

ORAL RECALL OF LIMITED ENGLISH PROFICIENT STUDENTS:
A TEXTUAL ANALYSIS USING THE
STEP (SUBORDINATION TECHNIQUE FOR EVALUATING PASSAGES) PROCEDURE

A Senior Thesis

By

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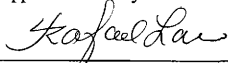
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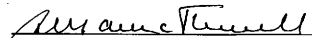
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Abstract

Oral Recall of Limited English Proficient Students: A Textual Analysis Using the STEP (subordination Technique for Evaluating Passages) Procedure

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The oral recall technique provides a comprehensive and useful analysis of reading comprehension. The assessment of Limited English Proficient (LEP) students is especially important; by discovering their patterns of recall, they can be given special instruction designed to fit their academic needs. This study uses the STEP procedure to analyze the recall of LEP students in both Spanish and English. The STEP procedure consists of dividing the passages (given to the students in the recall procedure) into idea units, or semantically related concepts. These units are then hierarchically ranked according to their semantic placement within the passage. I then analyzed the results of students' recall according to their ability to recall these specific units. The study investigated (a) how the placement of an idea within a passage affects its recall and (b) how the language in which the recall is conducted (Spanish or English) affects recall.

I would like to offer a special thank you to Dr. Rafael Lara-Alecio and June Azua for all their time and dedication to this project.

Introduction

The assessment technique of oral recall provides a comprehensive and useful analysis for classroom purposes. Such a diagnostic device is particularly valuable when dealing with students who are Limited English Proficient (LEP); only by discovering recall difficulties can the process of improving students' abilities begin (Clark, 1982). A detailed analysis of the textual structure of the passages used in the free oral recall procedure would benefit such students by revealing patterns in (a) the relationship between the ideas they recall and (b) the placement of those ideas in the semantic structure of the overall piece.

Problem

The paucity of research in this specific area has proven inconclusive in determining whether LEP students attend to textual structures. Although researchers have addressed both poor readers (Meyer, 1977; Tierney, 1978; Torgesen, 1978; Taylor, 1980; Luftig, 1983) and students learning English as a Second Language (Chandler, 1992), this study differs on two dimensions. First, a modified version of Christensen's Generative Rhetoric of the Paragraph, here identified as the Subordination Technique for Evaluating Passages (STEP) procedure, has been developed for the study. The STEP procedure offers a detailed and effective method of textual analysis of the free oral recall procedure that may reveal patterns in recall. Second, students recall these passages both in Spanish and English. Thus, researchers can analyze the data to determine if the variable of language affects students' recall of propositions according to the textual structure.

Research Questions

1. How does a proposition's placement in a passage, according to STEP, affect recall performance of LEP students: are students more likely to recall superordinate ideas than subordinate ones?

2. To what extent does the language in which students read and recall passages, either in their native language (Spanish) or their second language (English), affect their pattern of recall according to STEP?

Hypothesis

In response to the first research question, it is hypothesized that students' recall will follow a descending pattern. Level 1 propositions, those ranked as most general in terms of semantic significance according to the STEP method, will elicit the highest frequency of recall. The higher the rank assigned to a unit, and therefore the more detailed the information contained in the proposition, the less frequently it will be recalled (Marshall and Glock, 1978). This trend can be demonstrated by the following pattern:



It is hypothesized that the language of students' recall, as addressed in the second research question, will have an effect on their recall scores. Since the students involved in this study are not fully proficient in English, their processing and recall capabilities would be challenged in oral recall. It is also hypothesized, however, that these students use the same recall patterns in both their native and second languages (Chandler, 1992). Therefore, the data should reveal that students' total recall scores may be higher when they are asked to read and recall a passage in Spanish rather than English, but that their recall responses in both languages will follow the same descending pattern suggested in the first research question.

Literature Review

Recall Assessment

Our literate society demands a variety of skills from individuals, but perhaps the most fundamental is the ability to read and comprehend written materials. Because a significant portion of the knowledge a person acquires comes from reading or listening to prose (Meyer, 1975), cultivating capable readers is an educational goal that merits discussion and study. Recognizing that readers operate on a variety of levels, depending on their past experience and potential reading difficulties, is vital to accurate assessment of reading skills. Diagnosing the strengths and weaknesses of students considered disabled readers is crucial. Specifically, students identified as LEP can benefit from such assessment because it allows insight into students' processing, retrieval, and (re)organization of information (Feathers et al., 1991).

Several diagnostic instruments have been developed to assess comprehension of written material. However, most methods include literal questions that measure "how well a student remembers the text when given a prompt, not how well it is understood" (Clark, 1983, p. 435). Additionally, many assessments include only a few of these questions and give students little opportunity to fully express their comprehension of a passage. Such memory exercises are regarded as useful, but they tend to provide inadequate information for an accurate assessment of a student's reading comprehension skills. Most precisely, such testing measures product and largely ignores the reading process (Chandler, 1992).

In response to this inadequacy in recall assessment methods, professionals in the field of education have developed the oral recall procedure. With such a procedure, students have an opportunity to reproduce a previously read passage in their own words without the confinement of questions or specific prompts. Such an open-ended method

has several distinct advantages: it does not force questions of grammatical correctness to interfere with communication, it does not alter the student's understanding of the passage, it eliminates the possibility of guessing, and it is considered by many to be easy to construct and administer (Bernhardt, 1983; Clark, 1982).

The process of constructing a passage to be used in free recall assessment involves the "slashing of prose into meaningful segments" (Bernhardt, 1983, p.29). These units, also called propositions, nodes, or idea units, are phrases that connect at least two semantic concepts. This term is defined in a broad manner to encompass wide syntactic variation. Therefore, each of these segments is defined by its semantic structure, not only its grammatical representation. The rationale for such a method can be discovered in Sachs' 1967 study in which she evaluated the relationship between surface structure and memory. Sach's empirical evidence suggests that surface structure is not stored long in memory; instead, "[the] original sentence which is perceived is rapidly forgotten, and the memory is then for the information" (Sachs, 1967, p. 442). Therefore, due to its semantic importance, the idea unit as used in free oral recall is a useful tool in analyzing students' comprehension and recall procedures.

In the oral recall procedure, students are given the passage, either in written or verbal form, and then attempt to recall the information in the presence of a trained rater. The instructions dictated to the students by the rater may differ depending on the focus of the study. Nonetheless, the procedure is always fundamentally a free recall, implying that the rater does not use direct questioning and overt prompting. The rater may audio-tape students' recall for analysis at a later time. In replaying the student's responses, raters note which propositions the students recalled and may attend to the exactness and sequence of the recall as well. Such information can offer researchers and teachers important data in assessing reading strengths and difficulties.

The studies previously conducted using this instrumentation have varied in the textual analysis techniques utilized and the extent of the recall analysis conducted. As a

result, the studies of the free recall procedure sometimes appear to conflict in the conclusions drawn from their empirical data. Nonetheless, standard procedures of analysis share several common characteristics, and these studies have led to limited conclusions.

The populations studied in oral recall assessment studies differ in the readers' ages and skill levels. First, studies involving individuals of different ages demonstrates that older readers typically have higher overall recall (Taylor, 1980; Danner, 1976). Also, a substantial body of research exists that compares how "good" or "experienced" students' recall differs from that of students designated as "poor" or "inexperienced." Meyer (1977), Tierney (1978), Torgesen (1978), Taylor (1980), and Luftig (1983) all organized their studies' informants according to some measure of reading skill. Finally, Chandler (1992) did not compare students of varied skill levels but instead focused on the proficiency of second language learners.

Many studies address the textual structures of oral recall passages, analyzing both general characteristics of a passage and placement of each proposition in the hierarchical structure of the passage. Studies of oral recall have addressed several aspects of students' performance: the amount of information recalled, the sequence in which it was recalled, and the importance of the recalled information in relation to the general intent of the passage (Clark, 1982). Perhaps the widest variation in the research occurs in the manner in which the structural and semantic importance of each idea unit is analyzed.

The variation in textual analysis techniques can be assessed by examining a range of studies, from those that do not account for specific idea units within a passage to those that involve each idea unit in a tight, hierarchical structure. Using a less specific form of analysis, Danner (1976) began an investigation of textual structure by using a simple method, defining passages as "organized" or "disorganized" in structure. By contrast, Chandler (1992) defined the idea units in his study as main ideas or details, further classifying the details as either defining, describing, listing additional information, or

offering examples in relation to one of the main ideas. Clark (1982) used a somewhat vague three-point scale of importance, identifying propositions as either main ideas (level 1), intermediate ideas (level 2), and minor details (level 3).

Other researches have expressly designed and manipulated the structural organization of their texts in an attempt to analyze recall. Risko and Alvarez (1981) tailored the passages in their experiments to correspond to one of four levels of importance, each of which occurred with equal frequency in the texts. In addition, Marshall and Glock (1978) manipulated elements within a passage to see if their presence or absence altered levels of recall; these features included the presence of if-then relations, the variation of adjective forms, the placement of the main idea within the text, and the designated clause placement. Another example of textual design can be found in some analysis techniques designed for a specific genre of narrative given in the passages. Both Mandler and Johnson (1977) and Rumelhart (1977) use stories, including folktales, fables, and myths, to assess free oral recall and have a specific system of analysis applicable only to this kind of narrative.

One of the most systematic and detailed methods of textual analyses involves the hierarchical organization of idea units developed by both Kintsch (1974) and Meyer (1975). Kintsch's *micro-structure* model focuses on the semantic relationships within each proposition and leaves the interrelationships of the units and the overall organization of the prose largely unexamined. In contrast, the Meyer model defines passages by their content structure, defined as the "semantic and logical importance of each element and the relationship among idea units" (Beiger and Dunn, 1980). This prose analysis technique is based upon Fillmore's discussion of case grammar (1968) and Grimes' work on the semantic grammar of propositions (1975). From the information yielded by this hierarchical analysis, Meyer calculates a depth score to determine how the subordination of an idea unit affects its recall. Such hierarchies utilize the tree structure of organization, often beginning with an outline form. Many different studies suggest that

text structure affects students' recall, but studies have yielded varied results about the extent to which the specific placement of the units affects recall. For example, Rumelhart determined that in the recall procedure "a preponderance of statements appearing in the [responses] are from the upper half of the structure diagram," which contained the more general ideas in the passage (1977, p. 299).

Such organizational tree structures are often complex and, while offering much information regarding text structure, are often too complex for primary and secondary teachers to apply on a consistent basis to evaluate students' recall skills (Clark, 1983). Extensive training and study are necessary to conduct such a detailed analysis, and classroom teachers lack both the time and the resources to engage in such an activity. Therefore, a simplified yet specific method of textual analysis is necessary to allow the oral recall process to yield clear and practical results for classroom use.

Christensen's Generative Rhetoric of the Paragraph

Francis Christensen's Generative Rhetoric of the Paragraph posits an organizational structure that allows textual analysis to be more generally accessible to those investigating students' oral recall. Written specifically for teachers and designed for classroom use, Christensen's *Notes Toward A New Rhetoric* (1978) explains this method of textual analysis. Originally intended to assist students in analyzing prose selections, teachers can also use this instrument to examine the effects of text structure on student recall. The STEP process used in this study of textual analysis is a modification of Christensen's technique.

In several studies (Simonsen, 1992; Schwalm, 1990; Day, 1980), education experts have employed Christensen's rhetoric as a pedagogical device to help students distinguish main ideas from supporting details in paragraphs. Several publications address Christensen's work by recommending curricula that employ his analysis

techniques in teaching both paragraphs and sentence structures (Gray and Benson, 1982; Phillips, 1996). Christensen's rhetoric has even been utilized in English as a Second Language (ESL) instruction, providing a model for sentence combination and subordination (Mellor and Broadhead, 1982). Researchers have not yet applied this specific organizational structure to the oral recall method of assessment.

Christensen's model assigns numeric categories to the sentences within a passage according to the sentence's level of subordination within the paragraph. The base of each passage is identified as the topic or thesis sentence and assigned to Level 1; however, it is important to note that paragraphs may have an unstated topic sentence or none at all (Christensen, 1978). If this occurs, the unstated topic sentence is still assigned to Level 1, and the lowest possible designation of the remaining sentences is Level 2. From this point, the paragraph can be analyzed sentence by sentence, discovering the specific relationships between the phrases. If sentences exist in a parallel manner and operate on the same level of specificity, they are coordinate and receive the same Level assignment. By contrast, if an element of the paragraph differs from its preceding clause and provides more specific information about a previous sentence, it is considered subordinate and should be given a number one level higher than the phrase to which it refers. The following paragraph, used by Christensen in explaining his paragraph analysis techniques, illustrates this proposed rhetoric:

- 1 He [the native speaker], may, of course, speak a form of English that marks him as coming from a rural or an unread group.
- 2 But if he doesn't mind being so marked, there's no reason why he should change.
- 3 Samuel Johnson Kept a Staffordshire burr in his speech all his life.

3 In Burn's mouth the despised lowland Scots dialect served just as well as the "correct" English spoken by ten million of his southern contemporaries.

3 Lincoln's vocabulary and his way of pronouncing certain words were sneered at by many better educated people at the time, but he seemed to be able to use the English language as effectively as his critics.

The analysis of such a passage according to Christensen's generative rhetoric begins with the identification of the topic or thesis sentence, which is assigned a Level 1. In this passage, the first sentence occupies this most general level of specificity. Accordingly, the next sentence occupies a position subordinate to the thesis statement in terms of specificity, providing more detailed information regarding the primary sentence. This sentence, then, receives a Level 2 assignment. The following three sentences provide examples of the premise stated in the previous sentence. Yet, their relative specificity places them at the third level of subordination. The coordination of the final sentences is evident because they all relate to each other at the same level of specificity.

Nonetheless, multiple sequences of subordination may exist in one paragraph.

The following example can illustrate this common structure:

1 This is a point so frequently not understood that it needs some dwelling on.

2 Consider how difficult it is to find a tenable argument that *thrown*, say, is intrinsically better than *throwed*.

3 We can hardly say that the simple sound is better.

4 For if it were, we would presumably also prefer *rown* to *rowed*, *hown* to *hoed*, *strown* to *strode*, and we don't.

3 Nor can we argue convincingly that *throwed* should be avoided because it did not occur in earlier English.

- 4 Many forms which occurred in earlier English cannot now be used.
 - 5 As we mentioned earlier, *holp* used to be the past tense form of *help*; *helped* was incorrect.
 - 5 But we could not now say "He *holp* me a good deal."
- 2 As for "me and Jim," the statement that *I* should be used in the subject position begs the question.
 - 3 One can ask why *I* should be the subject form, and to this there is no answer.
 - 4 As a matter of fact, *you* was at one time the object form of the second person plural, *ye* being the subject form.
 - 4 But no one objects now to a sentence like "*You* were there."

Such a paragraph contains a topic sentence, expanded upon by two supporting statements which exist at a Level 2 in a coordinate structure. Each of the level two concepts is additionally subordinated by more details.

In this method of textual analysis, the subordination process can continue infinitely as long as the sentences continue to increase in detail and specificity. Thus, it is obvious that the number assignments do not hold an arbitrary value, but are dependent upon the subordination of the sentences which surround them. Christensen's (1978) rhetoric reveals the patterns of subordination in a passage, providing a means by which to determine students' patterns of recall.

Christensen's generative rhetoric is especially appropriate for use in this study. The numbering patterns specifically identify each idea unit and its placement in the subordination and coordination that occurs in the passage. Thus, researchers can analyze students' recall of the propositions in a very detailed manner. Also, this method is applicable to classroom situations as well. *Unlike many other methods of textual analysis, Christensen's rhetoric is easy to use and adaptable to any kind of passage.*

Methods

Context

This multifaceted study provides a new perspective on free recall by using the new STEP procedure to examine oral recall data. The study includes intermediate-age primary school participants designated as Hispanic LEP students. These students listened to 8 recorded passages, A-H. A researcher split these passages into idea units, or propositions. As defined earlier, each phrase contains two semantically related concepts, which comprise a single unit of meaning. The basis for this parsing system rests in semantic, not merely grammatical, structure; therefore, a proposition may be a complete sentence or merely a phrase within a sentence. Azua et al.(1998) established the reliability of the identification of idea units in these passages.

Raters scored the students' recall of these items after analyzing their free recall responses on audio tape. The presentation of the passages in both English and Spanish was counterbalanced. Students read and recalled these passages in the following combination of languages:

<u>Language Read:</u>	<u>Language Recalled:</u>
English	English
English	Spanish
Spanish	English
Spanish	Spanish

From the pool of 36 informants, nine students comprised four equal groups. Stage II of this study used only those responses administered and recalled in the same language,

English-English (EE) or Spanish-Spanish (SS). This control eliminates any possible effects that language switching may have on recall.

Instrumentation

The instrumentation in Stage I of the study involves data obtained by using the Listening and Oral Retell Competency (LORC) (Azua, 1998) measure to assess oral recall skills. Using this procedure, eight intermediate grade-level expository passages were developed, each composed of approximately 300 words each and operating with comparable length and readability. The same narrator recorded the passages in both Spanish and English. Students listened and orally recalled the passages. The students' recall was assessed by computing the percentage of ideas recalled and the importance of those ideas to the general meaning of the passage.

Stage II of the study consists of an investigation of the textual organization of these passages, utilizing the STEP procedure. The following modifications of Christensen's generative rhetoric were necessary to adapt to the existing parsing system. Christensen used the sentence as the basis of his analysis of the paragraph, explaining that "the paragraph may be defined as a sequence of structurally related sentences" (1978, p. 79). Yet, the passages used in this study had already been divided into propositions, or meaning units, in Stage I of the study conducted by Azua et al.(1998). The researcher segmented the units to represent semantic importance without regard to Christensen's rhetoric, so the propositions may or may not compose grammatically complete sentences. Therefore, for this study, Christensen's rhetoric was adapted to allow each previously designated propositional unit to act, in effect, as a sentence in the passage. Using this approach, each propositional unit was capable of subordination and coordination, just as a sentence was in the traditional model of Christensen's rhetoric.

Many of the propositions in a passage were typically complete sentences. However, some sentences were split into multiple idea units. In such cases, the sentence fragments are numbered according to the following conditions: Split sentences were classified at the same level if (a) the two propositional units existed in a coordinate structure or (b) the meaning of the first phrase was incomplete without the second. Split sentences were classified at different levels if the second phrase contained additional information about an idea referred to in the previous propositional unit.

Procedure

Stage I of the study, utilizing the research of Azua et al.(1998), was completed by analyzing the results gained from the oral recall process. In this procedure, the students read the eight passages, either in English or Spanish, according to their group assignment, as explained earlier. Using a scoring protocol that presented the passage divided into idea units, the raters assessed the comprehension of these units according to their presence in students' oral free recall responses (see Appendix A). Azua et al.(1998) established interrater reliability of the scoring recall with protocols. Each passage contained from 23 to 31 idea units. In translating the passages from English to Spanish, however, the addition or deletion of idea units was sometimes necessary to maintain meaning.

Stage II of the study built upon the data from such an inquiry to answer the proposed research questions included within the scope of this study. Students received 1 point for each idea unit recalled. For each passage, the data included:

- (a) Frequency of recall of each idea unit in English
- (b) Frequency of recall of each idea unit in Spanish

Also in Stage II, trained raters reanalyzed the passages according to the STEP procedure. In each passage from Azua's (1998) study, each idea unit was assigned a

numeric level according to the STEP textual analysis procedure. With this technique, the idea unit ratings were then correlated with the data obtained in Stage I. The results assisted in answering both research questions by showing the relationship between the recall of both Spanish-Spanish (SS) and English-English (EE) responses and the textual structure of the passage.

The resulting data were grouped along the following dimensions:

- (a) SS and EE combined responses
- (b) SS responses vs. EE responses

For each of these categories, the researcher calculated the percent recalled in regard to the variables of:

- (1) passage level
- (2) idea unit level

The final area of investigation addressed in the study involved a correlation between the idea unit distribution (the frequency of idea units at each level) and recall performance, analyzing the data on a passage-by-passage basis. The researcher investigated this relationship to determine if the recall of idea units at specific levels affected overall recall.

Reliability

The reliability of the numbering procedure was established by comparing the responses of individuals trained in using it, utilizing the expertise of a university faculty member and undergraduate students. The trained raters evaluated each of the eight passages according to the STEP technique, as explained in instructional information provided for their use. The resulting reliability, calculated as a percent of agreement, is 88.53%. This high level of agreement is indicative of the fact that the STEP procedure permitted a reliable enumeration of the passages.

Data and Results

The data were organized according to their ability to answer the proposed research questions.

Research Question #1: **Students' Recall According to Idea Unit Subordination**

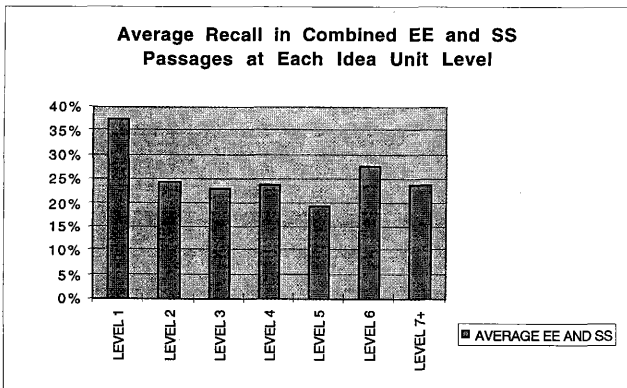
How does a proposition's placement in a passage, according to STEP, affect recall performance of LEP students: are students more likely to recall superordinate ideas than subordinate ones?

The analysis of students' recall in terms of the ranking of idea units resulted in much information to answer the first research question. The idea units within each passage received a numerical rank, with the most superordinate idea units (comparable to main ideas) assigned to Level 1 and the details which followed given increasingly higher designations, representing more and more specific information in the text. The results analyze recall according to (a) overall idea unit patterns of recall as well as (b) specific recall at the general, intermediate, and specific levels of subordination.

Overall Idea Unit Patterns of Recall: Declining Recall

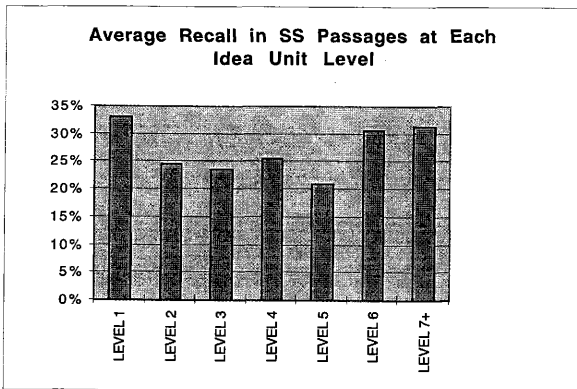
Appendix B presents a chart describing the percentages of recall at each idea unit level for each passage.

English and Spanish Combined Results (Overall). The combination of both SS and EE responses yields the following results:



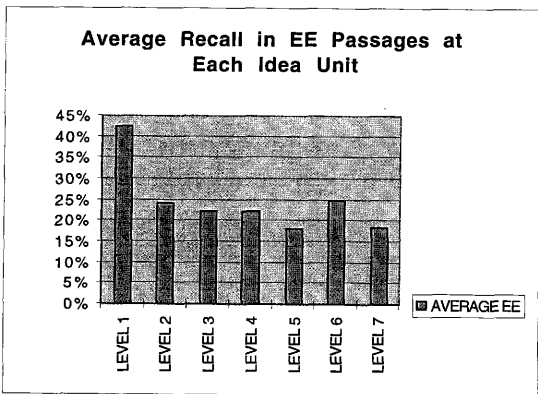
The data supported the hypothesized descending pattern of recall was supported by the data. The students recalled Level 1 most frequently, at 38%; responses at Level 2 (25%) and Level 3(23%) also followed the descending order. The percent recalled at Level 4 (24%), however, rose above the percent recalled at level 3. Level 5 continued the descending pattern at 19%. The levels 6 and 7 diverged from the pattern with 28% and 24% recall, respectively.

Spanish-Spanish Results (Overall). The researcher also analyzed the SS responses in respect to the ranking of idea units. The following chart describes this recall by level of subordination (Levels 1 to 7+):



The SS recall responses formed a descending pattern at the first three levels, with recall of 33% for Level 1. The percentages determined for levels 2 (25%), 3 (24%), and 4 (26%), however, were essentially the same. Level 5 continued the declining pattern with 21% recall. Finally, Levels 6 and 7 diverged from the pattern with 31% recall each.

English-English Results (Overall). EE recall also varied with the idea unit rankings:



In EE responses, students recalled Level 1 idea units at 42%, and Levels 2 (24%) and 3 (22%) continued the pattern of declining recall. Level 4 (22%) broke this trend, however, remaining the same as Level 3. Level 5 (18%) returned to the previously established declining pattern. A 7% increase occurred at Level 6 (25%), but Level 7 (18%) returned to the same frequency of recall as Level 5.

Specific Recall at Levels 1, 4, and 7+

To understand the relationship between the distribution of textual levels within a passage and mean recall for the selection, it was necessary to investigate recall at idea unit levels. Levels 1, 4, and 7+ represented, respectively, the most general ideas, the most specific ideas, and the midpoint between the two. Pearson's correlation, with an alpha level of .05, determined if ideas at a certain level may have a statistically significant relationship to overall recall.

Level 1 Recall: Most General Ideas

The lowest ranking, according to the STEP procedure, is Level 1, indicating idea units that contain the most general information in a passage. A correlation between Level 1 recall and overall recall, in either English or Spanish, does not demonstrate a significant relationship between the two variables.

Correlation between Level 1 and Overall Spanish Recall. The results of the correlational analysis, $r=-.080$, $p=.425$, show that in Spanish-Spanish responses, high overall recall performance and high Level 1 recall performance are not related at a statistically significant level. This finding suggested that in SS performance, the ability to recall main ideas does not facilitate higher overall recall.

Correlation between Level 1 and Overall English Recall. The results of the correlational analysis, $r=.217$, $p=.606$, demonstrate that in EE responses, high overall recall performance and high Level 1 recall performance are not related at a statistically significant level. This finding suggested that the ability to recall main ideas does not facilitate higher overall recall in EE performance.

Level 4 Recall: Midpoint of Specificity

In this study, seven levels of specificity were identified in a textual analysis of the passages. The midpoint of these levels is Level 4, representing idea units at a moderate level of specificity; they are more detailed than main ideas but less detailed than the specific units at Level 7+.

Correlation between Level 4 and Overall Spanish Recall. The results of the correlational analysis, $r=.821$, $p=.006$, show that in Spanish-Spanish responses, high overall recall performance and high Level 4 recall performance are related. The correlation was statistically significant at the level of .05. Furthermore, it met Cohen's (1988) criteria for a large effect. This finding suggests that the ability to recall specific details facilitates higher overall recall as well.

Correlation between Level 4 and Overall English Recall. The results of the correlational analysis, $r=.780$, $p=.011$, show that in EE responses there is a statistically significant relationship between high overall recall performance and high Level 4 recall performance. In general, this finding suggests that the ability to recall moderately specific ideas may facilitate higher overall English-English recall.

Level 7+ Recall: Most Specific Ideas

Level 7+ indicates idea units that contain very detailed reasoning or explanation. A pattern emerges that higher recall of these detailed units (those identified as Level 7+) results in higher average recall for SS but not in EE results.

Correlation between Level 7+ and Overall Spanish Recall. The results of the correlational analysis, $r=.854$, $p=.003$, show that in Spanish-Spanish responses, high overall recall performance and high level 7+ recall performance are significantly related. This finding suggested that the ability to recall specific details facilitates higher overall recall as well.

Correlation between Level 7+ and Overall English Recall. The results of the correlational analysis, $r=.005$, $p=.495$, show that in EE responses, high overall recall performance and high level 7+ recall performance are not significantly related. This finding suggested that in English-English performance, the ability to recall specific details does not facilitate higher overall recall.

Research Question #2

To what extent does the language in which students read and recall passages, either in their native language (Spanish) or their second language (English), affect the students' pattern of recall according to STEP?

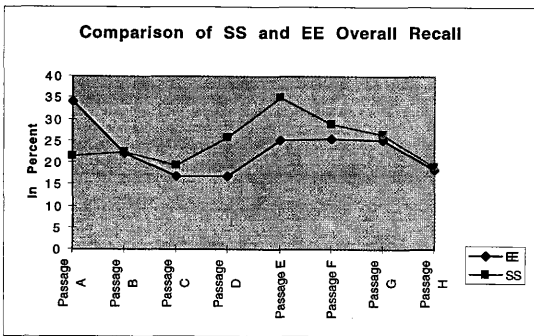
Overall Recall per Passage

Comparison of Spanish-Spanish and English-English performance.

The following charts compare the SS recall scores with the EE recall scores.

Overall SS Recall: 24.88%

Overall EE Recall: 23.06%



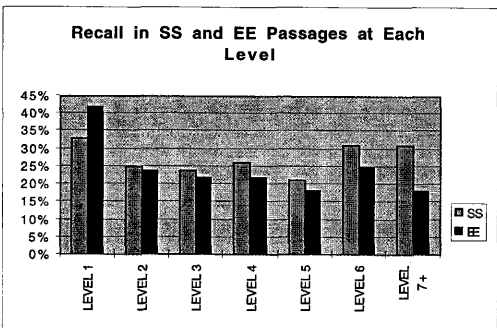
The Spanish-Spanish percentage of recall was higher than English-English recall overall in almost every passage. Spanish-Spanish recall exceeded the English-English recall

by .38% in Passage B, 2.47% in Passage C, 8.87% in Passage D, 9.9% in Passage E, 3.47% in Passage F, 1.45% in Passage G, and .62% in Passage G. Only in Passage A did English-English recall performance surpass Spanish-Spanish performance, averaging 12.57% higher than the 21.48% Spanish-Spanish recall.

The results of Pearson's correlational analysis $r=.255$, $p=.271$, show that the average recall per passage for Spanish-Spanish and English-English passages are not related at a statistically significant level. Therefore, there is no correlation in the population between the Spanish-Spanish and English-English responses measured passage by passage.

Recall According to Idea Units

Overall Comparison of Spanish-Spanish and English-English performance. As addressed in question one, the Spanish-Spanish and English-English recall at each idea unit can be correlated to determine if the patterns of recall by idea unit were significantly related. The results are represented graphically as such:



In both English-English and Spanish-Spanish responses, students recalled Level 1 propositions most frequently. Likewise, Levels 2 and 3 continued the pattern of declining recall. At Level 4, however, the Spanish-Spanish responses showed a slight increase (2%) from the previous level, while the English-English recall remained the same at Levels 3 and 4 (22%). At Levels 5 and 6, Spanish-Spanish and English-English recall mirrored each other in their results; Level 5 continued to decline while Level 6 recall increased in both sets of passages. At Level 7+ the pattern shared by the two languages of response diverged as Spanish-Spanish responses occurred at the same frequency as Level 6, but the English-English Level 7+ percentage recalled decreased to 18%, 7% lower than the English-English Level 6.

Statistically, the results of Pearson's correlational analysis $r=.602$, $p=.076$, showed that the average recall per idea unit for Spanish-Spanish and English-English passages are not significantly related. Therefore, the analysis suggests that there is no correlation in the population between the idea unit recall of Spanish-Spanish and English-English responses.

Summary

Research Question #1

Part 1: Overall Idea Unit Pattern of Recall: Declining Recall

1. The anticipated trend of declining recall according to idea unit subordination was partially supported for combined English and Spanish average recall with Levels 4, 6, and 7+ diverging from the pattern. While not linear, the descending frequency of recall, in which more general ideas were recalled more frequently, can be determined from the given data.
2. The anticipated trend of declining recall according to idea unit subordination was partially supported for Spanish average recall, although Levels 4, 6, and 7+ diverged from the pattern. While not linear, the descending frequency of recall, in which more general ideas were recalled more frequently, can be determined from the given data. However, the Spanish recall at Levels 6 and 7+ (31%) was sharply higher than recall at lower idea unit designations, represented by a 10% increase in recall from Level 5 to Level 6, when a decrease would have been expected. Such a significant increase may be due to the small sample size.
3. The anticipated trend of declining recall according to idea unit subordination was partially supported for English average recall, although Levels 6 and 7+ diverged from the pattern. The divergence of these last two levels is smaller in proportion to the Spanish pattern. Although not a linear descent, the descending frequency of recall, in which more general ideas were recalled more frequently, can be determined from the given data.

Part 2: Specific Recall at Levels 1, 4, and 7+

1. Correlational analysis between recall of Level 1 idea units (the most general ideas in a passage) and overall recall revealed that there was no significant relationship between these two variables in the recall of either Spanish or English.
2. Student recall at Level 4 idea units (those that operate at the midpoint of specificity on the Level 1-7+ scale, using the STEP procedure) was significantly related in Spanish recall tasks. Level 4 recall in English was significantly related to high overall recall.
3. In performance according to Level 7+ recall, Spanish recall of idea units at Level 7+ was significantly related to high average recall according to correlational analysis results. However, English recall of idea units at Level 7+ was not significantly related to high average recall, demonstrated by correlational results.

Research Question #2

1. In overall recall as analyzed passage by passage, a graphical representation of the responses in the two languages shows that Spanish recall is higher on every passage except Passage A. The average recall for Spanish passages, 24.88%, is higher than recall for English passages, 23.06%. The correlational analysis, however, revealed no significant relationship between the Spanish and English responses.
2. In performance according to idea unit recall, graphical representations demonstrate similar trends in Spanish and English responses, according to the declining pattern of recall hypothesized in question #1. However, a correlational analysis show no significant relationship between the idea unit recall of Spanish and English responses.

Limitations and Difficulties

Several factors in the construction and implementation of the study affected both the data and the conclusions that can be drawn from such information. One difficulty arose in the labeling of idea units in Stage II of the study from passages that were already constructed. Although the STEP procedure allowed for modifications of Christensen's Rhetoric to accommodate for this situation, the quantity and level of idea units in each passage could not be controlled. Also, the relatively small number of individuals responding to each passage (when separated by language) may have altered the results of the study; with a larger pool of data, analysis could identify general trends with more accuracy. With a larger sample, statistical analysis might show larger effects for trends observed in the study. An additional limitation of the study is that researchers did not analyze the passages individually to determine what exact types of information were included at these idea unit levels.

Conclusions

The Subordination Technique for Analyzing Recall

The STEP procedure proved to be an effective measure in analyzing free oral recall, utilizing a simple method to reveal trends not specifically addressed in other studies. The reliability of the passage-analysis device was calculated at 88.53% and proved the method to be an effective tool in assessing recall. STEP can be used on any existing passage or one constructed specifically for recall assessment. Additionally, due to the simplicity of the STEP procedure, individuals can employ this technique without extensive instruction. This simple device is especially well-suited for teachers' use in the classroom and can provide needed information about LEP students' recall strengths and weaknesses in both Spanish and English.

Research Question #1

Declining Recall

The analyses supported the hypothesis regarding the first research question. It is well supported by an analysis in Spanish-Spanish and English-English combined responses, Spanish-Spanish responses, and English-English response at each idea unit level. According to the STEP procedure for analyzing recall, propositions placed at lower levels, indicating more general information, were generally recalled more successfully. (The pattern of recall followed the trend of declining recall in most instances.) However, the Spanish-Spanish responses more closely followed this gradual decline in recall than the English-English responses.

Specific Recall at Levels, 4, and 7+

The relationship between recall of ideas at specific levels of specificity and overall recall performance was evaluated to determine if the ability to explain a certain type of information indicated the ability to recall an entire passage more successfully. The recall of

main ideas, those represented in the STEP procedure as Level 1, was not statistically related to overall recall. However, this result may have been affected by the relatively small number of Level 1 main ideas that occur within a passage. The recall of ideas at a moderate level of specificity, indicated as Level 4 in the STEP procedure, was significantly related in Spanish, but not in English. However, the relationship between English this level and overall recall was almost statistically significant. An investigation of Spanish recall at high levels of specificity resulted in a correlation between the recall of units at Level 7+ and higher overall recall. However, such a relationship does not exist in English recall. Thus, in LEP students' native language recall, a connection exists between the ability to recall very detailed pieces of information and the ability to recall passages well overall.

Research Question #2

Statistical analysis of the data used to answer the second research question did not fully support the hypothesis as expected.

First, it was proposed that Spanish recall per passage would be higher than English recall. While the data did reveal that Spanish recall was higher than English recall on all passages except one, the differences were not statistically significant. However, such a difference may become more marked with a larger sample of data.

Also, it was hypothesized that Spanish and English responses, organized according to the unit level designation, would both follow the same declining pattern of recall discussed in question #1. The students would process their recall in approximately the same way, resulting in a recall pattern that was somewhat similar in both languages. However, a statistical analysis revealed that there is no significant relationship between the Spanish and English overall patterns of recall. However, the general trends noted that support this hypothesis may become statistically significant if a larger pool of informants is used.

The statistical information yielded inconclusive results in this study in both research questions, but the trend of declining recall found in previous research was supported; recall decreased as the idea units increased in specificity. A definitive relationship according to specific idea level was determined between Spanish high overall recall and the recall of *moderately detailed and very detailed ideas*. Although these results do not offer definite answers to the complex question of LEP oral recall, the use of the STEP procedure in this study represents significant progress in this area of assessment. All recall assessment procedures measure slightly different aspects of oral recall, but the introduction of a new device offers teachers yet one more method for analyzing the recall capabilities of their students. The method is simple to use and to adapt to existing materials, providing a useful tool for classroom use.

Appendix A

Introduction: Listen to the story to find out about how rainforests are important for making rain and what can happen when rainforests are cut down.

Passage B: RAIN FROM RAINFORESTS (262 words)

1. ____ Another name for jungle is "tropical rainforest".
2. ____ True tropical rainforests get lots of rain.
3. ____ In a rainforest, it may rain more than 100 or 150 inches per year.
4. ____ All tropical rainforests are close to the equator.
5. ____ For this reason, they are warm and humid all year long.
6. ____ Tropical rainforests cover 6 percent of the earth.
7. ____ They are located all over the world, in places like Central and South America, Africa, Asia, and the United States.
8. ____ The most famous rainforest is the Amazonia in Brazil, South America.
9. ____ The mighty Amazon River runs through this forest.
10. ____ Rainforests are important to the entire world because they make rain;
11. ____ even for countries far from the rainforests.
12. ____ In rainforests, plants and trees pull water up from deep in the ground.
13. ____ Inside plants, the water moves up to the outsides of leaves.
14. ____ Then the water "evaporates";
15. ____ it is released into the air.
16. ____ The moisture in the air travels around the world.
17. ____ Then it falls as dew, rain, or snow.
18. ____ When rainforests are cut down, big open areas are left.
19. ____ On the bare soil, rain makes puddles and streams.
20. ____ The streams wash away the little food in the poor soil.
21. ____ However, some soils contain lots of iron ore.
22. ____ When iron ore is washed into puddles,
23. ____ it hardens like rock.
24. ____ No plants can grow when the soil hardens like rock.
25. ____ When rainforests are cut down, they may never grow again.
26. ____ As rainforests are destroyed, less rain falls.
27. ____ Deserts are formed on the earth.
28. ____ Food crops cannot grow.
29. ____ Cutting down rainforests can cause problems even for people in other countries.

Ideas recalled _____
 Erroneous (tally) _____
 Retell quality _____
 Fluency _____

Circle one:
 Uses appropriate language or mixes both
 Retell fluent, somewhat strained, or reluctant
 Language intelligible or meaning obscure
 Language/vocabulary advance, fair, or poor

Appendix B

TEXTUAL LEVEL AND RECALL																
PASSAGES																
	A	A	B	B	C	C	D	D	E	E	F	F	G	G	H	H
	EE	SS	EE	SS	EE	SS	EE	SS	EE	SS	EE	SS	EE	SS	EE	SS
LEVEL 1	83%	44%	22%	11%	67%	33%	67%	67%	33%	22%	22%	44%	33%	11%	11%	33%
LEVEL 2	31%	11%	28%	24%	15%	26%	13%	26%	33%	26%	28%	50%	22%	17%	25%	17%
LEVEL 3	38%	29%	21%	35%	10%	8%	21%	33%	22%	22%	13%	7%	40%	37%	13%	18%
LEVEL 4	31%	16%	21%	15%	7%	19%	9%	17%	31%	56%	26%	24%	28%	36%	25%	22%
LEVEL 5	3%	0%	26%	19%	17%	17%	6%	6%	33%	52%	31%	38%	19%	19%	9%	15%
LEVEL 6					28%	30%	17%	28%	22%	11%	27%	26%	33%	67%	22%	22%
LEVEL 7+							22%		18%	45%	33%	44%	0%	6%		

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