A STUDY OF ILOKANO LEARNERS' LEXICAL INFERENCING PROCEDURES THROUGH THINK-ALOUD

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ABSTRACT

This study is aimed at describing and understanding the different types of processing involved when foreign language learners infer the meaning of unknown words in a written text. Pair think-aloud protocols were used to examine the lexical inferencing procedures used by college-level students. Think-aloud protocols, a version of verbal report in which participants state their thoughts and behaviors, have become increasingly popular as a means of studying learners' comprehension processes. The informants were intermediate and advanced Ilokano language learners of high and low proficiency in the target language. Informants' use of interlingual, intralingual, and contextual sources is examined and compared across proficiency levels. Additional strategies employed by the informants as well as individual differences were also explored. Morphology proved to be the most prolific source informants appealed to in inferring the meaning of unknown words. The general finding of this study suggests that student proficiency is not a decisive factor in successful lexical guessing. Pedagogical implications and directions for future research emerging from the study are discussed.

BACKGROUND AND INTRODUCTION

A prerequisite for learning a second or foreign language is that the learner is exposed to the language, in writing and/or in speech. Such language exposure or input may either be comprehensible or incomprehensible to the learner. Since vocabulary is a sizable component in the learning process, learners across proficiency levels will encounter situations where they can understand only part of the written text or a sentence due to the fact that they do not know all the words. Encountering some unknown words might not hinder the overall understanding of the text, but if too many words or the most essential ones are unknown, then comprehension will suffer. As this is the case, learners will resort to comprehension and communication strategies in order to compensate for the inadequacy of their second language (L2) resources in their L2 use. "While in production learners use communication strategies to compensate for the absence of words for which they have meanings, in comprehension inferencing strategies are needed to compensate for the absence of meanings attached to unknown words" (Haastrup, 1991, p. 121). Communication strategies (CSs) generally have been defined as devices employed by L2 learners when they encounter problems in L2 communication because of their communicative ends have outrun their communicative means (Corder, 1983; Faerch & Kasper, 1983; Paribakht, 1985). Comprehension strategies, on the other hand, indicate

how readers conceive a task, what textual cues learners attend to, how learners make sense of what they read, and what they do when they do not understand (Block, 1986).

The present study is a comprehension study in the sense that the main inspiration comes from inferencing at text level through the processes of reading comprehension (i.e., schema-theoretic view), focusing primarily on learners' processes in a lexical inferencing task. A second source of inspiration in examining learners' processes in comprehension was Haastrup's (1991) notion of receptive competence, which refers to "the way in which learners of a foreign language understand written or spoken text in this language" (p. 11). Haastrup acknowledges a deficit in the receptive competence among learners that is often unnoticed by both the learners themselves and their teachers.

Inferencing, as a reception process, is considered an essential task in language use in the real world as well as inside the foreign language classroom. Learners engage in lexical inferencing when, for example, a new word appears in the text under discussion. Since most of studies on lexical inferencing have been conducted in an English as a second language (L2) setting, it would be equally interesting to investigate learners' lexical inferencing procedures in another language, to see whether the outcome will complement the findings from earlier studies.

An examination of university-level Ilokano learners' lexical inferencing procedures should prove useful in two ways. First, through analysis of verbal report data, we can explore a subset of learners' processing strategies when given a language task. Second, one can evaluate the pedagogical value of think-aloud as a methodology of studying learners' cognitive processes in foreign language classroom setting when they are given a task to perform.

Ilokano, like all its sister languages, is an Austronesian language of the Philippine type spoken by about ten million people (Rubino, 1998). It is the language spoken in the northwestern part of the Philippines which includes the provinces of Ilocos Norte, Ilocos Sur, Abra, and La Union. In the United States, Ilokano is the native or heritage language of the majority of Filipinos, including approximately 85% of the Filipino population in Hawai'i. In recognition of the large Ilokano population in the State of Hawai'i, the University of Hawai'i at Manoa (UHM) has supported the establishment of a full Ilokano Program—the only one of its kind in the world. Four levels (101, 201, 301, 401) of Ilokano are offered at UHM.

REVIEW OF LITERATURE

Inferencing is defined as the cognitive process a reader goes through to obtain the implicit meaning of a written text (Chikalanga, 1993). It is considered to be a

compensation strategy essential for skilled first language (L1) as well as second language (L2) reading comprehension (Bialystok, 1983). Furthermore, it is recognized as an essential component of the process of reading comprehension according to psycholinguistic models of reading comprehension, which postulate that reading involves an interaction between textual information and prior knowledge of the reader.

According to schema theory (Rumelhart, 1980; Widdowson, 1983), word inference can be seen as a process of search for, and use of, relevant schemata to identify unfamiliar verbal stimuli. Schemata can be seen as frames of reference which provide a basis for prediction and allow for the organization of information in long-term memory. The amount and quality of contextual cues can determine the outcome of such processes. From her early research with schema theory and reading, Carrell (1983) distinguishes three forms of schemata: linguistic (language knowledge), content (knowledge of topic), and formal (background knowledge of the rhetorical structures of different types of texts). Each of the three plays a part in the interaction among the writer, the text, and the reader. Schema-based inferencing, however, can be difficult for poor readers (Winne, Graham, & Prock, 1993). They may fail to stimulate relevant prior knowledge because of a production deficiency for making use of past experiences when reading, and they may lack relevant prior knowledge needed as input to inference-making processes.

Lexical inferencing, as one aspect of inferencing, "involves making informed guesses as to the meaning of a word in light of all available linguistic cues in combination with the learner's general knowledge of the world, her awareness of context and her relevant linguistic knowledge" (Haastrup, 1987, p. 197). If successful, it can serve for purposes of immediate comprehension in a listening, interaction, or reading context, and under favorable conditions, it may lead to retention of the word form as well as semantic and other lexical information (Paribakht & Wesche, 1999). Moreover, lexical inferencing is frequently recommended by writers on second language pedagogy, researchers, and authors of reading textbooks (Moran, 1991). Moran (1991) added that the great majority of reading textbooks at all levels published for English as a Foreign Language (EFL) learners since the early 1980's feature tasks which require the reader to guess the meaning of unknown words.

The importance of lexical inferencing is emphasized in top-down reading models (Goodman, 1976; Smith, 1978). These models underline the important role played by the reader as the sampler of text, who uses his or her knowledge to read better and who takes short-cuts in bottom-up processing of letters and words. Fortunately, the development of interactive models of reading has renewed interest in researching lower-order reading skills (Morrison, 1996). These models acknowledge a great deal of communication between the differing bottom-up and top-down models (Hudson, 1998). On the

interactive view, "if sight word recognition is successful then information can be delivered to higher level skills that make associations between the incoming lexical items and hence help the lower level skills by narrowing the possible new pieces of information that would be acceptable to complete a coherent message" (Hudson, 1998, p. 48). The reader applies reading strategies and attends to text structure.

There are three main types of cues available to learners when making lexical references. Carton's (1971) taxonomy of knowledge sources includes three main cue types: contextual, intralingual, and interlingual. Haastrup's (1991) taxonomy of knowledge sources employed in her empirical research on Danish-speaking learners of EFL was drawn from Carton's (1971) established cue types. Haastrup's (1991) taxonomy of knowledge sources will partly serve as analysis tool for the present study. Her complete taxonomy with sub-categories is presented in Appendix 1.

When using contextual cues (also called extralingual or pragmatic cues), learners draw on their knowledge of the world and from the co-text. Knowledge of the world is "viewed as part of language user's and language learner's general socio-cultural knowledge" (Haastrup, 1991, p. 47). The role of co-text, on the other hand, refers to the way in which the interpretation of a lexical item is influenced by the particular linguistic context in which it is placed.

For contextual cues to be of real help for word inference, Li (1988) indicated that they must (a) be perceptually and conceptually familiar to the text-receiver and (b) contain the information available for the text-receiver to find the relevant schemata in order to account for the oncoming input in the text and identify unfamiliar stimuli in context. Without such cues, inferencing may lead to misguesses (Bensoussan & Laufer, 1984). Bensoussan and Laufer (1984) concluded:

> lexical guessing is a very difficult task either because of the complexity of the text or because of the limitations of the reader, or both. Some words do not have clues in the text in which they appear; when there are clues for such words foreign language learners will not necessarily look for them; and when readers do look for these clues very often they cannot locate or understand them. (p. 27)

Intralingual cues are cues based on the learner's knowledge of the target language. For example, learners of English may infer the meaning of words by making use of their knowledge that suffixes *–er* and *–or* express notion of agency (Carton, 1971). The ability to exploit intralingual cues presupposes that the learners already have some knowledge of the foreign language they are expected to make lexical inferences about. Finally, interlingual cues are judgments made by learners about the identity of similarity of structures in two languages. For example, second language learners may derive word

meanings on the basis of cognates and regularities of phonological transformations from one language to another.

Think-aloud protocols, a version of verbal report in which participants state their thoughts and behaviors while performing a given task, have been useful in exploring the relationship between working memory and inferences. Inference and memory processes function together in order to construct a coherent, mental representation of a text (Whitney & Budd, 1996). For example, Trabasso and Magliano (1996) investigated the kinds of information available to consciousness during comprehension and how they are used inferentially to construct the meaning of text. Trabasso and Magliano (1996) assumed four types of thoughts occurring during thinking aloud: paraphrases, associations, explanations, and predictions. They characterized comprehension as being explanation driven because the readers in their study produced explanations most frequently.

Think-aloud protocols also reveal learners' strategic processes during text comprehension—successful and unsuccessful strategies employed by learners at various proficiency levels when they are faced with unknown words in the L2 (Bensoussan & Laufer, 1984; Block, 1986; Haastrup, 1987, 1990, 1991; Haynes, 1993; Morrison, 1996; Parikbakht & Wesche, 1999; and Walker, 1983). Specifically, researchers have compared the lexical inferencing procedures of high and low proficient learners, investigating what knowledge sources and cues they appeal to when confronted with unfamiliar words in a written text (Haastrup, 1987, 1990, 1991; Morrison, 1996), while others considered the extent to which context helps in successful lexical guessing (Bensoussan & Laufer, 1984; Haynes, 1993).

Haastrup's (1987, 1990, 1991) analysis of 62 pair think-aloud protocols of Danish-speaking learners of EFL revealed that learners used a wide range of inferencing procedures, many of which were considered to be ineffective. For example, some learners worked exclusively at the phonological/orthographic level (bottom-ruled processing), trying to make an unfamiliar word sound like an L1 word. Others inferred from contextual cues only, without considering the possible lexical or semantic sources. Haastrup's cross-talk continuum model (Figure 1) includes six types of processing ranging from pure bottom-level processing to top-level rule processing with full integration. Full integration or cross-talk involves an interaction between top-level and bottom-level cues. Her analysis of the characteristic differences between high-proficiency and low-proficiency learners revealed that L2 proficiency is "a decisive factor in lexical inferencing procedures and that there definitely seems to be a threshold level of L2 proficiency that learners have to reach first before they are able to use effective inferencing procedures" (Haastrup, 1990, p. 130).

1	2	3	4	5	6
pure bottom processing	bottom rule processing	conflict of ruling	top-ruled without integration	top-rule partial integration	top-ruled full integration

Figure 1. The cross-talk continuum (adapted from Haastrup, 1991, p. 129)

The framework of the cross-talk model incorporates the construct of non-interactive and interactive processing. An overview of the processing types is outlined in Table 1.

Table 1

Overview of Processing Types (Adapted from Haastrup, 1991, pp. 126-129)

	Processing Types	**Cue Levels**
NON-INTERACTIVE	Pure top processing	Top cues from text level
	Pure bottom processing	Bottom cues
INTERACTIVE	Bottom-ruled processing	Top and bottom cues
	Conflict of ruling	Top and bottom cues, but neither one wins
	Top ruled processing without integration	Activation and partial integration of lexical/semantic cues but not other cues
	Top-ruled processing with partial integration	Use of top cues (contextual) as well as bottom cues. Integration of non-central elements (i.e., prefix, word class)
	Top-ruled processing with full integration	Top and bottom cues. Integration of central elements.

Morrison's (1996) examination of the lexical inferencing procedures of university-level French as second language (FSL) learners supported Haastrup's (1991) observations, who found that context was by far the most frequently used knowledge source by her participants, almost twice as frequent as the use of intralingual cues and more than twice as frequent as the use of interlingual cues. As far as the two proficiency groups in Morrison's study were concerned, there was a clear and significant difference between the high-proficiency (HP) and low-proficiency (LP) groups in that the HP group used intralingual sources much more frequently than the LP groups. The same results applied with regard to the number of knowledge sources activated and the possible combinations. HP learners used more knowledge sources and more combined sources. Finally, Paribakht and Wesche's (1999) introspective study of intermediate L2 learners in a university ESL class demonstrated that word category interacted with strategy use. Learners used more inferencing for verbs in the question task than in the summary task. Furthermore, learners used varied kinds of previous knowledge as well as textual cues when attempting to infer meanings of unfamiliar words. Sentence-level grammatical knowledge was the type of knowledge most often used in lexical inferencing for both tasks and for all word categories. Morphology, punctuation, and world knowledge were the other knowledge sources used by the learners. Overall, the individual differences in the knowledge sources used in the study appeared to be related to individual learner's previous L2 learning experience, their L1, and their familiarity with the text topic.

Concerning the role of context in guessing the meaning of unfamiliar words, Bensoussan and Laufer's (1984) study of 60 first-year learners of English as a foreign language (EFL) found that lexical guessing was not meaningfully helped by context. In their study, the more proficient students were not able to use context more than less proficient students. Both groups of learners tried to ignore unknown words and applied their "pre-conceived notions" about the meaning of words or phrases. In her investigation of the reading strategies of 63 ESL learners, Haynes (1993) concluded that ESL readers have the ability to guess the meaning of unfamiliar words that are locally defined and that poor learners with a smaller vocabulary will find guessing more difficult. The importance of immediate contextual clues was confirmed. More than half of the students who gave appropriate meanings for unfamiliar words had relied on words from the immediate context in their definitions.

The think-aloud methodology (TAM) can also offer a unique view of individual differences in readers' comprehension and representation of narrative text (Long & Bourg, 1996; Whitney, Ritchie, & Clark, 1991; Zwaan & Brown, 1996). Zwaan and Brown (1996) collected verbal protocols from skilled and less skilled readers as they comprehended a story. They found that the two groups differed in the extent to which

they made certain classes of inferences. Skilled readers reported more explanatory inferences and constructed stronger situation models than less skilled readers. Whitney et al. (1991) also used verbal protocols to investigate individual differences in readers' comprehension processes. They classified readers according to their working memory span and collected think-aloud data as the readers comprehended ambiguous stories. Whitney et al. (1991) found differences in the specific elaborations produced in response to story sentences. Low-span readers reported more specific elaborations than high-span readers did. Furthermore, they observed more variability in the number of different thematic inferences among low than high-span readers.

Think-aloud methods of data collection have gained increasing prominence in the study of cognitive processing (i.e., L2 text comprehension) and in the investigations of individual differences. Think-aloud has several advantages over other types of verbal reporting. They involve highly specified tasks that produce more reliable results than hypothetical ones, and they lessen the problem of memory failure since the reporting is nearly concurrent with the processes being described (Ericsson & Simon, 1980). Unlike other techniques for gathering verbal data, there are no interruptions or suggestive prompts or questions as the subjects are encouraged to verbalize their thoughts and to avoid interpretation or explanation of what they are doing, so they just have to concentrate on the task (van Someren, Barnard, & Sandberg, 1994). Think-aloud techniques are particularly useful in task-oriented activities that allow some confirmation of what learners actually do (Haastrup, 1987; Long & Bourg, 1996; Whitney & Budd, 1996). According to Haastrup (1987), think-aloud protocols have proved an insightful and rich method for uncovering learners' procedural knowledge. In her discussion of the benefits of pairs thinking-aloud when working together on a task, Haastrup states that "one stimulates informants to verbalize all their conscious thought processes because they need to explain and justify their hypotheses about word meaning to their fellow informant" (Haastrup, 1987, p. 202). Thus, pair thinking-aloud is considered ideal because one can find out how learners infer on their own accord rather than if they were seated singly in front of a tape recorder and asked to verbalize alone. The interaction and negotiation that invariably occur when two people discuss enriches the wealth of information that introspective methods already offer. The majority of informants in Morrison (1996) gave positive feedback in the lexical inferencing task. Seventeen out of 20 informants believed that input from their partners allowed for a wider range of inferencing possibilities. Other students reported that working with a partner broadened their interpretation of the text. These positive remarks led Morrison (1996) to believe that her participants "were not withholding knowledge sources or hypotheses while inferencing" (p. 63).

Purpose

Since the long-term goal of the present study is pedagogical, Haastrup's (1991) pair-think aloud procedure has been retained. Her empirical study is intended to address pedagogical problems, that is, looking at learners' receptive competence. The rationale behind the thinking-aloud procedure is to make learners' cognitive processes visible by encouraging them to verbalize all their thoughts. Based on Faerch and Kasper's (1987) taxonomy of elicitation procedures, Haastrup's (1991) thinking-aloud procedure is characterized as task-integrated, undirected, self-initiated, and involving informant interaction. The interaction comes close to a real-life situation (i.e., a foreign language classroom) in which people discuss word meanings, either in L1 or L2. However, on the basis of Ericsson and Simon's (1993) model of verbalization, social interaction is not intended; therefore, informants are constrained not to analyze, explain, or interpret their thoughts. The think-aloud instruction must explicitly warn the subjects against explanations and verbal descriptions. In Ericsson and Simon's (1993) terms, "explanations, descriptions, justifications, and rationalizations are socially motivated verbalizations," (p. xiv) and are considered Type 3 verbalization.

As already mentioned, the long-term goal of the present study is pedagogical. In relation to my focus on learners' lexical inferencing procedures, a classroom-related study is set up, retaining several design features of Haastrup's (1991) empirical study. The research questions driving the present study are directly related to recent studies of lexical inferencing:

1. What knowledge sources do Ilokano learners make use of when attempting to understand unknown Ilokano words they encounter in a written text?
2. Do students differ in their use of cue types?

METHODOLOGY

Participants and Selection Process

A total of 26 students taking Ilokano at UHM participated in the study. From the 26 participants, fourteen students were from the advanced level (Ilokano 301), while twelve were from the intermediate level (Ilokano 202). The majority of the participants were second or third generation Filipinos. Many of these students came from homes where both parents were native speakers of or fluent in Ilokano, the target language under investigation. In the formation of pairs, students were assigned according to their target language proficiency, so that two students who were closest to each other according to the teacher's assessment formed a pair.

Data from the Ilokano 301 class were collected during the Fall 1999 semester, while the intermediate level data were collected during the Spring 2000 semester. Participating students were awarded 10 extra credit points.

Instrumentation

The text. All 13 pairs were exposed to the same text with six unknown test words in comprehensible context. The text (Appendix 2) was adapted from the short story *Saan nga Abalbalay ni Ayat* (Love is not a Toy) in *Burnay*, the Ilokano magazine on the Internet. The text was selected with the assumption that the theme will be very familiar to the participants, eliciting strong interest in the text. In order to make the context of the test words fully comprehensible, even to low proficiency participants, the text had to undergo a basic simplification process. A small group of former Ilokano students participated in a pilot study, serving to determine whether the text is suitable for the learners and whether the test words met the criteria set up by Haastrup (1991).

Inferencing task. The inferencing task consisted of six items in a moderately average-reader context, a short love story. It was expected that some other words in the text would also be unknown to the participants. The selected words that were the focus of the inferencing task met the criteria set out by Haastrup (1991):

1. Words should be unknown to all informants.
2. Words should invite the use of various knowledge sources.
3. A range of word classes should be presented. Of the six items selected, three open word classes are represented: nouns, adjectives, and verbs.

The target words used for the inferencing task included the following:

Ilokano Target Word	English Equivalent
alintatao	silhouette
mangar-arit	challenging
likliklikanen	avoiding
panangbarengbareng	taking for granted
malalaki	masculine
sakaanam	(your) foot

Task Administration

Several of the design features of Haastrup's (1991) study were retained for this particular study, notably the pair think-aloud procedure.

The task was administered in the Ilokano language classroom. The participants were presented with a one-page Ilokano text, and were asked to read the text individually and then, in pairs, guess the meaning, agreeing upon an English word as the most likely translation equivalent of the underlined words in the text, while verbalizing all their thoughts. The participants were allotted 25 minutes to complete the task. The students were asked to think-aloud in English and in the target language, Ilokano. The written instructions for the task are included in Appendix 3. Their discussions were tape-recorded and transcribed. The researcher transcribed the discussions. Another native Ilokano speaker with a transcription background verified the accuracy of the transcriptions.

Data Analysis

The researcher scored the results of the word inference task. Each pair was individually labeled. For example, a pair from the intermediate level was labeled as ILO202. A correct response was scored as one point, and an incorrect one as zero. A correct response was any answer giving an inferred meaning that approximately matched the contextual meaning of the target word.

All think-aloud protocols were transcribed and subsequent analysis was based on these written transcripts. Transcription conventions (Appendix 4) were adapted from He (1998). The introspective data were analyzed along two dimensions—the knowledge sources the Ilokano learners made use of guessing word meanings, and how they combined the knowledge gained from these sources. Haastrup's (1991) taxonomy of knowledge sources (Appendix 1) was the principal analysis tool employed in addressing the knowledge sources used by university-level learners of Ilokano as a foreign language. It was necessary to revise the taxonomy to fit the Ilokano material. The overall framework of Haastrup's (1991) taxonomy, drawn from Carton's (1971) work, establishes three main knowledge sources: (a) contextual, (b) intralingual, and (c) interlingual.

All the six items were included in the quantitative analysis. A distinction was made between valid and invalid attempts. The combination of one informant pair and one item constitutes an attempt (Haastrup, 1991; Morrison, 1996). An attempt was considered valid if (a) both informants in a pair reported not knowing the test word at the outset, (b) the item in question was discussed, (c) the pair arrived at a consensus with their guesses, and (d) their discussion allowed for a categorization according to the taxonomy. There is a total of 78 possible attempts (13 groups x 6 items per group = 78), of which 66 are valid attempts. Several pairs (six attempts) relied heavily on literal translation of the test word and the co-text, and could not be categorized according to the taxonomy. Furthermore,

one student in a pair knew all the test words, and therefore, was not engaged in inferencing. A total of 66 valid attempts were therefore retained for analysis.

Finally, the researcher encoded 66 protocols, according to the taxonomy presented. A subset of 20 percent of the protocols (13 in total) was encoded by a second person. Out of the 26 identified knowledge sources, the two raters agreed on 21, for an 81 percent inter-rater level of agreement.

RESULTS AND DISCUSSION

Findings are presented in the following order. First, a summary of how learners dealt with unknown words in the inferencing task is presented in Table 2. A quantitative analysis on the spectrum of knowledge sources utilized by all learners is subsequently reported. Samples of Ilokano language learners' think-aloud protocols will accompany the discussion of each knowledge source employed by learners. Finally, a discussion on individual students' differences in their use of cue types will be provided.

Based on the students' successes with the inferencing task, the students were categorized into three groups as follows:

# of Successful Guesses	Grouping	# of Pairs
5-6	High	3
3	Middle	3
0-2	Low	7

Table 2

Number and Percentage of Successful/Unsuccessful Guesses for All Informants for All Test Words

	HIGH		MIDDLE		LOW	
	#	%	#	%	#	%
Successful guesses	16	89	9	50	10	24
Unsuccessful guesses	2	11	9	50	32	76
Total # Possible	18	100	18	100	42	100

The majority of the informants were categorized as low-level (seven pairs). As shown in Table 2, the high-level students made the largest number of successful guesses (83%). The middle-level learners made an equal number of successful and unsuccessful guesses. As a group, the low-level informants registered 76% of incorrect guesses. The highest number of unsuccessful guesses made by the high-level learners was with the words *panangbarengbareng* and *malalaki*. While the middle and low-level learners made

unsuccessful guesses on the majority of the items, the highest number of their unsuccessful guesses occurred with the words *alintatao*, *panangbarengbareng*, and *malalaki*. Overall, *panangbarengbareng* and *malalaki* were the most difficult items for all the groups.

Knowledge Sources Used in Inferencing

In the percentage calculations shown in Table 3, the basis of the percentages is the total number of valid attempts (66). According to Table 3, all identified knowledge sources are used to some extent; there is, however, rare use of interlingual sources. Intralingual (the test word) is by far the most frequently used knowledge source. With regard to intralingual cues, the informants mainly used the test word itself, relying on its morphological features. There is a proliferation in the use of contextual sources among

Table 3
The Use of Three Main Knowledge Sources with Sub-Categories by All Informant Pairs for All Test Items

% of 66 valid attempts	H	M	L	ALL INFORMANTS
INTRALINGUAL				
Test word	5	9	47	61
TOTAL	**5**	**9**	**47**	**61**
CONTEXTUAL				
Co-text	12	7	9	28
Knowledge of the world	2	2	2	6
TOTAL	**14**	**9**	**11**	**34**
INTERLINGUAL				
L1	0	2	0	2
TOTAL	**0**	**2**	**0**	**2**

TABLE 4
Combinations of Knowledge Sources Used

	Valid Attempts		Successful Attempts	
	#	%	#	%
Contextual sources alone	4	19	1	5
Contextual + intralingual	17	81	14	67
VALID ATTEMPTS	21	100	15	72

high-level learners, while low-level learners utilized intralingual sources more frequently. According to Table 3, the sub-categories of the three main knowledge sources are each used to some extent. Use of interlingual sources, especially from L1 (English), is rare. Finally, Table 4 presents the two most frequent combinations of knowledge sources by all informants. The largest number of successful combination (67%) includes contextual plus intralingual sources (test word + the co-text).

The following section presents the three main cue types and combinations used by the informants. Excerpts from the verbal protocols accompany the discussion of each knowledge source employed by learners.

Intralingual cues. A distinctive feature of all the informants is the extensive use of intralingual cues. The test word is the main category of this knowledge source activated by almost all of the informants. A sub-category of the test word is word morphology. The learners frequently used their knowledge of word morphology to guess the meaning of the words. Such knowledge was the major type used by learners as a group and by most individually. I would like to note that the bulk of the transcribed protocols of the participants revealed an extensive and significant use of morphological cues regardless of proficiency and/or course level. Learners closely examined the morphological derivations of the test words, by first extracting the root of the target word and then determine the function(s) of the affix (prefix, infix, suffix) of the root. The three groups of learners seemed to be very successful in extracting the correct root, but encountered difficulty in determining the function(s) of the affix. For example, the participants had the most difficult time figuring out the meaning of the word *malalaki*. While all of them were successful in extracting the root, *lalaki* (man/male), they were confused as to what the function of the prefix *ma-* was. In Ilokano, the affix *ma-* can be a prefix to an adjective (which is the case of the target word) or denotes ability, usually attached to a verb. Most of the participants hypothesized the meaning of *malalaki* as *turning or becoming a guy*. Thus, they perceived the prefix *ma-* as an abilitative marker. The protocol below is an illustration of this observation.

> **TEXT 1**
>> **A** *Malalaki…Isu pay met..*
>> **B** What is that, *malalaki*?…Hmmm…Scary..it's getting scary ((laughs)). It's getting scary.
>> **A** OK, *malalaki*.
>> **B** Trying to be a like a guy?
>> **A** *Malalaki*?
>> **B** Is a man.

> **A** Tomboyish?
> **B** TOMBOY. Or not knowing their sex or something. I don't know. It's a guess, no matters if it's wild or what.
> **A** Okay tomboyish, because get *lalaki* inside. ((laughs))
> **B** But still had to do something with a guy.

In addition to word morphology, intralingual cues were also applied in the forms of collocations. The participants tried to consider an Ilokano or English equivalent of the test word or tried to come up with a proposal that "sounds like" with the test word. Collocations became very common with the test word *likliklikanen*. The majority of the participants associated this target word with the English word *to lick*, meaning *to lap or beat someone*. Two protocols from a middle and low-level pair illustrate this phenomenon, respectively.

TEXT 2
> **A** *Likan* is the word..there is little too much "liks" though, eh
> **B** *Likliklikanen ni Janet ni Sadiri. Dinan kayat a sanguen*..oh she was ashamed of him?
> **A** *Likliklikanen ni Janet ni Sadiri*..maybe he was licking her ((laughs)).
> **B** *Likliklikanen..likliklikanen*..Sadiri ate and licked Janet ((laughs)). She doesn't wanna face..
> **A** Face the boy.
> **B** Yeah, she's avoiding him, I think that's what it means. Yeah, it is.
> **A** To avoid, so Jane is avoiding Sadiri. What is this *igaggagara*?
> **B** She doesn't wanna hurt him I think.
> **A** So *likliklikan* is basically trying to avoid. Okay, we good already.

Based on the above protocol, the pair was trying to associate the target word with the English word *to lick*. The informants of this pair seem familiar that the text under discussion is a short love story; therefore, they were quick to give the target word a sexual equivalent. This particular pair of learners was able to come up with the correct proposal for the test word.

TEXT 3
> **A** The next one is *likliklikanen*. *Likliklikanen*. Sounds like food, brah. *Kanen*, yeah, that's why. Janet ate Sadiri ((laughs)).

This very short extract from a low-level informant shows the activation of morphological cues. However, this learner unsuccessfully extracted the correct root. The learner extracted *kanen* (food) as the root, and then associated that with the word *to lick*.

Contextual cues. The three groups of learners were also able to apply contextual cues in their lexical guessing procedures. The high-level learners registered the largest percentage in the activation of contextual cues. Although the low-level informants used contextual cues, they were not as effective as their high-level counterparts in using the immediate co-text and the wider co-text, and this explains their relatively lower percentages in Table 2. Even though this was the case, it is noteworthy that the proposals they made were fairly close to the expected English equivalent of the test words. The low-level informants, especially the intermediate level, did not take the extra initiative to make the connection between the test word and the co-text. That extra initiative was consumed by translation. The low-level informants relied extensively on word-for-word translation of the surrounding text, automatically translating the different parts of the co-text as they verbalized. While engaged in the literal translation process, low-level learners would interrupt each other to make inquiries on other words or clauses in the text they did not know. The protocol below illustrates an attempt by high-level informants in guessing the meaning of the word *mangar-arit*. Although the attempt was unsuccessful, the protocol is an excellent example of how high-level learners activated contextual cues.

TEXT 4

    A *Mangar-arit* is probably like, uhhhh?

    B What is *kabus*?

    A Have no idea. *Mangar-arit* isn't like…you know what *karit* is? Do you know what *karit* is, right? What does that mean, *karit*?

    B He's acknowledging him or something..

    A It's like a metaphor.

    B Yeah.

    A Like he's trying to..

    B *Bulan* is..

    A Moon – so he's trying to *arit* the moon?

    B Make love to the moon? So *nakaidda iti darat*, so she's lying on the ground?

    A So she is trying to seduce the moon?

    B You know how like a goddess or something..like a goddess of the moon?

    A What is?

B You know like how, you never like heard about the story of Diana, the goddess of the moon; so maybe she's trying to be analogous with that, trying to analogous with the moon, maybe the moonlight?

A Shall we move on?

In this protocol, A called on an intralingual cue first; she has found the stem *arit* in the word *mangar-arit*. Knowledge of the world is then used—A predicts that immediate co-text (sentence containing the unfamiliar word) is a metaphor. B reinforces A's prediction by calling on the word *bulan* from the immediate co-text. Knowledge of the world (goddess of the moon, Diana) is then used by B to support his own prediction. In this unsuccessful attempt, the co-text has been used with a strong emphasis on the immediate context, and knowledge of world has also been called upon.

Interlingual cues. Use of interlingual sources, especially from L1 (English), is rare. According to Table 3, only two middle-level learners called on these sources. This may be due to the fact that the informants possessed limited knowledge of the structures (i.e., Ilokano morphology) of the target language, Ilokano. Although the informants of this study were second and third year students of the target language, only selected grammatical structures (including Ilokano morphology) are covered at these levels. Therefore, in performing the lexical inferencing task, they were constrained to making judgments about the structure similarities of the target language and their L1, English.

Combination of knowledge sources. The Ilokano language learners in this study made use of the three knowledge sources identified by Haastrup (1991): contextual, interlingual, and intralingual. I would like to point out, however, that the activation of interlingual sources was negligible. The single most frequent combination activated by learners was the use of the co-text and morphology of the test word. The transcript below is an illustration, wherein learners displayed a combination of knowledge sources in their lexical guessing. The letters A and B represent the informants involved. The following is a protocol from a high-level pair.

TEXT 5
A sample protocol of the participants' combination of knowledge sources.

Thinking Aloud	Cues	Hypotheses
Test word: alintatao		
A What was that?		
B See it is *dalluyon* is a wave because they are the beach, yeah.	**Contextual**, the immediate co-text of the test word/Knowledge of the world	
A Okay..beach..*Kasla makitkitana*…He saw..*ti*…		
B Something that looks like human..		
A How do you know that?		
B Because the root word is *tao*, and then, *nakitana ti agtartaray iti kadaratan a magmagna kadagiti babassit a dalluyon*..like from the small waves he saw..	**Intralingual** (**Morphological** - extracts 'tao' as the root of the target word)	
A Something that was like human..so this is human-like?		
B Yeah..like supernatural…Lying in the dirt..*kasla mangar-arit iti kabus a bulan*..I don't know what that one means.		Human-like Supernatural

The column on the left contains the protocols from the session where A and B think-aloud about word meaning. The columns headed **Cues** and **Hypotheses** contained the learners' assumed hypotheses about word meaning and the researcher's interpretation of what cue(s) the learners used, respectively.

Using Haastrup's (1991) cross-talk continuum model in analyzing the learners' processes, we note that the group of participants initially started from bottom-level processing, relying on the morphology of the target word (see Text 4). Learners approached the test words by identifying or recognizing the root word as well as recognizing additional affixations of the target word. High-level learners systematically moved to top-level processing by contextualizing the target word through utilization of

the immediate and wider co-text. There is clear evidence of cross-talk among high-level learners. They were much more effective at integrating bottom-level cues with top-level cues than the middle or low-level learners. Although low-level learners were able to contextualize, often they failed to do so effectively. A word-for-word literal translation of the sentence where the target word was embedded was frequent. Evidence of frustration from the low-level learners was identifiable from the transcripts, in situations where they could not get the translation of the immediate text.

TEXT 6

A Okay, here's our story. I don't know what a lot of the words mean.

B *Awan bibiang ni Sadiri…*What is *bibiang*?

A I don't know. Like he didn't have a life?

B She doesn't have something..she doesn't finish work…she doesn't finish her work..

A What's *baybay*?

B Beach.

A That's what I thought…How come? It's not middle.

B What's *naminsan*? Some nights?

A But there's still, but there's still a beach, okay, that's a little weird.

B *Kadaratan…Kadaratan*

A *Magmagna*, walking right? *Dalluyon*, what is *dalluyon*?

B *Alintatao*?

A *Mangar-arit*?

B But *likliklikan…likliklikan…likliklikan* is avoiding..

A Oh..

B Avoiding…Janet is avoiding Sadiri. *Dinan kayat a sanguen wenno…*

A **There are a lot in here that I don't know.**

B **I know.**

A **How icky!**

Individual Differences in Use of Cue Types

This final section provides a comprehensive discussion of individual students' differences in their use of cue types. This section sheds light on research question two of the present study.

So far the analyzed protocols show that intralingual sources are the most frequently activated source used by learners as a group. Likewise, such a source is the most frequent source (See Table 3) activated by individual students, whether they are in the

intermediate or advanced level. Almost all informants tackled each test word with their fellow informants by first discussing the morphological derivations of the target word (see Text 4). Each individual in a pair tried to come up with the root (stem) of the target word, and then came up with a proposal as to what the definition of the unknown word was. Given the course level standing of the informants, each student should be capable of extracting the correct root of the target word. Out of the 26 students, 85%-90% of them were successful in extracting the correct root. The next task for the students was to relate the affix to the root, followed by determining the function(s) of the identified affix(es). Since there might be dual or multiple functions of an affix, students had to be able to determine the function through contextualization. The affixations used for the target words in the inferencing task had been introduced in the course of the students' formal study of Ilokano. Although this was the case, some students were *merely guessing* while others just ignored the target word because they did not know it. These differences appeared to be related to the individual's previous Ilokano learning experience and the amount of Ilokano input a student had received outside of class. In terms of previous learning experience, a solid foundation in Ilokano 101 and 102 was a major component for successful application of intralingual cues. In terms of using the co-text, a strong background in elementary Ilokano and course level seemed to contribute to the overall success. Individual students from the advanced group were more effective in using contextual cues to determine the meaning of unknown words. In contrast, there was a marked difference in the manner in which learners from the intermediate level processed word forms. For example, they did not question the role and meaning of certain words in a sentence where the test word was embedded. For example, one learner guessing at the item *mangar-arit* translated the word *bulan* of that sentence as *month* without considering other possibility (such as *moon*). Consider the following attempt by a high-level and low-level group in guessing at the meaning of the word *mangar-arit*.

TEXT 7

    A *Mangar-arit iti*..(reading slowly)). What is this part, *mangar-arit iti kabus a bulan*?

    B I don't know, but we need to know what *mangar-arit* is too.

    A *Arit*? *Bulan*? What is *bulan*?

    B *Bulan*? Month.

    A Yeah, it's month?

    B *Kabus* is something like the past month.

  A   Is it like some kind of a figure that comes out into the beach, every month. I know only turtles get hatched in the beach. It can't be a turtle, it's a *tao*. Were saying it's a *tao* right.

TEXT 8

  A   Okay then, the next one is *mangar-arit*, and the sentence is..

  B   *Nakadeppa*

  A   *Nakadeppa a kasla mangar-arit iti kabus a bulan*.

  B   *Kabus a bulan*..

  A   *Kabus* is year, yeah?

  B   Year or month?

  A   Month, *tawen* is year.

  B   *Bulan* is month.

  A   *Mangar-arit*?

  B   What is *arit*?

  A   *Arit* is the root word then.

  B   We can use our book?

  A   No can.

  B   *Arit*.

  A   *Arit* is the root word then.

  B   *Arit*..aritmethic ((laughs))

  A   What is *arit*, brah?

  B   *Mangar-arit*?

  A   *Nakadeppa*..

  B   What is that?

  A   What is *kabus*? We gotta find out *kabus*.

  B   *Kabus*.

  A   *Kabus..kabus..kabus man ta*..It's like an expression I think. Like every month, something like that.

  B   Oh that word.

While most of the participants in this study employed the inferencing strategy, few others depended on appeals for assistance. Low-level pairs, especially from the intermediate level, appealed to the researcher, wanted to use a dictionary, and considered asking the other group for assistance. Tessie (a pseudonym), an informant from the intermediate level, was not continuous in her study of Ilokano; therefore, she admitted

that she has forgotten some of her vocabulary and other relevant structures. The student appealed for assistance to the researcher, and suggested to her partner consulting with the other groups. Katie (a pseudonym), the only informant in this study not from Filipino background, expressed frustration towards Tessie while performing the task. Katie's verbal protocol is illustrated below.

Katie *Nadumaduma*…there are other guys that are looking at Sadiri..*a pakikuyogan ti balasang*, they must be flirting with each other or something, *kas man igaggagara* ni Janet…I don't know what *sakaanan* is…I don't know. **This is frustrating, this is like reading the story for our homework. It takes me hours you know**.

The amount of Ilokano input received by individual students outside of class is also a contributing factor to how well individual participants performed and how they behaved during the inferencing task. Some learners received more input in the target language from their parents and relatives, especially those living at home. A total of 98% of the participants came from homes where both parents were native speakers of or fluent in Ilokano. Such an observation is identifiable in the transcripts with expressions such as, "I've heard this before from my parents." This is another reason why some of these students produced a great many collocations while inferencing.

CONCLUSIONS

Research and Pedagogical Implications

Vocabulary is indeed a sizable component in second or foreign language learning, and often students are overwhelmed with the amount of vocabulary that they need to know. When assigning reading materials, in my opinion, teachers should not just provide a glossary for students and have them refer to it when they do not understand certain words. Instead, it will be a stimulating classroom task for students to be able to infer the meaning of unfamiliar or unknown words that they encounter in written text. The students who participated in this study reacted positively to the pair think-aloud procedure. All participants reported learning something from the experience.

Learner familiarity with the theme and topic of the text was an important source of clues for inferring the meanings of unknown words. Most students enjoyed the theme of the story, the love story of Janet and Sadiri, the two main characters of the story. The majority of the students gave favorable feedback on the text that was used for this study. Thus, the text type and theme evidently influenced learners in terms of both their motivation and their success in lexical inferencing. This brings me to another point that

needs to be mentioned: teachers should be selective in terms of the text used in the inferencing task. Although culture is intertwined with language teaching, foreign language teachers must make sure that students are culturally-familiar with the text they give to students for performing a lexical inferencing task. The reading text used in this study was carefully selected from the Internet. The Internet is a great tool for obtaining interesting, authentic, and multilevel reading materials (Forsyth, 1998; Godwin-Jones, 1996). The material should then be tailored to both high and proficient learners by simplifying the text to make it more comprehensible to the learners.

The structure of the target language, Ilokano, helps explain the proliferation of morphological cues activated by the informants. With its complex morphological structure typical of Philippine languages, a lexical inferencing task can be an avenue for Ilokano language learners to better understand the morphology of Ilokano words. In Ilokano, morphology is used not only to specify grammatical information, but also to create new lexical items. Familiarity with the connotations of Ilokano affixes can provide important and reliable information about word meaning. Such information may be particularly valuable in inferring the meaning of unfamiliar and low-frequency Ilokano words. Morphological features provide cues to such aspects of general word meaning as number, tense, manner, quality, and many other nuances. Students may benefit from a topic on Ilokano morphology in the Structure of Ilokano course (Ilokano 451).

This study demonstrated that while students have the ability to extract the correct root of the test word, they were unsuccessful in determining the functions of those affixations. This is true in the case of the target word *malalaki*, which posed some problems for the learners. The informants were not able to distinguish whether the prefix *ma-* functions as an adjective or abilitative verb marker. The test words for this study were all morphologically derived words. Finally, while there are several cases where Ilokano words do not translate very well into English, lexical inferencing is an effective task that can promote more frequent use of contextual cues in guessing the meanings of unknown Ilokano words. As long as students understand that pairs thinking-aloud is a collaborative activity, there is no reason why it could not be used in the classroom. The instructor could also present learners with some think-aloud samples and entertain open discussion of the different knowledge sources students actually use.

For this study, students of equal proficiency were paired to perform the task. Students were paired based on the teacher's assessment of individual student's general proficiency. Although student's level of proficiency was not a variable for the present study, the results demonstrated that proficiency level of learners is not always a decisive factor in effective inferencing procedures. Poulisse and Schils (1989) investigation on the effect of foreign language learners' proficiency level and task-related factors on the use of

compensatory strategies (CpS) found that proficiency level has a limited effect on the choice of CpS by the subjects and that task-related factors played a larger role.

Limitations of the Study/Directions for Future Research

The researcher is aware of the limitations of this study. First of all, the size of the sample was minimal. Larger samples, hence more representative of the larger population, may have yielded more conclusive results. The findings, however, complement the results of recent studies on lexical inferencing. The results of this study also demonstrated that student proficiency is not a decisive factor in successful lexical guessing. Familiarity with the structure of the language, in this case, the morphology of the target language, is useful.

Second, although the majority of the learners gave positive feedback on the inferencing task in a debriefing, there were indications in the transcript that a few students were giving *wild guesses* rather than *informed guesses* for the sake of completing the task assigned to them. This behavior could have been avoided if the students had been given some inferencing practice before performing the actual task. Such practice would give the students an opportunity to familiarize themselves with the task, in this case, the lexical inferencing task.

Third, some of the test words might not have been effective for this particular task. Although the test words were pre-piloted, it seems that a few informants in the advanced level class knew one or two of the test words. This, of course, can affect the reliability of the results. In any case, more lexical items should be tested on the students (also different word classes) in order to examine patterns of possible combinations of knowledge sources used by the informants.

The think-aloud methodology was used for this study to focus on how informants infer on their own accord. Since thinking-aloud has certain shortcomings, such as incomplete reporting and protocols that are difficult to interpret, retrospective interviews (Haastrup 1987, 1990, 1991) should be considered. Such interviews would allow the researcher to ask for clarifications and further information about some of the statements made during the thinking-aloud, thereby improving the reliability of the protocol analysis.

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REFERENCES

Aragon, R. V. (1998). *Saan nga abalbalay ni ayat*. [on-line]. Retrieved September 15, 1999 from the World Wide Web at http://burnay.hypermart.net/burnay_v1n4/sarita/abalbalay.html.

Bensoussan, M., & Laufer, B. (1984). Lexical guessing in context in EFL reading comprehension. *Journal of Research in Reading, 7*, 15-32.

Bialystok, E. (1983). Inferencing: Testing the 'hypothesis testing' hypothesis. In H. W. Seliger & M. H. Long (Eds.), *Classroom oriented research in second language acquisition* (pp. 104-123). Rowley, MA: Newbury House.

Block, E. (1986). The comprehension strategies of second language learners. *TESOL Quarterly, 20*(3), 463-491.

Carrell, P. L. (1983). Some issues in studying the role of schemata, or background knowledge, in second language comprehension. *Reading in a Foreign Language, 1*(2), 81-92.

Carton, A. S. (1971). Inferencing: A process in using and learning language. In P. Pimsleur & T. Quinn (Eds.), *The psychology of second language learning* (pp. 45-58). Cambridge: Cambridge University Press.

Chikalanga, I. W. (1993). Exploring inferencing ability of ESL readers. *Reading in a Foreign Language Learning, 10*(1), 931-947.

Corder, P. (1983). Strategies of communication. In C. Faerch & G. Kasper (Eds.), *Strategies in interlanguage communication* (pp. 15-19). London: Longman.

Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review, 87*(3), 25-251.

Ericsson, K. A., & Simon, H. A. (1993). *Protocol analysis: Verbal report as data* (rev. ed.). Cambridge, MA: MIT Press.

Faerch, C., & Kasper, G. (1983). *Strategies in interlanguage communication*. London: Longman.

Faerch, C., & Kasper, G. (1987). From product to process—introspective methods in second language research. In C. Faerch & G. Kasper (Eds.), *Introspection in second language research* (pp. 5-23). Clevedon, UK: Multilingual Matters.

Forsyth, I. (1998). Why use the Internet for teaching and learning materials? In I. Forsyth (Ed.), *Teaching and learning materials and the Internet* (pp. 13-33). London: Kogan Page.

Godwin-Jones, R. (1996). Creating language learning materials for the World Wide Web. In M. Warschauer (Ed.), *Telecollaboration in foreign language learning* (Technical

Report #12) (pp. 69-82). Second Language Teaching and Curriculum Center, University of Hawaiʻi at Manoa.

Goodman, K. S. (1976). Behind the eye: What happens in reading. In K. S. Goodman & O. S. Niles (Eds.), *Reading: Process and program* (pp. 3-38). Urbana, IL: National Council of Teachers of English.

Haastrup, K. (1987). Using thinking aloud and retrospection to uncover learners' lexical inferencing procedures. In C. Faerch & G. Kasper (Eds.), *Introspection in second language research* (pp. 197-212). Clevedon, UK: Multilingual Matters.

Haastrup, K. (1990). Developing learners' procedural knowledge in comprehension. In R. Phillipson, E. Kellerman, L. Selinker, M. Sharwood Smith, & M. Swain (Eds.), *Foreign/second language pedagogy research* (pp. 120-133). Clevedon, UK: Multilingual Matters.

Haastrup, K. (1991). *Lexical inferencing procedures or talking about words*. Tübingen: Gunter Narr.

Haynes, M. (1993). Patterns and perils of guessing in second language reading. In T. Huckin, M. Haynes, & J. Coady (Eds.), *Second language reading and vocabulary learning* (pp. 46-62). Norwood, NJ: Ablex.

He, A. W. (1998). Answering questions in LPIs: A case study. In R. Young & A. W. He (Eds.), *Talking and testing* (pp. 101-116). Amsterdam: Benjamins.

Hudson, T. (1998). Theoretical perspectives in reading. *Annual Review of Applied Linguistics, 18,* 43-60.

Li, X. (1988). Effects of contextual cues on inferring and remembering meanings of new words. *Applied Linguistics, 9*(4), 402-413.

Long, D. L., & Bourg, T. (1996). Thinking aloud: Telling a story about a story. *Discourse Processes, 21*, 329-339.

Moran, C. (1991). Lexical inferencing in EFL reading coursebooks: Some implications of research. *System*, *19*(4), 389-400.

Morrison, L. (1996). Talking about words: A study of French as a second language learners' lexical inferencing procedures. *The Canadian Modern Language Review, 53*(1), 41-66.

Paribakht, T. (1985). Strategic competence and language proficiency. *Applied Linguistics, 6,* 132-146.

Paribakht, T. S., & Wesche, M. (1999). Reading and "incidental" L2 vocabulary acquisition: An introspective study of lexical inferencing. *Studies in Second Language Acquisition, 21*, 195-218.

Poulisse, N., & Schils, E. (1989). The influence of task- and proficiency-related factors on the use of compensatory strategies: A quantitative analysis. *Language Learning, 39*(1), 15-48.

Rubino, C. (1998). *Ilocano dictionary and phrasebook*. New York: Hippocrene.

Rumelhart, D. E. (1980). Schemata: The building blocks of cognition. In R. J. Spiro, B.C. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 33-58). Hillsdale, NJ: Erlbaum.

Smith, F. (1978). *Understanding reading*. New York: Holt, Rinehart, & Winston.

Trabasso, T., & Magliano, J. P. (1996). Conscious understanding during comprehension. *Discourse Processes, 21*, 255-287.

van Someren M. W., Barnard, Y. F., & Sandberg, J. A. (1994). *The think aloud method: A practical guide to modelling cognitive processes*. London: Academic Press.

Walker, L. (1983). Word identification strategies in reading a foreign language. *Foreign Language Annals, 16*(4), 293-299.

Whitney, P., & Budd, D. (1996). Think-aloud protocols and the study of comprehension. *Discourse Processes, 21,* 341-351.

Widdowson, H. G. (1983). *Learning purpose and language use*. London: Oxford University Press.

Winne, P. H., Graham, L., & Prock, L. (1993). A model of poor readers' text-based inferencing: Effects of explanatory feedback. *Reading Research Quarterly, 28*(1), 53-65.

Zwaan, R. A., & Brown, C.M. (1996). The influence of language proficiency and comprehension skill on situation-model construction. *Discourse Processes, 21*, 289-327.

APPENDIX 1
Complete Taxonomy of Knowledge Sources
(Revised version from Haastrup, 1991)

CONTEXTUAL CUES

CATEGORY	DEFINITION
I. The text	The informant makes use of the text.
1. One or two words from the immediate co-text	The informant makes use of one or more words from the immediate co-text of the test word; s/he chooses a word that is familiar. This is then taken as the point of departure for his/her reflections, which may be of a collocational nature.
2. The immediate co-text	The informant makes use of the sentences that contain the test word.
3. A specific part of the co-text beyond the sentence of the test word	The informant refers to specific parts of the text other than the sentence of the test word, for instance to the sentence immediately following it.
4. Unspecified use of the text	The informant makes global use of the text without offering any definite reference.
II. Knowledge of the world	The informant makes use of his/her general knowledge of the world (semantics/lexical meaning), including factual knowledge, attitudes, beliefs, prejudices and so forth. What the informant proposes, s/he cannot have taken exclusively from the text.

INTRALINGUAL CUES

CATEGORY	DEFINITION
I. The test word	The informant makes use of the features of the test word.
1. Phonology/Orthography	The informant uses phonological/orthographical similarity. From the results and/or hypotheses, there is no indication that the informant considers meaning.
2. Morphology 　a. prefix	The informant uses prefixes or what s/he perceives as prefixes. His/her pronunciation reveals whether s/he thinks of an Ilokano prefix, if s/he does not say so explicitly.
b. suffix	The informant uses suffixes or what s/he perceives as suffixes.
c. stem	The informant tries by removing the prefix and/or suffix to use as his/her source the word stem, or what s/he perceives as the word stem.
3. Word class	The informant converts the test word into a different word class, sets up lines of demarcation with the help of word classes, or identifies through word classes.
4. Collocations	The informant tries what his/her proposal "sounds like" or reminds herself of other expressions with the test word.

INTERLINGUAL CUES

CATEGORY	DEFINITION
I. L1	The informant makes use of his/her first language, English.
1. Phonology/Orthography	The informant uses phonetic/orthographic similarity.
2. Morphology a. Prefix	The informant uses English prefixes or what s/he perceives as prefixes.
3. Lexis	The informant proposes an English-sounding word.
4. Collocation	The informant considers an English equivalent of the test word and potential collocations. The informant tries out whether the proposed English word sounds right in a translation of the immediate context.
II. Ln	The informant makes use of his/her knowledge of other languages than his/her first language and the target language, Ilokano.

1. General reflections
    a. Reflections about the origin of
      the word
 	
    b. Test word pronounced in Ln
	The informant reflects on whether the test word comes from a different foreign language.
	
	 The informant quotes the foreign language that s/he believes the test word is derived from.

2. Morphology a.. prefix	The informant uses prefixes or what she perceives as prefixes from a different foreign language.
3. Lexis	The informant puts forward a word from a foreign language s/he knows, and uses that as a starting point for reflections about meaning, i.e., s/he moves directly to the semantic level.

APPENDIX 2
Ilokano Text

Awan bibiang ni Sadiri no dina malpas ti trabaho nga ipapaaramid ti *boss*na. Kasla adda pay laeng iti daydiay a baybay idi naminsan a rabii.

Kasla makitkitana ti **alintatao** ni Janet nga agtartaray iti kadaratan a magmagna kadagiti babassit a dalluyon, nakaidda iti darat, nakadeppa a kasla **mangar-arit** iti kabus a bulan.

Likliklikanen ni Janet ni Sadiri. Dinan kayat a sanguen wenno kasao ti baro. Nadumaduma a lallaki ti makitkita ni Sadiri a pakikuyogan ti balasang. Kas man igaggagara ni Janet a saktan ni Sadiri.

Nasakit para kenkuana ti panangloklokko ni Janet iti riknana, ti **panangbarengbareng** daytoy iti ayatna. Saan ngamin a sanay a mapasakitan. Gapu ta buridek, maited amin a kayatna. Amin a kayatna ket maalana. Ket ita, adtoy ni Janet. Isu pay met ti ikastoy ti maysa a babai – isu nga am-ammo a nasiglat, **malalaki** iti babai. Ngem sabali, sabali ngamin ni Janet. Isu laeng a talaga ti nakariknaanna iti kastoy – iti ayat.

"Janet, damoka pay la a makita, ammokon a sika ti sapsapulek ket inkarik nga ayatenka. Dimo kadi aya ammo nga uray agparintumengak iti **sakaanam** ken agurayak iti adu a tawen, ayatennak laeng."

English Translation of Text

Sadiri doesn't care whether he finishes the work assigned by his boss. He's still thinking about the events that happened at the beach several nights ago.

He can still see the **silhouette** of Janet running in the sand, walking through small waves, lying on the sand with her arms stretched as if she was **challenging** the full moon.

Janet is now **avoiding** Sadiri. She doesn't want to face or talk to him. Sadiri's been seeing Janet with other men. It seems that Janet is intentionally hurting Sadiri.

It hurts Sadiri that Janet is playing with his feelings, for **taking his love for granted**. Is it because Sadiri is the youngest sibling in his family? He got all that he wanted in life. Everything he wanted, he got. Now here's Janet, why is he being treated like this by a woman? Afterall, women see him as "**masculine**" and "clever." But Janet is different. She's the only one for whom he felt love.

"Janet, the first time I saw you, I knew that you're the one I am looking for. I promised to myself that I will love you. Please know that I will **kneel before you** and wait many years for you to love me."

APPENDIX 3
The Lexical Inferencing Test Worksheet

INSTRUCTIONS

This is the Ilokano text that you are to work with as a pair. In the text we have printed in italics a number of words, the meaning of which you do not know.

Your task is to infer the meaning of the italicized words. Please come forward with all the suggestions that occur to you. Speak out, even if you are not sure that it is correct.

When you have agreed what the meaning of the word is, you write your solution on the worksheet. You are welcome to write either Ilokano words or English explanations, or a mixture of both.

It is important that you come up with a proposal for *all the words* even when you feel that you are making wild guesses. You have 25 minutes to solve the task.

alintatao

mangar-arit

likliklikanen

panangbarengbareng

malalaki

sakaanam

APPENDIX 4
Transcription Conventions (Adapted from He, 1998, p. 113)

CAPS	emphasis, signaled by pitch or volume
[	overlapped talk
=	latched talk
(( ))	additional observation
><	rapid speech
..	short pause
…	medium/long pause

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