foreign Language is a reliable and valid test designed to assess the English language skills of students whose native language is not English and who are applicants for admission to American colleges and universities.

Procedures

Administrative Procedures

A formal request to conduct this study was submitted to the coordinator of the English composition courses for international students at the University of Arizona. In the request, the investigator explained the purpose of the study and the need to give this data gathering instrument to all undergraduate international students enrolled in courses 106, 107, and 108. The coordinator approved the researcher's request.

Another formal request was submitted to the Director of the International Student Office since that office accumulates information on all international students. The purpose of the request was to verify the results of the TOEFL scores reported by students. This request was granted.

The test was administered to all students during a two-week period by the investigator. The classroom teachers were notified and were asked to stay while the students took the test. A normal class is approximately 20 students. The classroom

teachers acted as proctors during the test to prevent copying and collaborating. The students were allowed to take as long as needed to finish the task, but not to exceed a 50 minute class period. They were informed of the purpose of the test, which was to examine the ability of international students to understand unfamiliar words in context. Each subject was also asked to fill in a personal data sheet which required the subject's name, age, native country and language, TOEFL scores and other demographic information (see Appendix B).

Statistical Procedures

Information from the test scores for each subject were coded numerically on a coding sheet and then transferred into the computer for data processing. The most recent version of the Statistical Analysis System (SAS) (1985) was utilized in generating a computer program for analysis of the data.

Two techniques were selected to test the proposed hypotheses of this study. First, the analysis of variance (ANOVA) estimated the degree of significance between means. Second, the analysis of covariance allowed comparison of group means on a dependent variable after these group means were adjusted for differences between the groups on some relevant covariate variable. The analysis of covariance was used in this study to compare the performance of native speakers of a language with a Roman alphabet and native speakers of a language with a non-Roman alphabet on the context clue test with scores on the Test of English as a Foreign Language (TOEFL) being used as the covariate. The analysis of covariance is justified where treatment groups differ significantly and where the researcher is unable to control such differences in the design (Winer, 1971).

A 2x5x5 analysis of covariance with repeated measures was then conducted. The repeated factors included categorization of the context clue test score and the grammar clue

test scores. In other words, the repeated measures aspect of the analysis of covariance is the recategorization of the context clue test into: a) the five context clues, and b) the four grammatical classes.

The analysis of covariance assumes that: 1) the members of the subgroups are drawn randomly from a normally distributed population; 2) the subgroups are independent and mutually exclusive; and 3) the variance of the subgroups is homogeneous.

The dependent variable in this study is the overall score on the context clue test; that is, a) scores on the five context clue tests; b) scores on the four grammatical classes. All mean scores of the five context clues and the four grammatical classes range from zero to one. The alphabet system (i.e., native speakers of a language with a Roman alphabet versus native speakers of a language with a non-Roman alphabet) was the independent variable involved in this study.

It was also important to select an appropriate "level of significance" as a criterion for judgment in rejecting or accepting the null hypotheses. In accordance with studies concerning human behavior, the .05 level of significance was selected as the criterion for testing the hypotheses of this study.

Prior to testing the hypotheses, it was necessary to find if there was significant difference between subjects who were native speakers of a language with a Roman alphabet (Group 1) and subjects who were native speakers of a language with a non-Roman alphabet (Group 2) with regard to the Test of English as a Foreign Language.

In short, the analysis of covariance (ANCOVA) of three-factor mixed design with repeated measures on two (1 between and 2 within) was assumed to be the best design for this study. The major factors were: native alphabet system, context clues and grammatical classes. Scheffe's post hoc test was performed to determine significant differences

between means. As recommended by Scheffe, the .05 level of significance was used because of the stringent nature of the test.

Summary

This chapter described the design and procedures of this investigation. An instrument, adapted from a study by Dulin (1968) was piloted. The test gathering instrument consisted of 25 items. Each item consisted of one to three sentences followed by five multiple choice options. The subjects were 202 undergraduate international students who were required to enroll in an English composition course designed for international students at the University of Arizona. The response of these undergraduate international students were analyzed using the analysis of variance and the analysis of covariance of repeated measures with the Test of English as a Foreign Language (TOEFL) as the covariate. The level of significance for the analysis was set at .05.

CHAPTER 4

RESULTS AND DISCUSSION

The objectives of this study were to determine the types of context clues and grammatical classes used by undergraduate international students when reading an English text. The purpose of this chapter is to report and discuss the results of this investigation. Each null hypothesis and its accompanying research question is presented followed by the relevant finding and a brief discussion of the possible meaning of these findings.

Statistical Treatment of the Data

The data were submitted to an analysis of variance (ANOVA) and analysis of covariance (ANCOVA) with repeated measures on all factors: context clues, grammatical classes and groups according to the alphabet system of subjects' native languages. Post hoc multiple comparisons were applied using Scheffe's test. The Test of English as a Foreign Language (TOEFL) was used as a covariate.

This covariate was found to be significant (Tables 14-18 and Tables 21-25). That is, the independent variable the research chose to statistically control did have a significant relationship on the dependent variable. Therefore, any variation in context clues and grammatical classes which is related to the dependent variable that could have been influenced by the TOEFL scores have been statistically controlled and partialled out.

H01. There is no significant difference between subjects' use of each of the five context clues when identifying the meaning of an unknown word as measured by the context clue test.

The results of the analysis of variance (ANOVA) are shown in Table 12. The significant F value for Factor A, context clues, indicated that there is

significant difference between subjects' use of each of the five context clues when identifying the meaning of an unknown word as measured by the context clue test.

An examination of the means and standard deviations of the five context clues, summarized in Table 10 and depicted in Figure 1, showed that students successfully used linked synonym and/or appositive clues most often and cause-effect clues least often. This finding substantiates the hypothesis and provides support. Therefore, the null hypothesis was rejected.

Scheffe's post hoc tests were applied only where one might predict differential results to occur, rather than between all possible combinations of groups. Significantly different context clue scores were found between cause-effect clues and the other four context clues. Cause-effect clues were found to be the most difficult.

The nature of a context clue allowed the subjects to respond well on a particular clue while it did not allow him/her to do well on another. For example, it is difficult to conceptualize a contrast clue or understand a language experience clue in a sentence. Also, it is hard to understand that there is an effect for every cause. This is related to the intellectual thinking of one group but not the other and as part of the culture of that group.

The statistical analysis of the data produced several hierarchies between and among the five context clues. The following hierarchy of increasing difficulty was concluded from this study: linked synonym and/or appositive, language experience, direct description, contrast and cause-effect relationships. This means that the subjects of this study showed that certain clues were easier to use than others in finding the meaning of unknown words from context.

Table 10

Means and Standard Deviations (SD) of Each Context Clue Test (N = 202)

Context Clue	Mean	S.D.
Contrast	2.63	1.13
Linked Synonym and/or Appositive	2.78	1.15
Direct Description	2.66	1.03
Language Experience	2.69	1.18
Cause-Effect Relationships	2.12	1.28

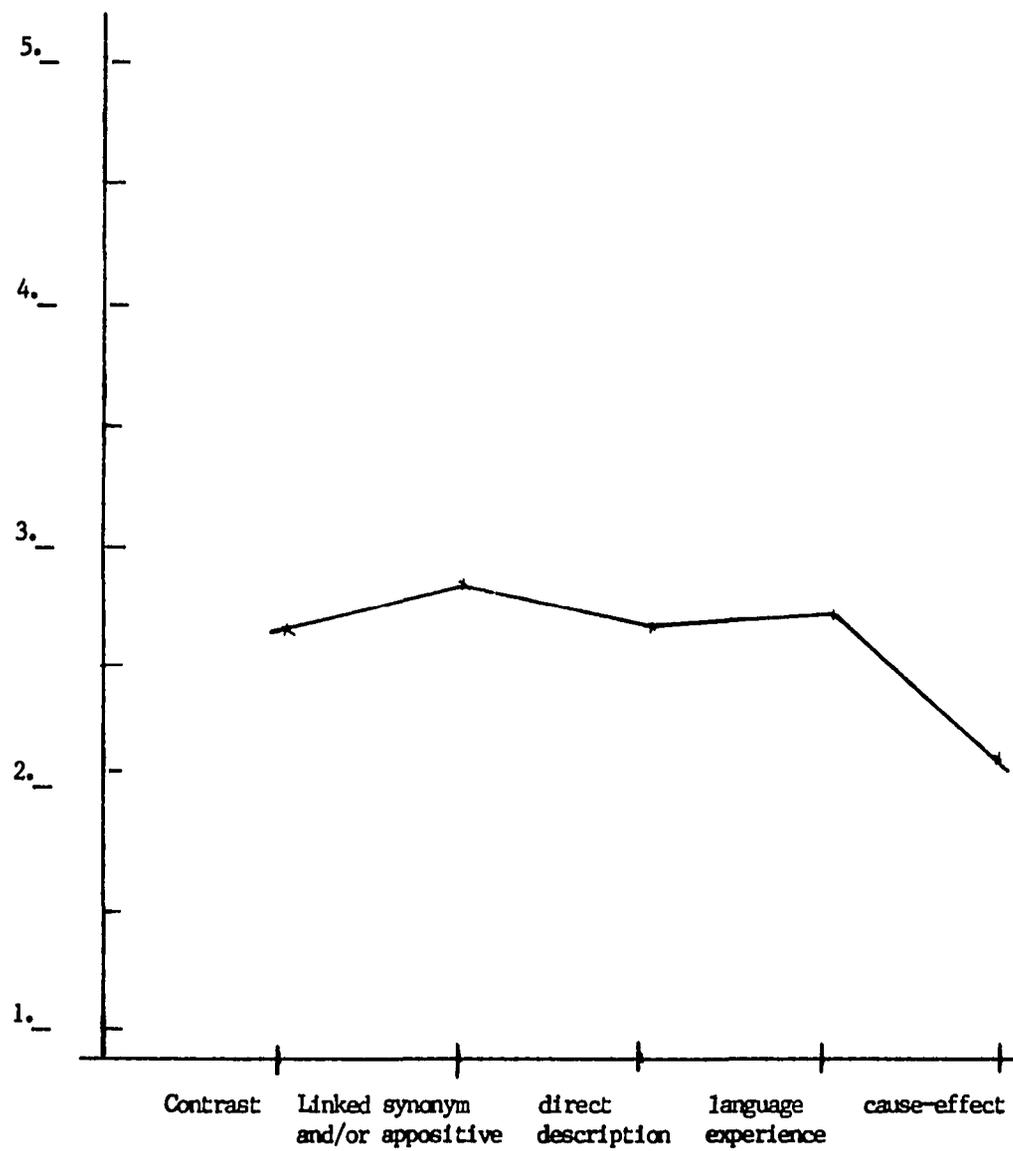


Figure 1

Mean scores of each context clue of the context clue test (N = 202).

Furthermore, the results of the present investigation were different from the results obtained by both Dulin and Keith. Dulin's (1968) hierarchy, in ascending order of difficulty, was language experience, cause-effect relationships, contrast, direct description and linked synonym and/or appositive; while Keith's (1980) hierarchy from least to most difficult was: contrast, cause-effect, language experience, direct description and linked synonym and/or appositive.

These differences may be due to the nature of the subjects tested in these studies and their ages. Dulin tested tenth graders, while Keith tested college freshmen. The subjects of the present study were undergraduate international students. Dulin and Keith investigated native speakers of English while the present investigator examined international students' ability to read and understand unfamiliar words from context. International students may respond in very different ways.

HO2. There is no significant difference between subjects' use of each of the four grammatical classes when identifying the meaning of an unknown word as measured by the context clue test.

Table 12 is a summary of the analysis of variance. The significant F value for Factor B, grammatical classes, indicated that there is significant difference between subjects' use of each of the four grammatical classes when identifying the meaning of an unknown word as measured by the context clue test.

An examination of the means and standard deviations of the four grammatical classes and the control, summarized in Table 11 and depicted in Figure 2, showed that students used verbs and adverbs most often and nouns least well. Therefore, the null hypothesis was rejected.

Table 11
Means and Standard Deviations (SD) of Each Grammatical Class
and the Control of the Context Clue Test (N = 202)

Grammatical Class	Mean	S.D.
Noun	2.34	1.06
Verb	3.14	1.07
Adjective	2.69	1.15
Adverb	3.13	1.16
Control	1.58	1.05

Table 12
Summary of the Analysis of Variance

Source of Variation	DF	SS	Mean Squares	F
Among Context Clues (between)	4	55.68	13.92	13.13
Among subjects (within)	201	432.08	2.15	2.08 ^{*,**}
Error	<u>804</u>	<u>849.92</u>	1.06	
	1009	1337.68		

*Significant at the .05 level.
 **Significant at the .01 level.

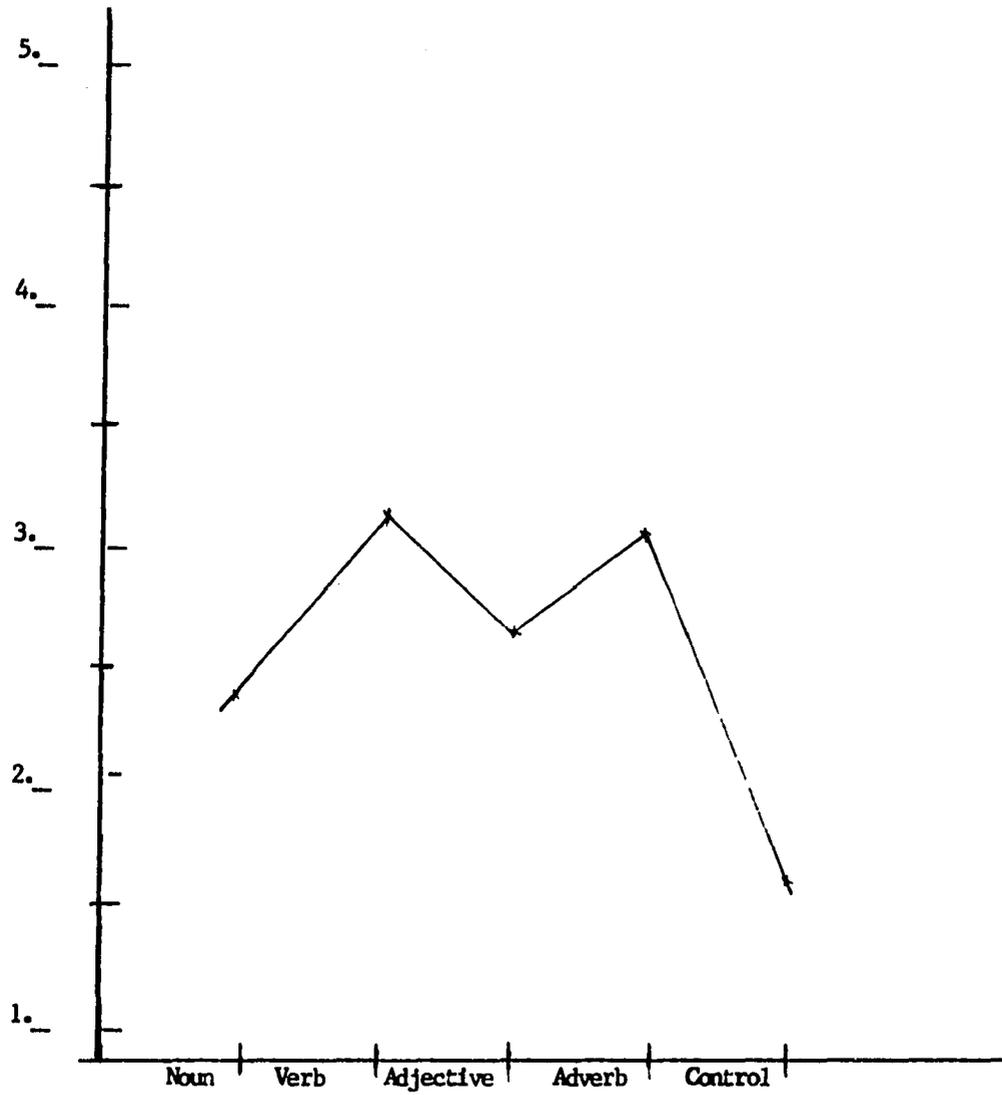


Figure 2

Mean scores of each grammatical class and the control of the context clue (N = 202).

Scheffe's post hoc tests were applied only where one might predict differential results to occur, rather than between all possible combinations of groups. Significantly different grammatical class scores were found between verbs and adverbs.

The statistical analysis of the data also produced several hierarchies between and among the four grammatical classes. Verbs were found to be the easiest grammatical class while nouns were found the most difficult.

Additionally, results of the present investigation were at variance with the results obtained by Dulin, Quealy and Keith. The hierarchy of the grammatical classes concluded from the present study in ascending order of difficulty was: verbs, adverbs, adjectives, and nouns. Previous investigators agreed that nouns were the easiest grammatical class, but differed on the classification of the other grammatical classes. Dulin, whose study has been examined and replicated by several researchers, arrived at the following hierarchy from most often used to least: nouns, adverbs, adjectives and verbs (1968).

The reason that the subjects of this study did well on the verbs and adverbs but not on nouns and adjectives might be due to the fact that verbs and adverbs are fixed structurally; that is, verbs often come after subjects and that adverbs come after verbs. Also, verbs are much more frequent in English than nouns. Even though the verbs in this study are nonsense words, one could agree that language knowledge about a class is based on frequency. In addition, there may be several noun "slots" in a sentence, so nouns may be confusing, where as verb "slots" may be more predictable and fewer per sentence.

Adverbs which are used in this test ended in -ly which was easy to predict and which made them a recognizable marker.

Nouns and adjectives, on the other hand, occur in different parts of a sentence, which might have confused the subjects of this study. Furthermore, it is apparent that two pairs of grammatical classes existed: verbs and adverbs, and nouns and adjectives. Verbs and adverbs are related in a way that verbs usually modify adverbs and that nouns and adjectives are also related in a way that adjectives modify nouns.

HO3. There is no significant difference between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) as measured by the context clue test.

Results of the analysis of covariance (ANCOVA) between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) indicated that there were significant differences between the two groups. This means that the ability of subjects belonging to Group 1 to use context clues to derive word meaning differed significantly from the ability of subjects belonging to Group 2. Table 13 reports the results of the analysis of covariance. Thus, the null hypothesis was rejected.

That is to say, being a member of one group or another made a significant difference with regard to the context clue test. In other words, groups who differed by their native alphabet system were significantly different in their responding to the context clue test.

Table 13
Summary of Analysis of Covariance of the Context Clue Test

Source of Variations	DF	SS	MS	F	PR > F
Model	2	656.40	328.20	43.43	0.001***
Error	199	1503.98	7.55		
Correct Total	201	2160.23			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	428.89	56.75	0.001	1	245.79	32.52	0.001***
G	1	277.50	30.10	0.001***	1	277.50	20.10	0.001***

***Significant at the 0.001 level.

The differences between subjects who are native speakers of a language using a Roman alphabet and subjects who are native speakers of a language using a non-Roman alphabet might be due to the familiarity of Group 1 with certain cognates that are available for them. In addition, prefixes, suffixes and roots might have played a great role in finding meaning of unfamiliar words from context. Also, subjects who are native speakers of a language using a Roman alphabet have common morphemes that will help predict new words. It is important to remember that subjects who are native speakers of a language using a non-Roman alphabet do not have any of these cues due to the nature of their alphabets and syntax.

In conclusion, the ability of subjects who are native speakers of a language using a Roman alphabet (Group 1) differed significantly from subjects who are native speakers of a language using a non-Roman alphabet (Group 2) as measured by the context clue test with the Test of English as a Foreign Language as the covariate.

HO4. There is no significant difference in the use of each of the five context clues between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test.

Results of the analysis of covariance (ANCOVA) between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word from context with the Test of English as a Foreign Language (TOEFL) as a covariate indicated that the adjusted means differed significantly (Tables 14-18).

Table 14
Analysis of Covariance of the Context Clue CONTRAST

Source of Variations	DF	SS	MS	F	PR > F
Model	2	31.48	15.74	13.90	0.001***
Error	199	225.40	1.13		
Correct Total	201	256.89			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	24.36	21.51	0.001	1	15.96	14.09	0.002***
G	1	7.12	6.29	0.001***	1	7.12	6.29	0.001***

***Significant at the 0.001 level.

Table 15

Analysis of Covariance of the Context Clue LANGUAGE EXPERIENCE

Source of Variations						DF	SS	MS	F	PR > F
Model						2	57.00	28.50	26.65	0.001***
Error						199	212.84	1.06		
Correct Total						201	264.84			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	12.64	11.82	0.007	1	2.42	2.26	0.001**
G	1	44.35	41.47	0.001***	1	44.35	41.47	0.001***

**Significant at the .01 level.

***Significant at the 0.001 level.

Table 16

Analysis of Covariance of the Context Clue LINKED SYNONYM AND/OR APPOSITIVE

Source of Variations	DF	SS	MS	F	PR > F
Model	2	23.64	11.84	12.21	0.001***
Error	199	193.08	0.97		
Correct Total	201	216.77			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	18.95	19.53	0.001	1	12.76	13.15	0.004*
G	1	4.74	4.89	0.028*	1	4.74	4.89	0.028 ¹

*Significant at the .05 level.
 ***Significant at the 0.001 level.

Table 17

Analysis of Covariance of the Context Clue DIRECT DESCRIPTION

Source of Variations	DF	SS	MS	F	PR > F
Model	2	14.31	7.15	5.31	0.005**
Error	199	168.26	1.34		
Correct Total	201	282.57			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	7.11	5.36	0.02	1	3.37	2.50	0.01**
G	1	7.08	5.26	0.02*	1	7.09	5.26	0.02 ¹

*Significant at the .05 level.

**Significant at the .01 level.

Table 18

Analysis of Covariance of the Context Clue CAUSE-EFFECT RELATIONSHIP

Source of Variations	DF	SS	MS	F	PR > F
Model	2	27.63	13.81	12.05	0.001***
Error	199	228.26	1.14		
Correct Total	201	255.90			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	26.80	23.37	0.001	1	22.24	19.40	0.001***
G	1	0.73	0.394	1	0.83	0.73	0.394	

***Significant at the 0.001 level.

An examination of the means and standard deviations of each of the five context clues between the two groups, summarized in Tables 19 and 20, and depicted in Figures 3 and 4, shows that native speakers of a language using a Roman alphabet do better on each of the five context clues than native speakers of a language using a non-Roman alphabet.

This might be due to the proficiency of Group 1 in English and to the semantic and syntactic similarities which exist between the English language and their languages. It might also be due to the vagueness and ambiguity of certain clues to one group but not to the other. Furthermore, it might be due to the presence of different idioms in the context clue test such as sentence 4, "... with wild enthusiasm they tore into the task" which lead to language misunderstanding.

Subjects who are native speakers of a language using a Roman alphabet (Group 1) did better on linked synonym and/or appositive, while subjects who are native speakers of a language using a non-Roman alphabet (Group 2) did better on language experience than on any other clue. This might be due to different reasons which this dissertation did not attempt to answer.

Scheffe's post hoc test was performed to determine the means between which significant differences existed. Significantly different context clue scores were found between linked synonym and/or appositive, language experience, contrast and direct description and cause-effect relationships with regard to Group 1. Also, significantly different context clue scores were found between language experience, direct description and contrast and cause/effect relationships but not with linked synonym and/or appositive with regard to Group 2.

Table 19

**Means and Standard Deviations (SD) of Each Context Clue of the
Context Clue Test of Subjects who are Native Speakers of a
Language Using a Roman Alphabet (Group 1, N = 101)**

Context Clue	Mean	S.D.
Contrast	2.91	1.02
Linked Synonym and/or Appositive	3.03	0.97
Direct Description	2.90	1.03
Language Experience	2.93	1.24
Cause-Effect Relationships	2.28	1.09

Table 20

**Means and Standard Deviations (SD) of Each Context Clue of the
Context Clue Test of Subjects who are Native Speakers of a
Language Using a Non-Roman Alphabet (Group 1, N = 101)**

Context Clue	Mean	S.D.
Contrast	2.35	1.17
Linked Synonym and/or Appositive	2.26	1.09
Direct Description	2.43	0.99
Language Experience	2.46	1.08
Cause-Effect Relationships	1.96	1.13

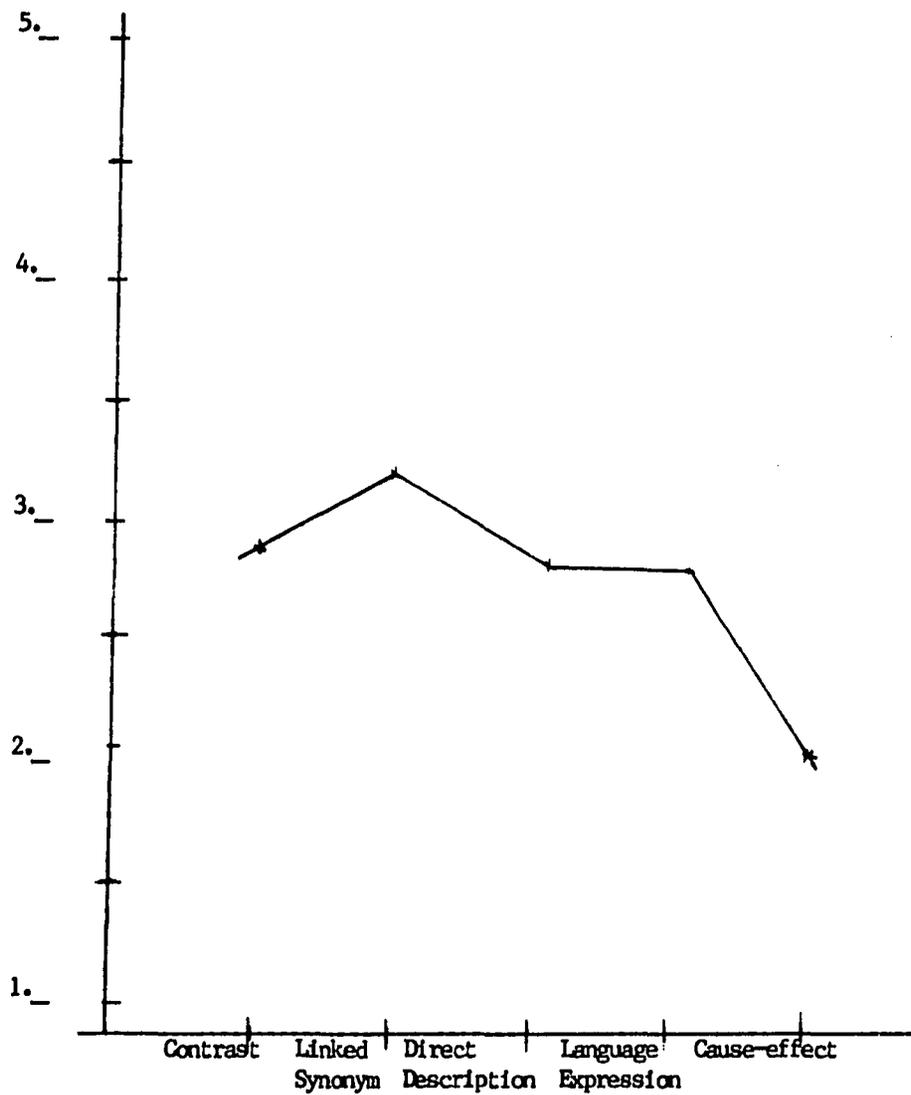


Figure 3

Mean scores of each context clue of the context clue of subjects who are native speakers of a language using a Roman alphabet (Group 1, N = 101).

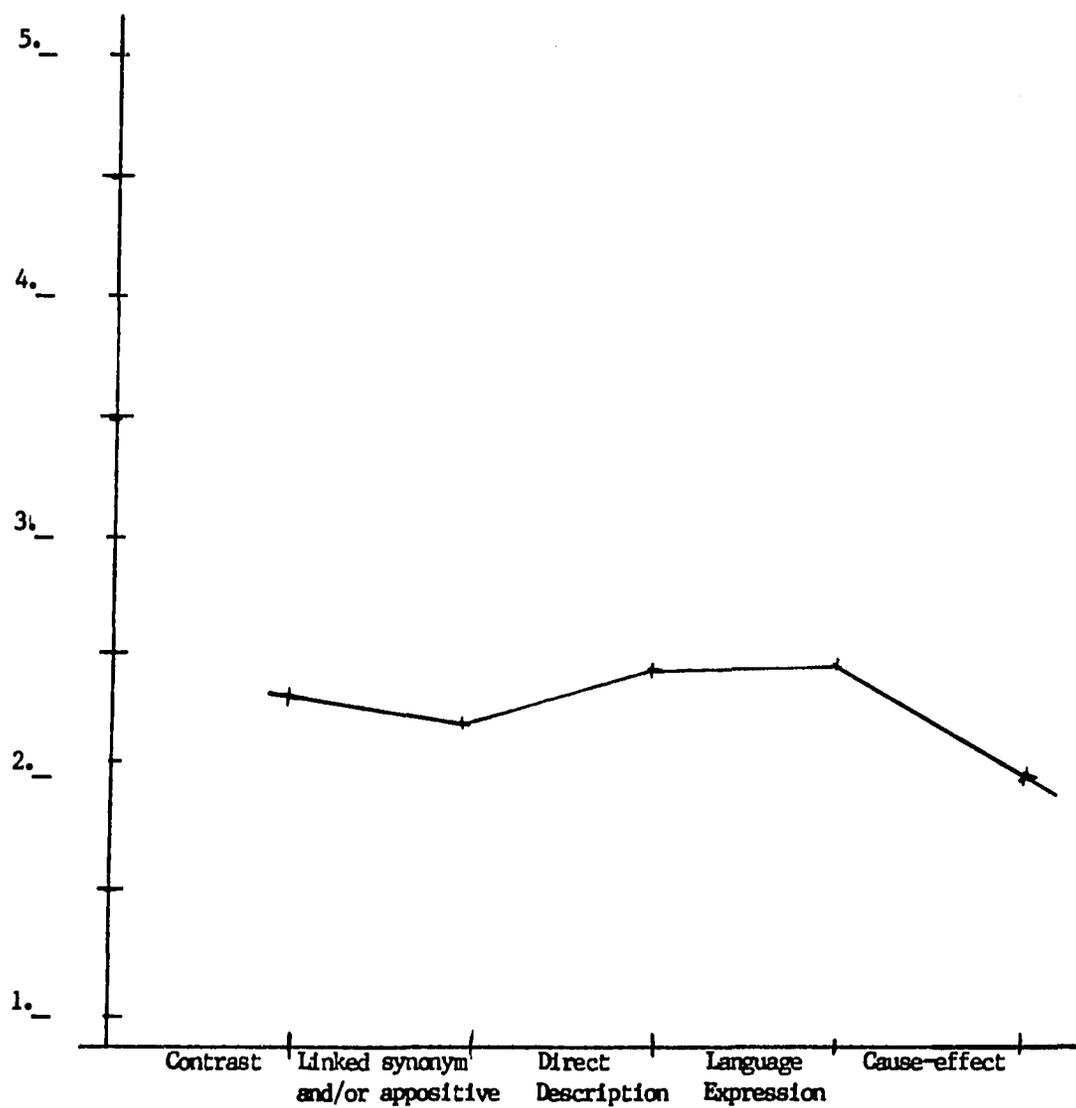


Figure 4

Mean scores of each context clue of the context clue test of subjects who are native speakers of a language using a non-Roman alphabet (Group 2, N = 101).

In conclusion, the hypothesis that there is no significant difference in the use of each of the five context clues between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) was rejected.

H05. There is no significant difference in the use of each of the four grammatical classes between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test.

In order for hypothesis 5 to be rejected, it must be demonstrated that one group did better in using the four grammatical classes than the other group.

Results of the analysis of covariance (ANCOVA) between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word from context with the Test of English as a Foreign Language (TOEFL) as a covariate indicated that the adjusted means differed significantly (Tables 21 to 25).

An examination of the means and standard deviations of each of the four grammatical classes between the two groups, summarized in Tables 26 and 27 and depicted in Figures 5 and 6, showed that subjects who are native speakers of a language using a Roman alphabet did better on each of the four grammatical classes than subjects who are native speakers of a language using a non-Roman alphabet. However, Group 1 did better on adverbs than on any other grammatical class while Group 2 did better on verbs than on any other grammatical class.

Table 21
Analysis of Covariance of the Grammatical Class NOUN

Source of Variations	DF	SS	MS	F	PR > F
Model	2	26.32	13.16	12.90	0.001***
Error	199	203.10	1.02		
Correct Total	201	229.43			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	8.64	8.52	0.003	1	2.75	2.70	0.001**
G	1	17.62	17.27	0.001***	1	17.62	17.27	0.001***

**Significant at the .01 level.
 ***Significant at the 0.001 level.

Table 22
Analysis of Covariance of the Grammatical Class VERB

Source of Variations	DF	SS	MS	F	PR > F
Model	2	25.23	12.61	12.05	0.001***
Error	199	208.30	1.04		
Correct Total	201	233.54			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	19.58	18.71	0.001	1	12.85	12.28	0.001
G	1	5.65	5.40	0.02*	1	5.65	5.40	0.02*

*Significant at the .05 level.
***Significant at the 0.001 level.

Table 23

Analysis of Covariance of the Grammatical Class ADJECTIVE

Source of Variations	DF	SS	MS	F	PR > F
Model	2	49.50	24.75	0.001***	
Error	199	219.07	1.10		
Correct Total	201	268.57			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	25.34	23.07	0.001	1	12.03	10.93	0.001***
G	1	24.10	21.90	0.001***	1	24.10	21.90	0.001***

***Significant at the 0.001 level.

Table 24
Analysis of Covariance of the Grammatical Class ADVERB

Source of Variations	DF	SS	MS	F	PR > F
Model	2	30.67	15.33	12.64	0.001***
Error	199	241.44	1.21		
Correct Total	201	272.11			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	18.94	15.61	0.001	1	10.39	8.57	0.003**
G	1	11.72	9.66	0.002**	1	11.72	9.66	0.002**

**Significant at the .01 level.
***Significant at the 0.001 level.

Table 25

Analysis of Covariance of the Grammatical Class CONTROL

Source of Variations	DF	SS	MS	F	PR > F
Model	2	15.58	7.79	7.40	0.001***
Error	199	204.48	1.05		
Correct Total	201	225.06			

Source	DF	Type I ss	F	PR > F	DF	Type III ss	F	PR > F
TOEFL	1	15.55	14.77	0.001	1	13.97	13.28	0.001***
G	1	0.02	0.03	0.86	1	0.02	0.03	0.86

***Significant at the 0.001 level.

Table 26

Means and Standard Deviations (SD) of Each Grammatical Class and the Control of the Context Clue Test of Subjects who are Native Speakers of a Language Using a Roman Alphabet (Group 1, N = 101)

Grammatical Class	Mean	S.D.
Noun	2.68	1.09
Verb	3.39	1.02
Adjective	3.12	0.97
Adverb	3.45	1.02
Control	1.67	1.10

Table 27

Means and Standard Deviations (SD) of Each Grammatical Class and the Control of the Context Clue Test of Subjects who are Native Speakers of a Language Using a Non-Roman Alphabet (Group 1, N = 101)

Grammatical Class	Mean	S.D.
Noun	2.00	1.00
Verb	2.90	1.08
Adjective	2.26	1.16
Adverb	2.82	1.21
Control	1.49	1.00

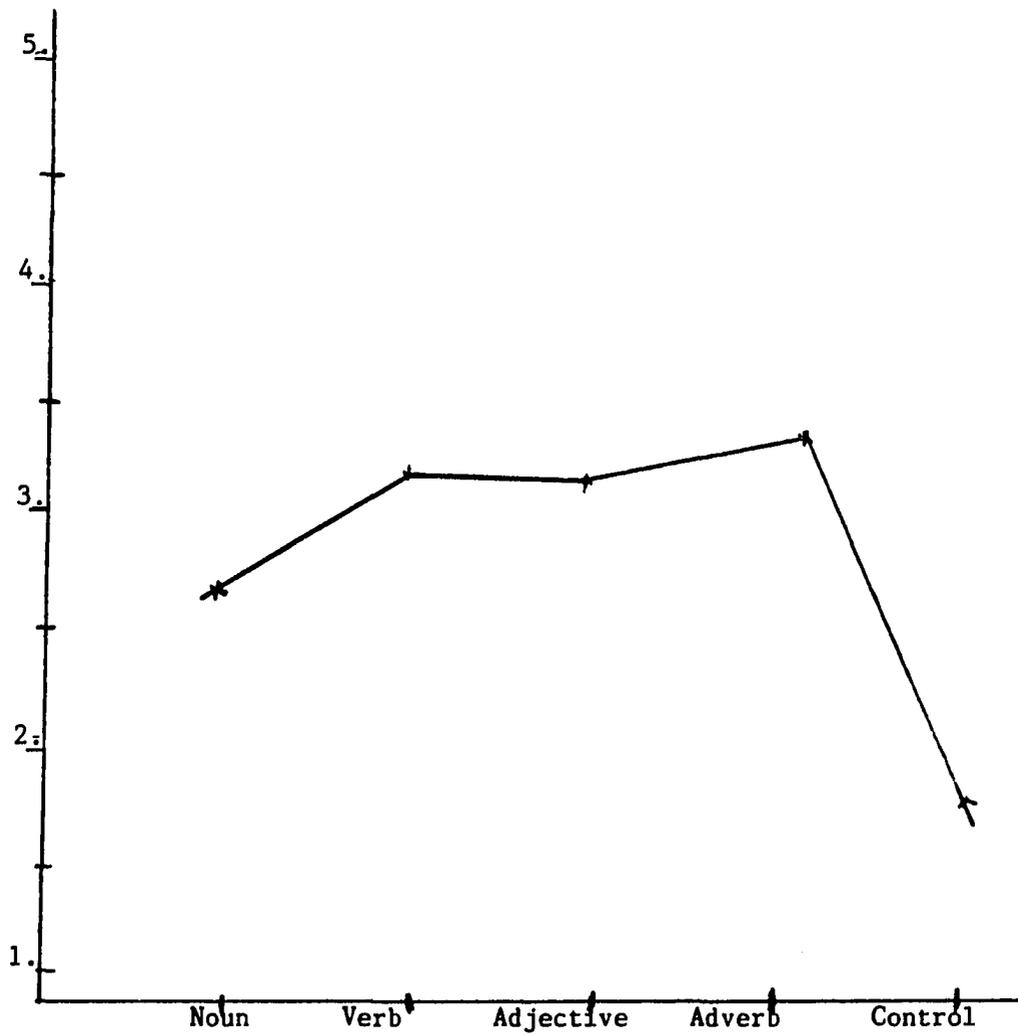


Figure 5

Mean scores of each grammatical class and the control of the context clue test subjects who are native speakers of a language using a Roman alphabet (Group 1, N = 101).

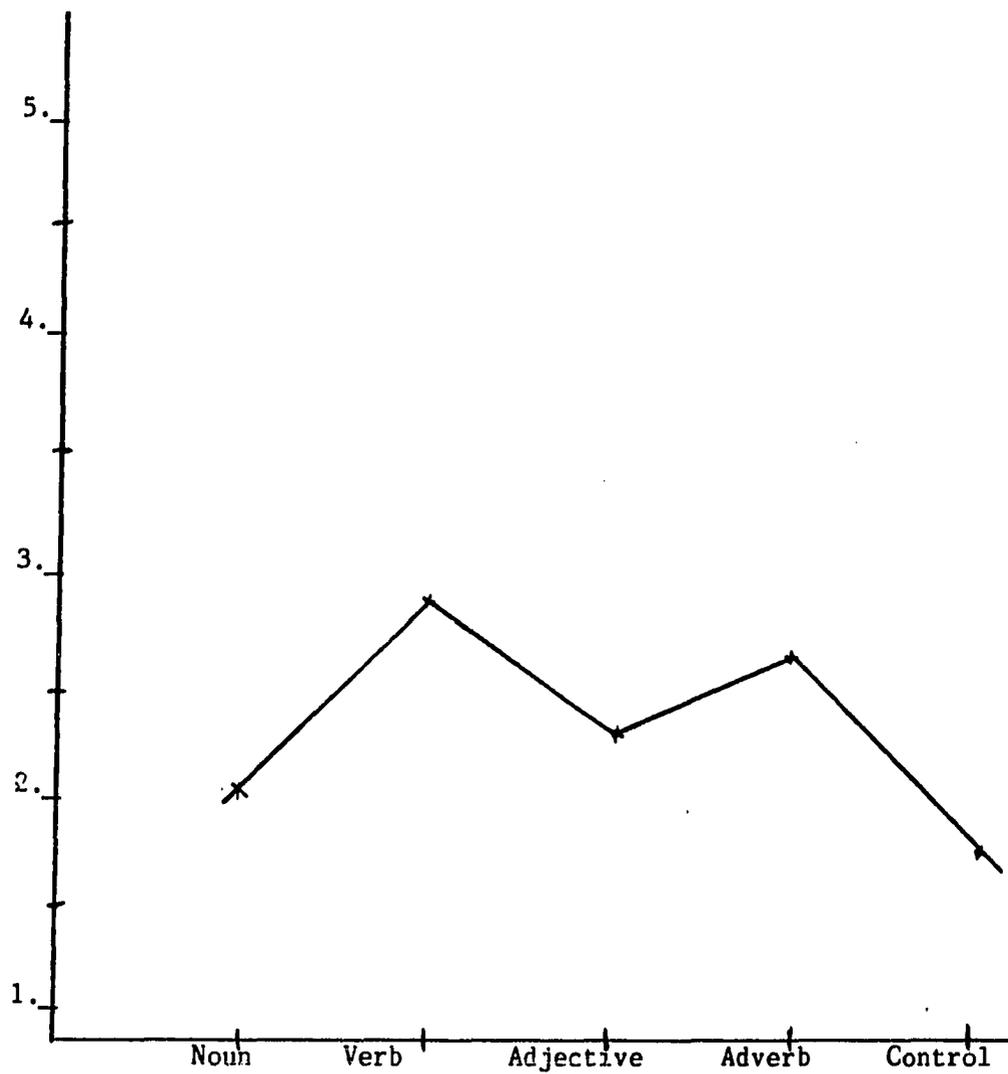


Figure 6

Mean scores of each grammatical class and the control of the context clue test subjects who are native speakers of a language using a non-Roman alphabet (Group 2, N = 101).

Mean scores of Group 1 were higher on all the grammatical classes than mean scores of Group 2.

The findings that subjects who are native speakers of a language using a Roman alphabet did better on all the four grammatical classes than subjects who are native speakers of a language using a non-Roman alphabet might be, again, due to the syntactic and semantic similarities of the English language to their language.

In addition, and according to English language instructors and language experts, Arabic speakers and other native speakers of languages using non-Roman alphabets have trouble with the verb 'to be'. However, verbs seem to be easier to identify and easier to guess, which would have helped predict the meaning of unknown words from context.

Certain grammatical structures, such as adjectives preceding nouns in prepositional phrases (Sentence 18) and the usage of "now" with past tense as in sentence 8 "... was now the prevailing spirit ...", could have been confusing. Also, the usage of two active clauses followed by a passive clause, as in sentence 9 and the usage of 2 opposite words, rapidly and casual (sentence 10) was misleading. Finally, many idiomatic structures, such as "the task at hand" (sentence 16) and "flick of the hand" (sentence 18) were unfamiliar to international students.

The point is that the four grammatical classes were used either in irregular structures or were easily identified. Nouns were used in subject/object position, mostly preceded by an article or have plural endings; irregular verbs were often used; adjectives were used preceding nouns, following the verb to be, with linking verbs and with lots of familiar endings; and finally, adverbs were mostly used with the -ly marker.

The preceding results must also be viewed in the light of three-way interaction; context clues, grammatical classes and groups. The best overall combination (N = 202) was between linked synonym and/or appositive and verbs; while the worst combination was between cause-effect relationships and nouns. However, Dulin found that contrast functioned significantly better with nouns than with any other class, direct description functioned significantly better with adjectives than with any other class, language experience functioned significantly better with adverbs than with any other class. In addition, linked synonym and/or appositive and cause-effect relationships each functioned less well with adjectives than with any other class.

The best combination for subjects who are native speakers of a language using a Roman alphabet (Group 1) was between linked synonym and/or appositive and adverbs; while the best combination for subjects who are native speakers of a language using a non-Roman alphabet (Group 2) was between language experience and verbs. The worst combination for both groups was between cause-effect relationships and nouns.

In conclusion, the hypothesis that there is no significant difference in the use of each of the four grammatical classes between subjects who are native speakers of a language using a Roman alphabet and subjects who are native speakers of a language using a non-Roman alphabet was rejected.

Summary

The results of this study provided information concerning the role of context clues, grammatical classes, native speakers of a language using a Roman alphabet and native speakers of a language using a non-Roman alphabet. It was found that certain context

clues facilitate ones ability to score better on the context clue test. Similarly, certain grammatical classes were better used than others and that there was an interaction between the two such that certain context clues and certain grammatical classes yielded better results, in particular, linked synonym and/or appositive seems to work best with verbs and adverbs and worst with nouns. It was also found that the two groups of interest differed significantly in how well they use certain grammatical classes and context clues.

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Chapter 5 is divided into four main sections. The first section is a summary of the study, including the background, rationale and procedures. The second section represents the findings and the third section presents the conclusions. The fourth section discusses the implications of this study for instruction and further research.

Summary

The Problem

The purpose of this study was to investigate the effect of context clues on undergraduate international students' identification of meanings of unfamiliar words in English texts. The present research developed a test which was designed to investigate international students' ability to use five context clues and four grammatical classes. The subjects were 202 undergraduate international students who were native speakers of a language using either a Roman alphabet such as Spanish and French, or native speakers of a language using a non-Roman alphabet such as Arabic and Chinese. The Test of English as a Foreign Language (TOEFL) was used as a covariate. Five hypotheses were investigated and tested at the .05 level of significance.

The Related Research

For some time, authorities have acknowledged a need for context clue instruction in reading and English as a foreign language. Some of the research was based on arbitrarily derived lists of clues (i.e., Artley, 1943; McCullough, 1943), while the rest were based on empirical investigations of reader's use of context (Ames, 1965; Dulin, 1968). Also, some

authorities have discussed a generalized concept of context clues rather than highly specific kinds of context clues (Pearson and Johnson, 1978).

The literature provides evidence that context clues facilitate word recognition; that is, readers use context clues to identify unfamiliar words. Some of the early context clues studies produced lists of context clues by logically analyzing printed materials. Two studies of this type are often cited. The first was conducted by Artley (1943) and the second by McCullough (1943). Each derived a classification system of several types of context clues.

Deighton (1968), in an analysis of getting meaning from context, stated that "context reveals meaning far less frequently than has commonly been supposed". In fact, Deighton asserted that though context helps predicting the meaning of an unknown word; it does not necessarily reveal the real meaning.

Others have attempted to classify context clues experimentally by examining students' responses to certain context clues (Ames, 1965; Rankin and Overholser, 1969; Dulin, 1968).

A thorough and significant comprehensive investigation of context clues was conducted by Ames (1965). Unlike previous investigators, Ames arrived at a list of fourteen context clues by analyzing the responses of 20 graduate students

Rankin and Overholser (1969) investigated the sensitivity of intermediate grade pupils to context clues described by Ames (1965). They concluded that those intermediate grade pupils respond adequately to certain types of clues but not to others.

In his empirical study, Dulin (1968) examined the existence of various classes of contextual aids, the possibility of a hierarchy of difficulty among types, and the possible influence of grammatical classes on difficulty. He constructed a five-form data gathering instrument with each form consisting of twenty-five short reading selections, each followed

by a five multiple-choice test items. Within each form, five different context clues were used, each in specific combination with a simulated noun, a simulated verb, a simulated adjective, a simulated adverb, and a non-word for which the correct test response was "none of the above". The five context clues used were 1) contrast, 2) linked synonym and/or appositive, 3) direct description, 4) language experience, and 5) cause-effect relationships. The test was then given to 315 tenth-graders. The following hierarchy of ease of meaning was found: 1) language experience, 2) cause-effect relationships, 3) contrast, 4) direct description, and 5) linked synonym and/or appositive. When grammatical classes were considered, there was an easy to hard hierarchy: nouns, adverbs, adjectives, and verbs. Furthermore, the ability to use context clues was correlated with several premeasures: sex, age, and verbal reasoning, abstract reasoning, and grammar knowledge subscores on the Differential Aptitude Test.

The overall conclusions detected from Dulin's study were a) there seem to be significant differences in ease of meaning acquisition between all types except cause-effect relationships and language experience, b) there seem to be only slight differences in ease of meaning-generation from one grammatical class to another, c) there seem to be certain combinations of context-clue and grammatical class that appear more or less effective than others.

Finally, most of the studies investigating context facilitation at the word-recognition level seem to deal with the following topics in context versus words in isolation (Goodman, 1965), good and poor readers' use of context (Perfetti, Goldman, and Hogaboam, 1979), and the interaction of context with word frequency (Allington, 1980; Pearson and Studt, 1975; Quealy, 1969; and Seibert, 1945). Three key generalizations are derived from such studies: a) readers recognize words faster in context than in isolation; b) poor readers are

not only able to use context, but benefit at least as much as good readers from context clues; and c) context significantly helps readers pronounce high-frequency words, but has a minimal effect in helping readers pronounce more difficult, less frequent words.

In conclusion, it is believed that the current pedagogical status of instruction in use of context clues as a method of vocabulary acquisition and as a word-recognition strategy is one of profound authority.

Design and Procedures

The sample of this descriptive study consisted of 202 male and female undergraduate international students who attended the University of Arizona during the Fall semester of 1985, and who were required to enroll in English composition courses 106, 107 and 108, which are equivalent to freshman English for native speakers. One hundred and one native speakers of a language using a Roman alphabet and another one hundred and one native speakers of a language using a non-Roman alphabet were tested using a multiple-choice test adapted from the five-form data gathering instrument prepared by Dulin (1968). Dulin's instrument consisted of five forms, each with a 25-item multiple-choice test format. An item analysis was done on the five forms and those 25 items that were predicted to have the most discriminating power were selected for this study.

The newly constructed form was piloted for its difficulty and appropriateness for ESL students by testing it with 18 undergraduate international students. The results suggested that these students were able to read and respond to the items on the instrument and that the items were of a very general nature. The 25-item multiple-choice test made use of five context clues and four grammatical classes. The five context clues were: contrast, linked synonym and/or appositive, direct description, language experience, and cause-effect relationships. The four grammatical classes were: nouns, verbs, adjectives,

and adverbs. A none-of-the-above option was added. Each item required the subjects to find the meaning of a single nonsense word inbedded in a short passage. The Test of English as a Foreign Language (TOEFL) was used as a covariate.

The analysis of variance (ANOVA) and the analysis of covariance (ANCOVA) were chosen for the design for this study. A 2x5x5 analysis of covariance of repeated measures was conducted. Scheffe's post hoc test was performed to determine the significant differences between means wherever appropriate. The .05 level of significance was used.

Findings

The following findings are based on the statistical analysis of the data.

1. There are significant differences between subjects' use of each of the five context clues when identifying the meaning of an unknown word as measured by the context clue test. The statistical analysis showed that subjects successfully used linked synonyms and/or appositive clues most often and cause-effect least often.
2. There are also significant differences between subjects' use of each of the four grammatical classes when identifying the meaning of the unknown word as measured by the context clue test. The statistical analysis also showed that subjects successfully used verbs and adverbs most often and nouns and adjectives least often.
3. There are significant differences in the performance of native speakers of a language using a Roman alphabet (Group 1) and native speakers of a language using a non-Roman alphabet (Group 2) with regard to the context clue test. Native speakers of a language using a Roman alphabet scored higher on the context clue test than native speakers of a language using a non-Roman alphabet. This means that being a member of one group or another made a significant difference with regard to the context clue test.

4. **There are significant differences in the use of each of the five context clues between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test. Subjects who are native speakers of a language using a Roman alphabet did better on linked synonym and/or appositive, while subjects who are native speakers of a language using a non-Roman alphabet did better on language experience.**
5. **There are also significant differences in the use of each of the four grammatical classes between subjects who are native speakers of a language using a Roman alphabet (Group 1) and subjects who are native speakers of a language using a non-Roman alphabet (Group 2) when identifying the meaning of an unknown word on the context clue test. Subjects who are native speakers of a language using a Roman alphabet did better on each of the four grammatical classes than subjects who are native speakers of a language using a non-Roman alphabet.**
6. **The best combination for subjects who are native speakers of a language using a Roman alphabet (Group 1) was between linked synonym and/or appositive and adverb; while the best combination for subjects who are native speakers of a language using a non-Roman alphabet (Group 2) was between language experience and verbs. The worst combination for both groups was between cause-effect and nouns.**
7. **Direct description in conjunction with adjectives and language experience in conjunction with adverbs were found to be significantly different from any other combination for the total subjects.**

Conclusions

The following conclusions seem warranted by the findings of this study.

The overall conclusions are that international students, regardless of their alphabet system, have some knowledge of context clues and grammatical classes. Also, that international students performed differently on certain context clues and grammatical classes.

Implications and Recommendations

From the data reported and discussed in the previous chapter, it is apparent that certain context clues and grammatical classes are more powerful to certain kinds of readers while other context clues and grammatical classes are less effective. It also seems that the interrelationship between grammar and type of context clue is not yet understood, and that some students seem to rely more heavily on grammatical classes than they should. However, several implications and recommendations for instruction, instructional materials and further research in the use of context clues and grammatical classes by undergraduate international students are suggested by this descriptive study.

For Instruction

Reading instructors and teachers of English as a second language may find it profitable to study the findings and conclusions of this investigation as part of their preparation for teaching reading from an English text. The following recommendations are suggested:

1. Based on this study, it appears that subjects who are native speakers of a language using a Roman alphabet should be taught differently from subjects who are native speakers of a language using a non-Roman alphabet. Perhaps those subjects should

be given different instruction in context clues and grammatical classes since significant differences were found among them.

2. Once students have been introduced to context clues and grammatical classes, the classroom teacher might draw to their attention the relationship between the two and explain how grammatical classes and context clues help to predict meanings of unfamiliar words from context.
3. ESL students should probably read broadly to gain as much experience as possible with the language.
4. There is little in theory or research to suggest that anybody can make a workbook with those kinds of context clues, practice them, and then expect to know how to use them. However, within a teaching-learning situation, a teacher might help students understand the relationship between context clues and grammatical classes in an English text.

For Instructional Materials

The following recommendations for instructional materials and for textbook writers are suggested by the conclusions of this study.

First, proficient readers of English typically use context clues. However, it was observed in this study that ESL students are not particularly proficient at using context clues. Therefore, it would appear that perhaps instructional materials on context clues would help ESL students become more proficient readers.

Second, materials should be prepared which take into consideration the combination of context clues and grammatical classes. If these materials are available, ESL students should be aware of them and know how to use them. It is important to have more materials and exercises available which will help ESL students understand the importance of context clues.

Third, since the two groups, native speakers of a language using a Roman alphabet and native speakers of a language using a non-Roman alphabet, differed significantly on the context clue test, different materials should be prepared for each group which take into consideration the findings of this study.

For Further Research

The present study represents an initial attempt to understand the use of context clues and grammatical classes by international students reading English. The conducting of this study and the subsequent findings suggest several implications for further research.

First, although the multiple-choice test used in this study was enough to detect if undergraduate international students were able to find the meanings of unfamiliar words from context, an introspective technique where subjects are interviewed individually and are asked to explain how they used context clues to supply meaning for the simulated words would be added to the multiple-choice test.

Second, it would be interesting to investigate students' use of context clues while reading English in countries other than the United States. The social nature of reading (Harste, Burke, and Woodward, 1984) may influence readers' use of context clues in differing academic environments.

Third, schema theory would predict that subjects' prior knowledge affected their ability to select the correct definition on the multiple-choice items. This investigation considered two factors: 1) subject's verbal ability as measured by the TOEFL and their placement in English classes, and 2) their native language alphabet system. These are very general indicators of prior knowledge and experience. Further research should examine other more specific prior experience variables.

Fourth, since the subjects of this study are native speakers of a language using a Roman alphabet, and native speakers of a language using a non-Roman alphabet from many nationalities, it is suggested that this study be replicated with speakers of a language using a Roman alphabet and native speakers of a language using a non-Roman alphabet each from one nationality in which the background knowledge and number of years of leaning English will be the same.

Fifth, a definitive study should be conducted to determine specifically the role, if any, of sex differences in the ability of undergraduate international students to identify meanings of unfamiliar words from English texts since the present study was not designed to investigate this area and since other studies (Dulin, 1968; Quealy, 1969) found differences.

Sixth, one could research students' awareness of context clues and grammatical classes and whether or not that awareness significantly improves comprehension when reading natural texts.

Seventh, research needs to be done on how to teach context clues. Instructional techniques and materials designed for teaching would be profitable and useful if researched first.

Eighth, it would be interesting to have the instrument broadened to include more subjects which delineate between gender and types of languages.

Finally, a possible area of research is to find out what other context clues in conjunction with grammatical classes provide the best approach for a reader to predict the meaning of unfamiliar words from context.

Summary

The purpose of this investigation was to provide information concerning a group of students about which little is currently known. Several points stand as being of interest to those who work with international students. It was found that some international students had more knowledge of context clues and grammatical classes than others and some were able to use these context clues and grammatical classes to derive word meanings while others were not. These differences were particularly apparent when comparing language groups. Further research will investigate these differences.

APPENDIX A

DEFINITIONS AND EXAMPLES OF THE FIVE CONTEXT CLUES

The following definitions and examples have been utilized by Dulin in his study (1986, pp. 100-102).

Contrast

This refers to the process of developing, through the use of specific antonyms or definitive phrases and clauses, the exact opposite or logical antithesis of the meaning of the new word. This device often makes use of such introductory or linking expressions as "rather than," "unlike," and "instead of".

"Instead of being frightened, as we had expected him to be, he was actually quite zerrilic".

"Rather than hurrying, he instead zommed".

"Unlike the burly, husky older boys, young Billy was quite chelly".

Synonym and/or Appositive

This refers to the processes of (a) pairing a new word with synonyms or synonymous phrases in series, or (b) linking it with a synonym, appositive, or appositive phrase through punctuation. Dashes or commas are usually used in the latter cases.

"The dirty, polluted, zenoid water was filled with debris".

"The zista, the storehouse used for grain, was located behind the farmhouse".

"He planned to breg -- crush and utterly destroy -- all opposition to the movement as soon as he gained control of the government".

Direct Description

This refers to the process of describing, through the use of definitive and/or descriptive passages preceding or following the new word, what the meaning must be. In contrast to the previous technique (linked synonyms and/or appositives), this device uses modifying clauses, words and phrases, not synonymous ones. Thus, rather than restating the meaning of the new word (as synonyms and/or appositives do), it explains it or describes it. Prepositional phrases and dependent clauses are often used within this device.

Also, such linking expressions as "that is," "thus," "in short," and "in summary" are often used to tie together such descriptions and their referents.

"The brell, with its deep growl, glowing eyes, and long, shaggy hair, was a very fierce-appearing beast".

"The man stumbled and fell. He picked himself up, but lost his footing and fell again. This time he didn't get up. In short, he was negolic".

"He was very fenno: that is, he stamped his feet, he roared in a loud voice, and his eyes flashed and sparkled like two glowing coals".

Language Experience

This refers to the introduction of a new word in such a linguistic or experiential setting as to lead the reader almost "automatically" to the meaning intended; that is, the device relies upon the reader's grammatical or linguistic "sense," rather than the mental manipulation of related adjacent "meaning," to provide the intended equivalent. A reader using this device is under very similar conditions as when performing on a "cloze" exercise, where each Nth word of running prose is omitted. Practically no "thinking out" or inference should be required of the reader using this device.

"He opened his coin-purse, took out two zendas, and paid for his meal."

"Idly flipping through the pages of a herpak, his eye was caught by an advertisement for a 1968 Ford".

"He went over to the cupboard, got a glass, and poured himself a stroob of water".

Cause Effect

This refers to the setting up of a cause-effect relationship from within which the meaning of the new word can be logically inferred. Within this device, the new word and its meaning are usually closely linked to one or the other condition (causes or effect), rather than to both; that is, either the cause will be openly stated, with the effect fulfilling the new meaning, or the effect will be stated, with the cause to be inferred. This device often employs such introductory and linking words or expressions as "because", "since," "as," "because of", and "therefore" or "thus".

"Because he was very concerned about the quality of this particular piece of work, he worked very condilly".

"Since he was very tired, he walked in a sproll manner".

"It was very important that this job be done very well; therefore, he worked chorilly at it all morning".

APPENDIX C

DATA GATHERING INSTRUMENT

Context Clue Test -- Form 1

DIRECTIONS: This is a test of your ability to understand unusual and difficult words which you encounter in advanced, mature reading material. The words have been especially designed to be unfamiliar to you, so feel free to guess in terms of whatever clues are present. Read each item carefully and then do the test question following it. Indicate your opinion as to the proper meaning of each underlined word by circling the right letter of your choice on the answer sheet. The sample below may help you.

SAMPLE: The native witch doctors were the only practitioners of medicine to be found in the area.

Practitioners are:

- A. local leaders who serve both as employers and as political leaders.
- B. persons who practice some specific skills.
- C. skilled workmen who work secretly and illegally.
- D. teams of workmen who always work in groups, and only after a great deal of planning.
- E. none of the above.

ANSWER: A (B) C D E

Option B was the correct choice. Now go ahead to the rest of the test. Although there is no exact time limit, you should try to proceed as rapidly as you can without being careless. In some cases, "none of the above" is the correct response.

Circle the letter of your choice:

1. The kuzoto, General Saratoff's rigidly-trained, fiercely loyal police, were undoubtedly the key factor in the success of his dictatorial regime.

The kuzoto were:

- A. Highly-trained directors of communal plantations.
 - B. Members of the professional army of a particular country.
 - C. Militaristically-trained law-enforcement officials.
 - D. Plain-clothes detectives used principally in the detection and prevention of arson, embezzlement, and theft.
 - E. None of the above.
2. His appearance, slim and slender, tall and olique, led us all to expect that he would be well-coordinated and skillful. After the first contests were over, we had no reason to change our first impression. He had won them all!!!

To be olique is to be:

- A. Highly-skilled and well-coordinated.
 - B. Long and lithe, with little excess body fat.
 - C. Somewhat muscle-bound, appearing powerful but awkward.
 - D. Of stocky, husky build.
 - E. None of the above.
3. Since secrecy was important to the success of the operation, he was as shendur as possible; he certainly didn't want to be detached at this point!

To be shendur is to be:

- A. Courteous without sincerity.
 - B. Extremely careful about personal appearance.
 - C. Stealthy and guarded.
 - D. Worried and anxious about possible failure.
 - E. None of the above.
4. Since money was no longer any problem, what with his newly-begotten riches and all, Stan behaved very vorrily for once in his life.

To behave vorrily is to act:

- A. Carefully.
- B. Completely.
- C. Extravagantly.
- D. Precisely.
- E. None of the above.

5. Since he was eager for fame and acclaim, he was very unitol in his manner of approaching those who might possibly be helpful to him.

To be unitol is to be:

- A. Bashful and shy.
- B. Cold and indifferent.
- C. Crude and discourteous.
- D. Unthinking and impulsive.
- E. None of the above.

6. As soon as he caught sight of the duck, without a moment's hesitation he heefily swung the shotgun to his shoulder and fired. The bird fluttered once and fell to the ground.

To do something heefily is to do it:

- A. Awkwardly.
- B. Delicately.
- C. Quickly.
- D. Slowly.
- E. None of the above.

7. Waiting nervously in the outer office, I thumbed idly through the pages of a recent issue of one of my favorite denzas.

A denza is:

- A. A letter.
- B. A license.
- C. A magazine.
- D. A radio.
- E. None of the above.

8. To do so stregally was not possible. Agreement now had been reached, cooperation was now the prevailing spirit, and common goals existed at last.

To behave stregally is to:

- A. Behave coldly and without feeling
- B. Behave emotionally and excitedly.
- C. Operate in accordance with group policy.
- D. Operate singly, with each participant going his own way.
- E. None of the above.

9. Gradually things changed. Their pace grew quicker, their motion accelerated, and their actions were performed faster and faster. Their movements had become esopastic.

To be esopastic is to be:

- A. Accompanied by music or changing.
 - B. In concert with others.
 - C. Highly organized.
 - D. Rapid to a high degree.
 - E. None of the above.
10. The lorronade, with its long, shaggy hair, its keen eyesight, and its long, sturdy legs, is well-adapted for use by hunters in this region.

A lorronade is:

- A. A beast of burden often used as a mount in cold, semimountainous regions.
 - B. A difficult-to-find variety of eagle.
 - C. A farm animal often raised for food for humans.
 - D. A game-animal often hunted on horseback by European sportsmen.
 - E. None of the above.
11. His behavior could best be described by brendic. He dashed about from person to person, greeting each as he or she arrived, and even now continued to arrange and rearrange the furniture as he circulated about.

To be brendic is to be:

- A. Distracted; lost in thought.
 - B. Indifferent and unconcerned.
 - C. Moderately concerned, but not highly so.
 - D. Quietly aware of what is going on.
 - E. None of the above.
12. At first he moved slowly, carefully, and methodically. Gradually, however, his actions changed; at last, he was practically decasing.

To decase is to

- A. Move in rhythm or cadence.
- B. Move in unison with others.
- C. Move rapidly and in a carefree, casual manner.
- D. Move smoothly but cautiously.
- E. None of the above.

13. Rather than the large, heavy gun he usually carried, for this mission he chose a breddex.

A breddex is:

- A. An expensive gun especially designed for target shooting.
 - B. A lightly-built, easy-to-handle weapon.
 - C. A self-loading sidearm used by soldiers.
 - D. A sturdy heavily-built pistol.
 - E. None of the above.
14. Now it was Christmas morning and time to semple their presents! With wild enthusiams they tore into the task. Soon all was chaos, with papers, bows, and ribbons all over the floor.

To semple is to:

- A. Assemble.
 - B. Detach.
 - C. Eat.
 - D. Open.
 - E. None of the above.
15. We must draw together all the information we can, we must combine all we can know so far, and we must eliminate all division and separation; in short, we must contabulize if we are to be successful.

To contabulize is to:

- A. Bring together and synthesize.
 - B. Cut out inter-dependence wherever possible.
 - C. Make improvements and revisions.
 - D. Substitute new ideas and innovations for older ones.
 - E. None of the above.
16. Though he usually dashed through the tasks at hand, today he simply plugged bordilly along.

To behave bordilly is to be:

- A. Aggressive and demanding.
- B. Eager to act and to be responded to.
- C. Impulsive and quick to act.
- D. Quick to move into action.
- E. None of the above.

17. To ensure the party a safe crossing of the plains, the leaders laid careful dremmeds.

Dremmeds are:

- A. Books of instruction.
 - B. Costumes worn by Indians.
 - C. Dangerous animals often found near rivers.
 - D. Types of quickly-prepared foods.
 - E. None of the above.
18. With a bleck flick of the wrist, he turned over the last card. It was the Ace of Spades!

To move bleckly is to be:

- A. Clumsy and slow.
 - B. Dull and boring.
 - C. Quick and deft.
 - D. Thin and shrill.
 - E. None of the above.
19. Instead of approaching the problem in his usual careful, methodical manner, today he proceeded quite elenestically.

To behave elenestically is to:

- A. Behave impulsively, with little preplanning.
 - B. Behave very coldly, with much concern for details but little for individuals.
 - C. Operate in a cautious, carefully-planned manner.
 - D. Operate openly, without secrecy.
 - E. None of the above.
20. They hopped, jumped, leaped, and glurped; it was an exciting scene and I hated to leave. Since I had to get to work, however, I had no choice.

To glurp is to:

- A. Move in unison with others.
- B. Move quickly and spontaneously.
- C. Speak rhythmically and musically, as a choral reading.
- D. Speak slowly, clearly, and distinctly.
- E. None of the above.

21. Because he had consistently chosen the easy way out, regularly turned his back upon opportunity, and failed time and time again to meet the challenges confronting him, he was now a confirmed brennigan.

A brennigan is:

- A. An aggressive, ambitious person.
 - B. A lazy, unambitious individual.
 - C. A model to others, worthy of emulation or imitation.
 - D. A somewhat mediocre man, neither lazy nor ambitious.
 - E. None of the above.
22. The work they'd undertaken was finally completely over, wholly finished, and jerrily successful. What a relief to have it all come out so well!

To do something jerrily is to do it

- A. In concert with others.
 - B. Entirely or fully.
 - C. Quickly and superficially.
 - D. In a tricky or misleading way.
 - E. None of the above.
23. Whatever one calls it -- duty, devotion to service, or contundity -- it's a most necessary trait in a soldier. And without it, he will never succeed.

Contundity is the quality of:

- A. Being quick to forget responsibility.
 - B. Caring little for promises one has made.
 - C. Failing to stick to jobs begun.
 - D. Neglecting to carry through on responsibilities.
 - E. None of the above.
24. Instead of his usual quiet, dignified manner, today Bill's behavior was downright etescent.

To be etescent is to be:

- A. Courteous, well-mannered, and gentlemanly.
- B. Open-minded and friendly.
- C. Uneven in mood and manner.
- D. Unruly, impolite, and rowdy.
- E. None of the above.

25. In order to successfully meet the problem of catching up, they decided that they would have to sprell for a day or two.

To sprell is to:

- A. Accept responsibility for an activity.
- B. Compensate for loss; speed up.
- C. Slow down an activity.
- D. Work with extra care and precision.
- E. None of the above.

APPENDIX D

Item order by context clue and grammatical class

<u>Item #</u>	<u>Context Clue</u>	<u>Grammatical Class</u>
1.	linked synonym and/or appositive	noun
2.	linked synonym and/or appositive	adjective
3.	cause-effect relationships	adjective
4.	cause-effect relationships	adverb
5.	cause-effect relationships	control
6.	language experience	adverb
7.	language experience	noun
8.	direct description	adverb
9.	direct description	adjective
10.	direct description	noun
11.	direct description	control
12.	contrast	verb
13.	contrast	noun
14.	language experience	verb
15.	direct description	verb
16.	contrast	control
17.	language experience	control
18.	language experience	adjective
19.	contrast	adverb
20.	linked synonym and/or appositive	verb
21.	cause-effect relationships	noun
22.	linked synonym and/or appositive	adverb
23.	linked synonym and/or appositive	control
24.	contrast	adjective
25.	cause-effect relationships	verb

APPENDIX E**ANSWER - KEY**

- | | |
|-------|-------|
| 1. B | 14. D |
| 2. B | 15. A |
| 3. C | 16. E |
| 4. C | 17. E |
| 5. E | 18. C |
| 6. C | 19. A |
| 7. C | 20. B |
| 8. C | 21. B |
| 9. D | 22. B |
| 10. E | 23. E |
| 11. E | 24. D |
| 12. C | 25. B |
| 13. B | |

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