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Ralph P. Barrett
Major professor

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A STUDY USING THE VIDEOTAPE AS A TOOL FOR INCREASING LISTENING COMPREHENSION OF ESL STUDENTS AT THE MALAYSIAN NATIONAL UNIVERSITY

By

Wanchik W. Ibrahim

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ABSTRACT

A STUDY USING THE VIDEOTAPE AS A TOOL FOR INCREASING LISTENING COMPREHENSION OF ESL STUDENTS AT THE MALAYSIAN NATIONAL UNIVERSITY

By

Wanchik W. Ibrahim

In countries where native speakers are not readily available, videotape is a reasonable facsimile of the spoken language.

Research in listening comprehension via the videotape using foreign speakers produced mixed results.

A study using videotape by Cammack and Richter found native speakers of Japanese majoring in English performed better when the English learning material was presented with aural and visual stimuli than with aural stimuli only. In another study done to test for listening comprehension, Ortmeyer and Goldstein reported that Chinese speakers of ESL fared better using only the audio mode than the audio-visual representations via videotape.

The purposes of this experimental and control study were (1) to test for listening comprehension of Malaysian nonnative speakers of English at the Malaysian National University via the videotape, and (2) to test between relationship grouping and visual dependency for listening comprehension of ESL students at the Malaysian National

University via videotape.

A random sample was drawn from the population of beginning, intermediate, and advanced level ESL students at the Malaysian National University. The sample was divided into two equal groups forming the experimental and the control groups.

Ten tests of ten items each for a total of 100 items were administered to both the experimental and the control groups. A t-test performed on the mean scores obtained by the two groups on listening comprehension indicated a significant difference at the .01 level. However, a Chi Square value test on relationship grouping and visual dependency of ESL students at the Malaysian National University indicated no significant difference at the .05 level.

Results of the study suggested that videotape enhances achievement in listening comprehension of the target language when native speakers are not readily available. Replication of the tests are recommended for other universities and institutions where English is taught as a second language.

I dedicate this effort to my family, teachers and friends who have the undying faith in my ability to achieve.

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CHAPTER 1

THE PROBLEM

Introduction

In normal speech situations, auditory skills are closely linked to the oral skills. The spoken language differs in many ways from the written language. The spoken language is much more complex because of the redundancy it contains. The spoken language features many aspects of language not found in writing, such as the rise and fall in pitch, the stress and intonation.

In spoken language, a message can still be understood even though it may be mutilated or partially heard, because the visual context can often provide meaning to the content of the conversation. The human brain has a limited capacity to absorb all that is heard and seen. That is why features of language redundancy are essential for comprehending the spoken language. In real-life situations, the listener is able to use contextual clues to interpret what he hears. However, problems may arise in the transmission of the message from communicator to receiver. If the message is transmitted with an accompaniment of irrelevent sound or "noise," some of the message may not be received by the listener. In a foreign-language situation, unfamiliar elements of the message may be perceived in much the same

way as noise, so that some parts of it will be lost in the process of transmission to the receiver.[1]

Heaton (1979) stressed that it is helpful when conducting an auditory test, for the speaker to be seen by the listener. Heaton noted that a disembodied voice is much more difficult for the foreign learner to follow. According to Heaton, the use of the videotape presents perfect models of the spoken language in countries where native speakers are not readily available.[2]

In recent years, technology in the form of videotape has offered teachers the potential of improving their techniques and methods of teaching, especially in English as a second language or ESL. Videotape can provide the teacher with products that can be referred to when needed, especially in areas such as (1) listening comprehension and (2) oral tests.

Videotape provides the basis for more flexibility in scheduling tests. This could mean a more efficient use of time on the part of both the tester and the testees. As videotape is a referable product, the test materials or items on the videotape chosen for the test can be presented and used by a person outside the testing agency to critique the materials chosen for the test.

In recent years, the language laboratory has been used

to improve the teaching of ESL. However, with the introduction of videotape into the market, teachers of ESL have now another very useful teaching aid at their disposal. Videotape brings the outside world into the classroom and make teaching more effective and meaningful for both the teacher and the students.

Videotape can play an important role in aiding sound production. Using videotape to magnify the image of a native speaker making speech sounds may prove valuable. Magnification of the image also establishes direct contact between the native model and the student by providing the learner with a dynamic image of the target language in use. Because it combines visual images with sound, it can lead the student from linguistic competence to communicative competence through an understanding of facial expression, gestures, and the correct manipulation of idiomatic and grammatical structures. Videotape can synthesize the many aspects of a good lesson presentation and can be used to inject cultural materials in the classroom.

Skills in comprehending the spoken language are becoming increasingly important due to the audio-visual orientation of modern culture. Videotape may be an ideal means for creating this learning environment and developing the listening skill. The learning setting, the accompanying pictorial series and the fact that the spoken text is the only source for homework information provide the incentive to developing listening skills. However, one of the most

important features of videotape is the opportunity to review the spoken material and to build one's confidence for comprehending the unremitting voice of the speaker. For the weakly motivated and the low ability students, language learning via videotape can be made more effective and can result in better performance, for videotape provides verbal and nonverbal forms of communication and a variety of life-like situations. It increases students' attention and provides a model for them to imitate. Because it presents perfect models of the spoken language in countries where native speakers are not readily available, videotape may make a perfect tool for testing comprehension of foreign students when listening to native English speakers.[3]

Statement of the problem

The problem that this study addresses is whether or not videotape is more effective than audiotape in increasing listening comprehension of students learning English as a second language.

The Purpose

The purpose of this study was to determine if there were any meaningful differences in scores obtained from evaluating the listening comprehension of Malaysian ESL students at the Malaysian National University between those students who watched and listened to the videotape and those students who listened to the videotape without the visual images on the screen.

Problem Question

Were ESL students at the Malaysian National University who watched and listened to the videotape in the experimental group different in measures of their listening comprehension from those ESL students at the Malaysian National University in the control group who listened to the videotape without the visual images on the screen? A set of ten tests of listening comprehension was designed with ten items each for a total of 100 items. Three of the tests (tests 3, 5, and 7) with ten items each for a total of thirty items are from scripts which were judged to be visually dependent (refer to Definition of Terms). The tapes were judged to be visually independent.

Example of a visually dependent script:

"Pearl Harbor, Hawaii...the name was a battlecry for a generation. The pride of the American Pacific Fleet still rode in anchor here. They call that stretch "battleship row". The California was anchored just down there, and then the Oklahoma and the Maryland. And out there... the Tennessee and the West Virginia, and then, the Arizona. That gleaming white monument marks where she floated and where she still lies...just beneath the water. Oil still rises from the underwater tomb of over two-thousand sailors. They were the first American victims of World War II."

Example of a visually independent script:

"The Department of Defense has recommended to the

President a space-based laser defense against Soviet intercontinental ballistic missiles. That system would not be ready until the year 2000 at the earliest. It would cost at least twenty-billion dollars in research and development alone because so much still has to be invented including a power source that would let the lasers function effectively from space."

The test formats used for listening comprehension were the multiple-choice "main idea" items, multiple-choice content questions, true-false items, and "supply the answer" items. The different types of test formats were chosen because they could provide a better insight into the students' understanding of the listening comprehension tests.

The content question for items 7 with multiple-choice answers was constructed slightly differently from other content questions. This type of question was constructed with Malaysian students in mind for they are more familiar with it than American students.

Example of the content question for items 7 with multiple-choice answers:

7. What is associated with the Saturn Five?

(i) the rocket

(ii) the crawler transporter

(iii) the assembly building

(iv) the weight of Saturn Five

(a) i and ii

(b) i and iii

(c) all of the above answers

Null Hypothesis One

There is no difference in the means of listening comprehension test scores between those ESL students at MNU who watched and listened (WL) to the videotape and those students at MNU who listened (L) to the videotape without the visual images on the screen.

$$Ho : \mu WL = \mu L$$

Null Hypothesis Two

There is no significant relationship between student grouping (experimental and control) and visual dependency (visually dependent (vd) and visually independent (vid) of listening comprehension test scores at the Malaysian National University via the videotape.

$$Ho : \mu vd = \mu vid$$

Definition of Terms

The following definitions are provided to clarify the important terms used in the study.

ESL: English as a second language.

EFL: English as a foreign language

Nonnative Speakers: Speakers of English used as a foreign language in countries such as Malaysia, Indonesia, Japan and China.

Educational Television: Televised transmission of open channel broadcasts of educational programs.

Communication Skills: Skills in communicating with others, by spoken, written, or visual means.

Visually Dependent Scripts: Scripts which rely on the visual images on the screen for full comprehensibility.

Visually Independent Scripts: Scripts which can convey information without relying on the visual images on the screen.

Facility Value: The degree of difficulty an item shows on the test as a whole.

Discrimination Index: The degree to which an item discriminates between the high achievers and the low achievers on the test as a whole.

Script: The text of the audio portion of a videotape.

Transcript: A copy of the narration of a videotape prepared after listening to the videotape.

Notes:

1. Rivers, Wilga, in Listening Comprehension. Modern Language Journal, Vol. 50, 1966.

2. Countries like Malaysia, Singapore, Thailand, Indonesia, India and Hong Kong.

3. English, New Zealanders, Australians, Americans and Canadians, among others.

CHAPTER TWO

RESEARCH DESIGN AND PROCEDURE

Introduction

The purpose of this study was to determine if there is a difference in scores received from evaluating listening comprehension tests between Malaysian nonnative students of English who watched and listened to the videotape and Malaysian nonnative students who listened to the videotape without the visual representations on the screen.

The data for this study were collected from tests conducted with students at the Malaysian National University who studied English as a second language as part of their undergraduate course at the university.

Research Design

The research design used in this study was the experimental and control design similar to that of Stanley and Campbell's (1963).

This design was chosen because it controls the internal validity sources stated in Stanley and Campbell and facilitates precision by the use of an analysis of individual items and the test as a whole. Barrett (1983), suggested that at least ten items be constructed for each test in order to obtain sufficient statistical power to test the hypothesis.

Ten tests with ten items each for a total of 100 items for listening comprehension were constructed. The questions constructed were based on the transcript as the only source of reference, and did not involve the visual images on the screen.

The population sample for the study were students at the Malaysian National University who had the same educational background and the same number of years learning English as a second language. They were selected randomly from groups of students ranging from beginning to advanced level students including English majors at the university. Placement in these groups was determined by the university.

Selection of the Topic

The tapes for listening comprehension tests were videotaped from public broadcasting stations in the United States. Audio Plus, New Jersey, helped in editing, dubbing and synchronizing the tapes. Excerpts from the following tapes were chosen for the tests.

1. An Air Force film on the "Star Wars" defense system. (Appendix B).
2. A Public Broadcasting Service film on archeology - "Peruvian Civilization." (Appendix D).
3. A National Aeronautics and Space Administration film on the manned flight to the moon. (Appendix F).
4. A Public Broadcasting Service nature film -

"Flight of the Condor." (Appendix H)

5. A National Aeronautics and Space Administration film on the inter-planetary space program. (Appendix J).
6. A Public Broadcasting Service documentary film on animal and bird migration. (Appendix L).
7. A film from Brinkley's Believe It or Not series "Pearl Harbor." (Appendix N).
8. A Home Box Office nature film on predators in the United States. (Appendix P).
9. An American Broadcasting Corporation documentary on the B-1 bomber. (Appendix R).
10. Continuation of the documentary on the B-1 Bomber. (Appendix T).

These tapes were selected because they could provide the students with a wide variety of topics dealing with science and technology, history and culture, and nature.

Development of the Test

The transcripts were prepared after listening to the narration on the videotape as a guide for the selection of the test items. One hundred test items were prepared with the transcripts as the source of reference. Copies of the scripts and listening comprehension tests are included as Appendix.

Testing Instrument

The tools for testing listening comprehension were

a videotape recorder and a tuner, a television set to display the visual images on the screen and test items.

To enable the test to be conducted in Malaysia, the videotape was dubbed into the PAL system VHS videotape[1] by Audio Plus Video International, 240 Pegasne Avenue, North Vale, New Jersey.

Administration

Selection of the students for the test at the Malaysian National University was done at random. They were selected from five different groups: the beginning level (ESL 1113), the lower intermediate level (ESL 1123), the upper intermediate level (ESL 1133), the advanced level (ESL 1162), and the English majors (TESOL 11). The students' placements in the various levels were made by the university from its standardized year-end test results. To assure an adequate sample size, more than 100 testees were given the test. However, the results of 100 testees who completed all the ten tests were chosen for the study. The use of standardized syllabuses at every level for every subject including English as a second language at the National University shows that EFL proficiency should be adequately controlled for every level in which the students are selected. The five groups of students were then randomly divided into two equal groups: the experimental and the control groups,

each with equal numbers from each of the five proficiency groups. Before the test began, the importance of the test, the procedure, and the instructions for completing the test were explained to the students. The students were encouraged to ask questions regarding the test.

In anticipation for late comers, two other identical language laboratories were made available for the test.

Procedure

The students in the experimental group were shown the videotape for each test twice. The first showing of the videotape occurred just before the test was conducted. The first showing of the videotape familiarized the students with the chosen topic for the test. Instructions were given after the first showing of the videotape, and the students were told how to mark their answers on the test prior to each test. Then the videotape for the test was shown to the students for the second time. A listening comprehension test on the topic was given immediately after the second showing of the videotape. For each test, the students were given fifteen minutes to answer ten questions, after which the question-answer test papers were collected for correction and analysis.

The same procedure was repeated for the control group. However, the control group was asked only to listen to the videotape as there were no visual images on the screen as there were for the experimental group. The tests conducted

with the control group were given at almost the same time as the experimental group in a separate but identical laboratory. This ensured that an element of control of the test content and equipment was adequately observed. However, there were unforeseen external factors (such as a lack of uniformity of behavioral responses--for example, attention span and attitude toward the test) within both the experimental and control groups.

Scoring

For questions 1-9 scoring was done on the basis of right-wrong responses. An answer with a correct response was given one mark while an answer with an incorrect response was given no mark.

Scoring for the subject test for question 10 followed conventions used in the Clark and Burdell research.[2] Responses with misspellings were not judged incorrect unless the misspelling could be construed to be another English word.

With respect to grammar, partial objectivity in scoring was aimed for but the grammer must be acceptable at sentence and text levels. This allows nonnative students to make such errors as nonagreement of subject and verb, an incorrect verb tense, incorrect use of a function word, or incorrect choice of preposition, etc., without detracting from the semantic acceptability of their responses. However, responses that violate the acceptable clause structure

rules in English cannot be awarded any score.

Example:

Question: When is the mother bear considered most dangerous?

Answer: The mother bear is considered most dangerous when she is protecting her cubs.

Acceptable answers: (syntatic and semantic)

1. The mother bear most dangerous when she protects her cubs.
2. Mother bear is very fierce when protecting her cubs.

Unacceptable answers:

1. Is mother bear most dangerous when fierce?
2. The polar bear likes to kill her cubs when she is most dangerous.

Method of Analysis of Data

A. Analysis of the data of experimental and control groups:

1. Right-wrong analysis of the experimental and control groups.
2. The mean, median, mode and range of the experimental and the control groups.
3. The percentage difference of listening comprehension test scores between the experimental and the control groups.
4. Mean difficulty of questions for the experimental

and the control groups.

5. Mean difficulty of tests for the experimental and the control groups.
6. Mean discrimination of questions for the experimental and the control groups.
7. Mean discrimination of tests for the experimental and the control groups.

B. Results of statistical tests of the experimental and the control groups.

C. Finding of test: either rejection or acceptance of null hypothesis for listening comprehension.

D. Results of statistical tests between the visually dependent and the visually independent scripts.

E. Finding of test: either rejection or acceptance of null hypothesis for the visual dependent and the visual independent scripts.

The Pilot Study

A pilot study was carried out using the same procedure, but with different samples. The samples used in the pilot study were made up of Malaysian students from various universities in the United States.[3] Their academic status range from freshmen to seniors at their respective schools. The ten tests of 100 items were given to the experimental and the control groups. The questions were made up of "main idea" questions with multiple-choice answers for question 1 for a total of ten questions; content questions

with multiple-choice answers for questions 2-7 for a total of sixty questions; and "supply the answer" questions for questions 8-10 for a total of thirty questions.

The study produced results indicating strong evidence that there is a significant difference between the means of listening comprehension test scores of the experimental and the control groups. A *t*-test revealed a statistically significant difference between the two groups at the .05 level. The *t* value of 2.19 exceeded 1.67 for the listening comprehension test at 48 degrees of freedom.

Results of the pilot study showed that many students had failed to answer all the "supply the answer" questions given. Almost half the total number of students had time to answer only one of the "supply the answer" questions; therefore, in the study done at the Malaysian National University two of the "supply the answer" questions were taken out and replaced with two true-false questions.

Notes:

1. System being used in Malaysia which involve 210/220 volts and 55/60 cycles.
2. Michigan State, Western Michigan, Northern Illinois University and Kishawaukee College.
3. Clarke, Mark A., and Burdell, Linda. Shades of Meaning: Syntactic and Semantic Parameters of Cloze Test Responses. Paper presented at the Eleventh Annual TESOL Convention, Miami Beach, April, 1977.

CHAPTER III

REVIEW OF RELATED LITERATURE

Introduction

Noting that listening comprehension is one of the most important and fundamental skills of language learning, Herschenhorn (1979) states it is still probably the least stressed area in the language classroom. She attributed the result to the lack of available materials specifically developed for and focused on the teaching of listening skills. However, her assertion was made more than half a decade ago. Today, materials, especially for listening comprehension, can be found in various forms in books, audio cassettes, slides, film strips, computers, and videotapes through which students can experience many modes of learning a second language. In countries where native speakers are not readily available, videotape presents reasonable facsimiles of the spoken language. Videotape has a psychological effect which is distinct from any other forms of media. It can be used as a tool for communication as well as expression in the sense that images projected on the screen signify immediacy and give
on the screen signify immediacy and give one the sense of way, it suggests involvement which is impossible with other forms of media (Heaton, 1979).

Report of Review

Postman (1979) concluded in his survey that 98% of American homes have television, and children between the ages of five and eighteen spent 16,000 hours watching the television compared to 12,000 hours spent in school.

The use of instructional television, public television, and educational television via videotape in the United States as an educational tool has become an increasingly popular trend over the past few years. When used appropriately, television can add to the teaching-learning process (Newman, 1980). Now many of the educational television programs are videotaped earlier in order to be shown to students.

Stickler and Farr (1979), noted that television plays an important role in language learning for most children today. They carried out a study in 1979 to find out whether television can improve language learning in children. They report that there is a need to stimulate real-life experiences to bring the world into the classroom, so that children will understand how the skills they learn can relate to the world outside. One possibility, they said, is to bring into the classroom a representation of the world outside through the medium of television. They argued that children see and hear innumerable situations in which an action is accompanied by sounds--most of which are forms of language. Although preschool children are not able to understand all of what

they view and hear on the television, most are probably aware of the fact that it is, at least, potentially meaningful. Because they expect it to be meaningful, they are able to understand whatever is within their experience. At the same time television helps to broaden this experience. Through it, they are exposed to numerous situations and events to which they might not otherwise have access.

In their investigation, Stickler and Farr found that instructional television programs which are carefully designed with children in mind can motivate and increase the range of language experience in children. In the end, they concluded that instructional television programs can serve as a significant source of models on language usage in meaningful contexts, just as commercial programming provided language models for preschool children. Such models were to broaden their range of experiences in the world. By expanding their experience through instructional television we enable children to communicate more effectively. If, in addition, we provide them with quality instruction and television programming especially designed to improve basic communication skills, we can greatly increase the likelihood that they will learn to communicate effectively. Regardless of positive or negative effects that the content of some commerical television programs have on individual children, Stickler and Farr pointed out that television does serve as an instructional media and helps

children develop their communication skills.

In a 1976 survey, Hamilton analyzed the reading habits of 253 seventh graders and came to the conclusion that television can actually stimulate students to read due to humorous materials and a variety of attention-getting devices.

Producers of many popular children's educational television programs have adapted a variety of entertaining features from commercial television programs and from commercials (Bryant, Hezel and Zillmann, 1979).

It is widely accepted that several of these programs, such as "Sesame Street"; "3, 2, 1 Contact" and the Electric Company," have been rather successful in attracting youthful mass audiences (Samual Ball, 1977).

Moldenhaur and Miller (1980) reported that television does not inhibit reading achievement, but in fact is positively related to vocabulary development, thus encouraging reading growth.

A research which indirectly relates to listening comprehension development is done by Paulson (1980). Paulson's evaluation of the social goals of "Sesame Street" gives evidence that Sesame Street does teach cooperation, particularly through modelling. Children who viewed the program for an entire season performed more acts of cooperation under situations similar to those depicted in the program than did the nonviewing children. This interaction led to

the improvement in their communication skills.

In another research, Chu and Schramm (1976) conclude that television, especially in the classroom, could be effective if utilized correctly as a teaching medium. Chu and Schramm pointed out that television always enters into a pattern of influences that already exist. Compared to some of these factors, such as heredity and family environment, the number of hours that a student watched TV appears to exert only a minor influence on achievement in reading and success in school. However, as Moldenhaur and Miller had said earlier in the review, even though television does not inhibit reading achievement, it is in fact positively related to vocabulary development.

Carvert (1974) found those programs which have been purposely designed to teach specific materials via a particular strategy have had a more measurable result. This includes the use of communication skills in children. The videotape recorder is becoming an increasingly common piece of audio-visual equipment in the classroom. In teaching a foreign language, Beswick (1977) considered activities involving listening comprehension using videotape to be the first phase of the process. Testing for comprehension could then take a less structured form where the students might be asked to provide orally a summary of the viewed material.

Videotape can provide examples of materials from widely diverse contexts like speaking, listening and

writing (Nostrand, 1966). Hodapp (1978), in a research study on videotape as an instructional tool, found that video presentation can be an effective aid in the teaching of English as a second language, because videotape provides language clues such as body movements, facial expressions, changes in breathing, length of pauses and degrees of emphasis.

Madachy (1978) used videotape as a method for improving the language skills of the hearing impaired. Wallisch (1979) reported that the United States Air Force Academy used videotape to teach technical writing to its students. Wallisch noted in his study that students in the academy found videotape a useful aid in technical writing.

In a study by Brinton and Gaskill (1978), video presentations proved to be an effective aid for English as a second language. Brinton and Gaskill reported on a videotaped news broadcast used in the classroom. The news consisted of BBC's "News of the Week". Comprehension questions that followed were made up of short-answer questions, true-false questions, short essay questions, and cloze passages. In their findings, they found improved comprehension of broadcasts on the part of the students, increased interest and better understanding of the target culture.

Howlett (1977) in a 17-page booklet reported that the videotape can provide motivation for learning and an opportunity to use the students' skills of listening.

Cammack and Richter (1967), in Language Teaching with Videotape, tested a group of twenty-five Japanese students who were college freshmen majoring in English. In their test they found that native speakers of Japanese majoring in English performed better when the English learning material was presented with aural and visual stimuli by means of videotape than with aural stimuli only.

A course to teach oral skills in English as a second language using a videotape was developed by Lawson (1979). A videotaped movie is shown without its sound track. The students then analyze, discuss and ultimately dub in the film in the target language.

Another experiment using the videotape was reported by Garber and Holmes (1981). In their findings, they too reported that short video movies could be used to help foreign language students develop their written skills by writing the scripts and dubbing them in the target language.

A research which contradicts all previous findings in this review on listening comprehension via the videotape was conducted by Ortmeyer and Goldstein (1980). Their research was a practical investigation of the effectiveness of the methods and modes which have been used to increase the listening comprehension skills of Chinese speakers learning English as a second language. A twelve-minute videotape, "Hawaii, Chinese Style", was chosen for the experiment because the language was authentic and the cultural content was familiar to the subjects. It was hypothesized that the audio mode, without the visual

representation, would be more effective than the video for learning to listen to and understand spoken English. The subjects, one hundred twelve students with limited English proficiency, were randomly assigned to the audio or the videotape. They were given a short introduction about the content, and were allowed to listen to the material twice. Immediate recall of information on the topic was tested by administering an objective test (devised by the teachers) after the second exposure to the material. An analysis of the data confirmed the working hypothesis that the audio mode would be more effective than the video for learning to listen to and understand spoken English.

Instructional television via videotape can be a good source of assistance in alleviating comprehension problems that occur when foreign languages are taught by the audio-lingual method. Television can be used in language instruction to provide good illustrations of the total speech situation including gestures and facial and mouth movements that naturally accompany language production. Visual scenes can often provide meaning to the content of the conversation. In addition, video tapes allow a measure of individualized instruction and can preserve lectures of lessons for students who missed them or want to review them (Harper, 1974).

Knight (1975) reported that video programs have proven more successful for oral proficiency than traditional conversation in English language courses at Stockholm University. Video provides verbal and nonverbal forms of communication and a variety of life-like situations. It

also increases students' attention and provides a model for students to imitate.

A brief survey by Weiss and Ravaux (1975) of the uses of videotape recording in the field of foreign language showed several points in favor of videotape recordings. These include the fact that videotape (1) produces the totality of the speech act, and (2) is ideal for individualized instructions.

The revolution of technology has led to changes in foreign language teaching, but in many areas, the use of modern technology has not been fully exploited. The use of videotape in the classroom may require new approaches to the teaching of ESL. One has first to consider the desired results and how to achieve them as well as consider the many procedures necessary to allow for changes. Success in achieving the desired results does not depend entirely on the mere utilization of electronic equipment, but on the type of materials chosen, on the preparation of the students for them, and on the teacher's success in restraining his/her impulse to interrupt, correct and elucidate (Santoni, 1975).

Summary of the Review

Most of the work done to evaluate the use of television is in the improvement of communication skills and reading which are indirectly related to the enrichment of children's vocabulary, especially with the preschoolers.

Stickler and Farr said that television plays an important role in language learning. Hamilton conducted a survey and analyzed the reading habits of seventh graders. In his investigation, Hamilton found that television can stimulate children to read. However, Moldenhaur and Miller, who did a study on similar lines, disagreed with his finding. In their conclusion, they say that television neither promotes nor inhibits reading achievement but is a positive influence only as far as development in vocabulary is concerned.

Other researchers on reading produced mixed results, but many agreed that television does improve communication skills in children, which implies an improvement in their vocabulary. However, many questions still remain unanswered on the broader issues of television and reading. In some cases, it appears that television has been effectively used to teach and reinforce reading skills and has been proven most effective where communicating skills and vocabulary are concerned. But the relationship of reading, communication skills, vocabulary and television are far more complex than a simple analysis of the amount of hours viewed and the achievement test scores gathered. The context in which children watch, parental control and supervision, discussion, and programs selected varies widely. Further research using more sophisticated measures of viewing behavior, reading behavior, communication skills

and vocabulary needs to be carried out before conclusions regarding the relationship between television and the above variables can be made.

Most of the work done on research into the use of video in the teaching of ESL are found in areas of communication skills. Garber and Holmes, Nostrand, Brinton and Gaskill, Hodapp, and Knight provided results of success in the use of videotape as an effective tool for teaching of ESL because of its ability to present visual as well as audio material.

Beswick, Nostrand, Howlett, and Cammack and Richter reported on the use of videotape relating to listening skill and/or listening comprehension. But the most intriguing of all was a research done by Ortmeyer and Goldstein. They found in their study that native Chinese speakers of ESL fared better in tests of listening comprehension using only the audio mode rather than the audio-visual representation via the videotape. This contradicts the study done by Cammack and Richter, who found that speakers of Japanese majoring in English performed better when the English material was presented with both aural and visual stimuli by means of videotape rather than with aural stimuli only. This contradiction has caused some controversy regarding the effectiveness of videotape in teaching listening comprehension. To ascertain the effectiveness of videotape as a tool to increase listening comprehension in ESL, the author has conducted a test in listening comprehension using the videotape verses the videotape without the visual images on the screen.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of this study is to determine if there will be differences in the scores of listening comprehension between the experimental and the control groups and the scores between the visually dependent and the visually independent tests of both groups of students.

Ten tests of listening comprehension involving the use of the visual dependent and the visual independent videotapes conducted with the experimental and the control groups will be analyzed in this chapter.

The purpose of this study is to compare the test scores obtained from the experimental group to the scores obtained from the control group. This chapter will report the results of the comparison.

The results of the experimental design for this study can be found in Tables 1a - 1e, while the results of the control group can be found in Tables 2a - 2e.

Table 1a

Right-Wrong Analysis of Test Scores of Experimental Group

	TEST 1										TEST 2										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	CR
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	19
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
6	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
9	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
10	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
11	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	16
12	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	1	16
13	1	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	17
14	1	1	0	1	1	1	1	1	1	0	1	0	1	1	0	1	1	1	1	1	16
15	1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	16
16	1	1	0	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	16
17	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	18
18	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	0	1	1	0	13
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	19
20	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	17
21	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	17
22	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	0	1	0	14
23	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	15
24	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	1	16
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	17
26	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	16
27	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	1	1	17
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	16
29	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	0	15
30	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	16
31	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	17
32	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	17
33	1	0	1	1	0	0	1	1	1	0	1	1	1	0	1	0	1	1	0	1	12
34	1	1	1	1	0	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0	14
35	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	0	1	0	13
36	0	1	1	0	1	1	0	0	1	0	1	1	1	0	1	0	1	0	1	0	11
37	1	0	1	1	0	1	1	0	0	0	0	1	1	0	1	1	0	0	1	1	9
38	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	1	1	1	13
39	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	9
40	0	0	1	0	0	1	0	0	1	1	1	0	1	0	0	1	0	1	1	0	8
41	0	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	0	0	0	0	11
42	0	1	0	0	0	1	0	0	0	1	0	1	0	0	0	1	1	0	0	0	5
43	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	1	1	0	0	6
44	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	5
45	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	1	5
46	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	5
47	1	0	1	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	5
48	1	1	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	7
49	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	4
TCR	40	39	39	35	38	39	37	35	31	25	37	40	38	36	40	39	35	31	35	21	710
FV	.40	.78	.78	.70	.76	.78	.74	.70	.62	.50	.74	.80	.76	.72	.80	.78	.70	.62	.70	.42	
DI	.57	.43	.43	.64	.64	.43	.71	.64	.43	.86	.57	.36	.57	.57	.36	.36	.57	.57	.57	.71	

TCR = Total correct responses.

FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 15

Right-Wrong Analysis of Test Scores of Experimental Group

	TEST 3										TEST 4										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	CR
1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
5	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
7	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	18
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
9	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	19
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	19
11	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	18
12	0	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	15
13	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	19
14	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	0	1	0	1	15
15	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
16	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19
17	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	1	16
18	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	0	0	15
19	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	16
20	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	0	16
21	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	0	16
22	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	13
23	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	15
24	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	0	0	0	0	13
25	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0	0	1	0	15
26	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	0	1	1	0	15
27	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	15
28	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	14
29	0	1	0	1	1	0	0	1	1	0	1	1	0	1	0	1	1	0	0	0	10
30	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	0	0	15
31	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	16
32	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	17
33	1	1	1	1	1	1	0	1	0	1	0	1	1	0	1	0	1	1	1	1	14
34	0	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	0	0	0	0	13
35	1	1	1	1	1	0	1	1	0	1	0	1	1	1	0	0	0	1	1	1	13
36	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	0	0	0	12
37	1	1	1	0	0	1	0	1	0	1	0	1	1	1	0	0	0	1	1	0	11
38	1	1	0	1	1	0	1	0	1	1	0	0	0	0	0	1	0	1	1	1	11
39	1	1	1	1	1	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	9
40	1	1	0	0	0	1	1	1	1	0	0	0	1	1	0	0	0	1	1	0	10
41	1	1	0	1	1	0	1	0	1	0	0	1	1	0	1	0	0	0	1	0	10
42	1	0	0	1	1	0	1	1	1	1	0	0	0	1	0	0	1	1	1	0	11
43	1	0	0	1	1	0	1	0	0	1	1	0	1	1	0	1	0	1	0	0	10
44	0	1	1	0	1	0	1	0	0	0	0	0	1	0	0	0	1	1	1	0	8
45	0	1	0	0	0	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	6
46	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	1	0	0	0	0	6
47	0	0	0	1	0	1	1	1	0	0	1	0	1	0	1	0	0	1	0	0	8
48	1	1	0	0	0	1	0	1	1	0	0	1	1	0	1	0	1	0	0	0	9
49	0	0	1	0	0	0	1	0	1	0	1	0	0	1	1	0	1	0	0	0	7
50	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	5
TCR	41	42	38	40	39	38	35	35	34	23	36	41	43	39	39	37	28	30	20	19	707
PV	.82	.84	.76	.80	.78	.76	.70	.70	.68	.46	.72	.82	.86	.78	.78	.74	.56	.60	.60	.38	
DI	.36	.43	.64	.50	.43	.43	.36	.36	.36	.50	.64	.57	.64	.50	.57	.64	.64	.36	.43	.71	

TCR = Total Correct Responses. PV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 1c

Right-Wrong Analysis of Test Scores of Experimental Group

	TEST 5										TEST 6										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	TR
1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	18
2	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	19
3	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	18
4	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	19
5	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	18
6	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	19
8	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	18
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
10	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	18
11	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0	17
12	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	18
13	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	16
14	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	18
15	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	17
16	1	1	1	0	1	1	1	0	1	0	1	1	0	1	0	1	1	1	1	1	15
17	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	17
18	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	17
19	1	1	1	1	1	1	1	1	0	0	1	1	0	1	1	1	1	0	1	0	15
20	1	0	1	1	0	1	0	1	0	0	1	1	1	1	1	1	1	1	0	0	13
21	1	0	1	1	0	1	1	1	0	1	1	1	0	1	1	0	0	1	1	1	12
22	1	0	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	16
23	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	0	1	0	1	15
24	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	16
25	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	1	0	0	1	1	14
26	1	1	1	1	1	1	0	1	0	0	0	1	1	1	1	1	0	0	0	0	11
27	1	0	1	1	1	1	1	0	0	1	0	1	1	0	1	1	0	0	1	0	13
28	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	0	14
29	1	1	0	0	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1	0	14
30	0	1	1	0	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	1	13
31	1	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	0	11
32	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	15
33	0	0	1	1	1	1	0	0	0	1	1	1	1	0	1	1	0	0	0	0	10
34	0	1	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	0	1	1	14
35	1	0	1	0	1	1	0	0	1	0	1	0	0	0	1	1	1	1	0	0	10
36	0	0	0	0	0	1	1	1	1	1	1	0	0	1	0	0	1	1	1	0	10
37	0	0	0	1	0	1	1	1	1	0	1	1	1	1	0	1	0	0	1	1	11
38	0	0	1	0	0	1	1	0	0	1	0	1	0	0	1	1	0	1	1	0	9
39	1	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	1	1	0	10
40	0	1	1	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	0	0	11
41	0	1	1	0	1	1	1	0	0	0	0	0	1	1	0	0	1	1	1	0	10
42	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	4
43	0	1	0	0	0	1	1	0	0	0	0	1	0	0	1	1	1	0	0	0	5
44	0	1	1	0	1	1	0	0	0	0	1	0	0	0	0	1	1	1	0	0	5
45	0	1	0	1	1	0	0	1	1	0	0	1	1	1	1	0	1	0	1	0	11
46	1	0	1	1	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	0	9
47	1	0	1	1	1	1	0	0	0	0	1	1	0	1	1	0	0	0	0	0	9
48	1	1	0	1	1	1	0	0	0	0	0	1	0	1	0	1	1	0	0	0	9
49	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0	1	0	0	0	6
50	1	1	0	0	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	0	8
TCR	38	37	38	35	37	40	35	25	26	21	40	41	35	38	40	37	33	33	30	23	682
PV	.76	.74	.76	.70	.74	.80	.70	.50	.52	.42	.80	.82	.70	.76	.80	.74	.66	.66	.60	.46	
DI	.57	.43	.57	.57	.64	.29	.36	.57	.50	.71	.43	.36	.50	.43	.50	.43	.43	.50	.36	.64	

TCR = Total Correct Responses. PV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 1d

Right-Wrong Analysis of Test Scores of Experimental Group

	TEST 7										TEST 8										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	CR
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	19
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	18
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	19
7	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	18
8	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	18
9	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0	1	1	1	17
10	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	17
11	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	18
12	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	18
13	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	0	16
14	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	18
15	0	0	1	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	14
16	1	1	1	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	17
17	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	15
18	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	0	1	1	1	16
19	1	1	1	0	0	1	1	0	0	0	1	0	1	0	0	1	1	1	1	0	11
20	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	15
21	1	1	1	1	1	0	1	0	0	0	1	0	1	0	1	1	1	1	1	0	13
22	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	14
23	1	1	0	0	1	1	1	0	0	0	1	1	1	0	1	1	1	1	1	0	13
24	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	1	0	14
25	1	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1	0	0	1	0	12
26	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	0	1	0	0	13
27	0	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	0	0	11
28	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	0	0	0	13
29	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	16
30	1	0	1	1	1	1	0	1	1	0	1	1	1	0	1	0	1	0	1	0	13
31	1	1	1	1	1	1	1	0	1	0	1	0	1	0	1	0	0	1	1	0	13
32	0	0	1	0	0	1	1	1	1	1	1	0	1	1	0	0	0	1	1	0	11
33	0	0	1	0	0	1	1	1	1	1	1	0	1	1	0	0	0	1	1	0	11
34	1	1	0	0	1	0	1	0	1	1	1	0	0	0	0	1	1	0	1	0	10
35	1	1	0	1	0	0	1	1	1	1	0	0	0	1	1	0	1	1	1	0	12
36	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	1	1	1	0	0	13
37	0	0	1	1	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	11
38	1	1	1	1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	1	0	12
39	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1	0	1	0	0	0	8
40	0	0	1	1	1	1	0	0	1	0	0	0	0	1	1	1	0	0	1	0	8
41	0	0	1	0	1	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0	6
42	0	1	0	1	0	0	0	1	1	0	1	1	0	0	0	0	1	1	1	0	9
43	1	0	1	1	0	0	1	1	1	0	1	1	1	0	0	1	0	0	0	0	10
44	1	0	0	1	0	0	1	0	1	0	1	1	1	1	0	1	0	1	0	0	10
45	1	0	1	0	1	1	0	0	0	0	1	1	0	0	0	1	0	1	0	0	8
46	1	1	0	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	7
47	1	1	0	0	0	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0	8
48	0	0	1	0	1	0	1	1	0	0	0	1	1	1	0	1	0	0	0	0	8
49	0	1	1	0	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	7
50	1	1	0	1	0	1	0	0	0	0	1	0	0	1	1	0	1	0	0	0	8
TCR	39	38	37	38	38	34	35	29	29	21	43	37	37	35	34	35	30	30	32	14	665
FV	.78	.76	.74	.76	.76	.68	.70	.58	.58	.42	.86	.74	.74	.70	.68	.70	.60	.60	.64	.28	
DI	.50	.50	.36	.36	.43	.43	.43	.50	.50	.71	.36	.36	.57	.43	.64	.50	.43	.50	.50	.64	

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 1e

Right-Wrong Analysis of Test Scores of Experimental Group

	TEST 9										TEST 10											
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	CR	TCR
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	97
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	96
3	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19	96
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19	95
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	95
6	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19	95
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19	94
8	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	18	94
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	19	94
10	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	18	91
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	18	87
12	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19	86
13	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	18	86
14	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	18	85
15	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	18	84
16	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	1	0	16	83
17	1	0	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	16	82
18	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	16	77
19	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	0	1	16	77
20	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	0	1	0	1	1	15	76
21	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	0	1	16	76
22	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	0	16	73
23	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	0	15	73
24	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	0	14	72
25	1	1	1	1	1	1	1	1	0	0	1	1	0	0	1	1	1	0	0	0	13	71
26	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	0	1	0	15	70
27	1	1	1	0	0	1	1	1	1	0	1	1	1	0	0	1	1	0	1	0	13	69
28	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	12	69
29	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	0	0	0	14	69
30	1	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1	0	0	0	1	12	69
31	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	0	0	1	0	0	12	69
32	1	1	1	1	1	1	1	0	0	1	1	0	1	1	0	0	0	0	0	0	10	69
33	1	1	1	1	1	1	1	0	0	1	0	1	1	0	1	0	0	1	1	1	13	63
34	1	1	0	1	1	0	1	0	0	1	1	1	1	0	0	1	1	0	1	1	13	62
35	1	0	1	0	1	1	1	1	1	0	0	1	0	0	0	1	1	0	0	0	11	60
36	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	0	11	59
37	1	0	1	0	1	0	1	0	1	0	0	1	0	0	0	1	1	1	1	0	10	54
38	1	0	0	0	1	1	1	0	1	0	0	0	1	1	0	0	1	1	1	0	10	51
39	1	1	0	1	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	0	9	49
40	0	1	1	0	0	0	0	1	0	0	0	0	1	1	0	1	1	0	0	0	7	45
41	0	1	0	1	1	1	0	0	0	0	1	1	1	0	1	1	0	0	1	0	10	44
42	0	0	0	0	1	1	0	0	1	1	1	0	0	0	1	0	1	0	0	0	7	42
43	0	0	1	0	0	0	1	0	1	0	0	1	0	1	1	1	0	1	1	0	9	42
44	0	0	0	1	0	1	0	1	0	0	1	1	1	0	1	0	0	1	0	0	8	40
45	1	0	1	0	1	0	1	0	1	0	0	1	0	1	0	0	0	1	0	0	8	38
46	0	1	1	0	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	9	37
47	0	1	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	6	36
48	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	5	36
49	0	1	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0	0	1	0	9	36
50	0	1	0	0	1	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	9	34
TCR	39	41	39	35	42	41	28	30	36	20	38	40	40	38	39	34	29	28	30	20	687	3451
FV	.78	.82	.78	.70	.84	.82	.56	.60	.72	.40	.76	.80	.80	.76	.78	.68	.58	.56	.60	.40		
DI	.64	.50	.57	.71	.43	.43	.57	.71	.43	.86	.50	.43	.36	.36	.36	.43	.64	.43	.57	.79	MEAN	69.02

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2a

Right-Wrong Analysis of Test Scores of Control Group

	Test 1										Test 2										CR
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	
1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	18
2	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	17
3	1	1	1	1	1	1	0	1	1	0	0	1	0	1	1	1	0	1	1	1	15
4	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	14
5	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	16
6	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	15
7	1	0	0	1	1	1	1	1	1	0	0	1	1	0	1	1	1	0	1	0	12
8	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	1	0	0	13
9	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	0	0	14
10	0	1	1	1	1	0	1	1	1	0	0	1	1	1	1	1	0	1	0	1	13
11	1	0	1	1	1	1	0	0	0	0	1	1	1	1	1	1	0	0	1	1	13
12	0	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1	0	0	1	0	13
13	0	0	0	0	0	1	1	0	0	0	1	1	1	0	1	1	1	1	1	0	10
14	0	0	0	0	0	0	1	0	0	1	1	0	1	1	1	1	0	0	0	1	9
15	1	1	0	1	0	0	0	0	1	0	1	1	1	1	0	0	1	0	1	0	10
16	0	1	1	1	1	0	0	0	1	0	1	1	0	0	1	1	1	1	0	1	12
17	1	1	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	1	1	1	0	8
18	0	0	0	1	0	0	1	1	1	0	0	1	1	0	0	0	1	1	0	1	0	9
19	0	1	1	0	0	0	0	0	1	1	1	0	0	0	1	1	0	0	0	1	9
20	1	0	0	1	1	0	1	1	0	0	0	1	0	0	0	0	1	1	1	0	8
21	0	1	1	0	0	0	1	1	0	0	1	0	0	0	1	0	1	1	1	0	9
22	0	1	0	1	0	1	1	1	0	1	0	1	0	0	1	0	1	0	1	0	9
23	0	1	0	0	1	0	1	1	0	0	0	1	0	1	1	0	0	0	1	0	9
24	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	1	1	1	0	0	8
25	0	0	1	0	0	1	0	1	0	0	0	1	0	1	0	0	1	1	0	0	7
26	1	1	1	1	0	0	0	1	0	0	0	1	0	1	0	1	1	0	0	0	9
27	1	0	1	1	1	0	0	0	0	0	1	0	1	0	1	1	1	0	0	0	9
28	1	0	1	1	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1	0	9
29	1	1	1	1	0	0	0	0	1	0	1	1	0	0	1	0	0	1	0	0	9
30	1	0	1	0	0	1	1	1	0	0	0	1	0	0	1	0	0	1	0	0	8
31	0	1	0	0	0	1	1	1	0	0	0	0	1	0	1	0	0	1	0	0	7
32	0	1	1	1	1	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	8
33	1	1	0	0	1	0	0	0	0	0	1	1	1	0	1	1	1	0	0	0	9
34	1	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	1	1	0	7
35	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	5
36	0	0	1	1	1	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	8
37	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	0	0	5
38	0	0	1	1	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	6
39	0	0	1	1	0	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	6
40	0	0	0	1	1	0	0	0	1	0	0	0	0	1	0	0	1	1	0	0	5
41	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
42	0	0	0	1	0	0	0	1	1	0	0	0	1	1	0	1	0	0	0	0	6
43	0	0	0	0	0	1	1	1	0	0	1	0	1	1	0	0	0	0	0	0	5
44	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	5
45	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	6
46	0	0	1	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	0	6
47	0	0	0	1	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	5
48	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4
49	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0	6
50	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	4
TCR	20	23	23	29	27	21	23	23	18	6	25	31	25	27	31	29	22	22	17	8	450
FV	.40	.46	.46	.58	.54	.42	.46	.46	.36	.12	.50	.62	.50	.54	.62	.58	.44	.44	.34	.16	
DI	.43	.43	.36	.43	.43	.36	.50	.43	.79	.36	.50	.43	.43	.43	.71	.36	.43	.36	.64	.43	

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2b

Right-Wrong Analysis of Test Scores of Control Group

	TEST 3										TEST 4										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	
1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
2	1	1	0	0	1	1	1	1	1	1	0	1	1	0	0	1	1	1	0	1	
3	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	
4	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	
5	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	0	1	
6	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	0	1	1	
7	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	0	
8	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	0	
9	1	1	0	0	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	
10	0	1	0	1	1	0	1	1	0	1	1	1	0	1	1	1	1	0	0	1	
11	1	1	0	0	1	1	1	1	1	0	0	0	1	1	1	1	0	1	1	0	
12	1	1	1	0	0	1	1	1	1	0	0	1	0	1	0	1	1	0	0	0	
13	1	1	1	1	0	0	0	1	1	0	0	0	1	1	1	1	0	1	0	0	
14	1	1	1	1	0	0	1	1	1	0	1	0	0	0	1	1	1	0	0	0	
15	1	0	0	0	1	1	0	0	0	0	1	0	0	0	1	1	1	1	1	0	
16	0	1	1	0	0	0	1	0	1	0	1	1	0	1	0	0	0	1	1	0	
17	1	0	0	1	1	0	0	1	0	0	0	0	1	0	1	0	1	1	1	0	
18	0	0	1	1	1	0	0	0	0	1	1	1	0	0	1	1	0	1	0	0	
19	0	1	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	1	0	0	
20	1	0	1	1	0	0	1	1	0	0	0	1	1	0	1	1	1	0	0	0	
21	1	1	0	0	1	1	0	0	0	0	0	1	0	0	1	1	1	0	1	0	
22	0	1	1	1	1	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	
23	1	0	1	0	1	0	1	0	0	0	0	0	1	1	1	1	0	0	0	0	
24	1	0	1	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0	1	0	
25	0	0	0	1	1	1	1	0	1	0	0	0	1	0	1	1	0	0	0	0	
26	1	1	1	0	0	1	0	1	0	0	1	0	0	1	1	0	1	1	0	0	
27	0	0	0	1	0	0	1	1	0	0	1	1	0	1	0	1	0	0	0	0	
28	0	1	0	1	0	0	1	0	1	0	1	0	1	1	1	0	1	0	0	0	
29	1	0	0	0	1	1	0	0	1	0	0	0	1	0	1	1	0	0	0	0	
30	0	1	0	1	1	0	0	1	0	0	0	1	1	0	1	0	1	1	0	0	
31	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	
32	1	1	1	0	0	0	0	0	0	0	1	0	1	1	0	1	0	1	0	0	
33	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	1	0	
34	0	1	1	1	1	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	
35	1	1	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	
36	1	1	1	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	1	0	
37	0	1	0	1	0	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	
38	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	1	0	
39	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	1	0	1	0	
40	0	1	0	1	0	0	1	0	0	1	0	0	0	1	0	0	1	0	1	0	
41	1	1	0	0	0	1	0	0	1	0	0	0	0	1	1	1	1	0	0	0	
42	0	0	1	1	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	0	
43	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	
44	1	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	
45	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	
46	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	
47	0	0	1	0	1	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	
48	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
49	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	
50	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	
TCR	32	31	24	23	27	19	24	23	21	10	22	25	26	29	28	33	21	20	18	8	464
FV	.64	.62	.48	.46	.54	.38	.48	.46	.42	.20	.44	.50	.52	.58	.56	.66	.42	.40	.36	.16	
DI	.38	.43	.36	.36	.57	.43	.14	.79	.57	.50	.36	.36	.36	.43	.29	.50	.57	.43	.29	.50	

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2c

Right-Wrong Analysis of Test Scores of Control Group

	TEST 5										TEST 6										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	TCR
1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
2	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	18
3	1	0	1	0	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1	14
4	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	17
5	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	0	15
6	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	16
7	1	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	0	0	0	1	13
8	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	17
9	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	0	14
10	1	1	0	0	1	1	0	1	1	0	1	0	1	0	1	1	1	0	1	1	13
11	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	0	0	0	0	13
12	1	1	1	1	1	0	1	1	0	0	1	1	1	0	1	0	1	1	1	0	14
13	1	1	1	1	0	1	1	0	1	0	1	1	1	1	1	1	0	1	0	1	15
14	1	1	1	0	1	1	0	1	0	0	0	1	0	1	0	1	1	1	0	0	11
15	1	0	0	1	1	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0	8
16	0	1	1	1	1	1	0	0	0	0	0	1	0	1	0	1	0	1	1	0	10
17	1	1	1	0	1	1	0	0	0	0	1	0	1	1	1	1	0	0	0	0	11
18	0	0	1	0	0	1	1	0	0	0	0	1	0	1	0	0	1	0	1	0	8
19	1	0	1	1	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0	0	9
20	0	1	0	0	1	1	0	1	0	0	0	1	1	1	1	0	0	0	1	1	10
21	1	0	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	0	1	0	9
22	1	1	0	0	0	1	0	0	0	0	0	1	0	1	1	0	0	1	1	0	9
23	1	1	1	1	0	1	0	0	0	0	0	1	0	1	1	0	1	1	0	0	10
24	1	0	1	0	0	0	0	1	0	0	1	0	1	0	1	1	0	0	1	0	9
25	1	0	1	0	1	0	0	0	1	0	1	1	1	1	0	0	0	1	0	0	9
26	0	1	0	0	1	1	1	0	0	0	1	1	1	0	1	0	0	0	1	0	9
27	0	1	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	1	0	0	9
28	0	1	0	0	1	1	0	0	0	0	0	1	1	0	1	0	1	1	0	0	8
29	1	0	0	0	1	1	0	1	0	0	1	1	0	1	0	1	0	1	0	0	9
30	1	1	1	1	1	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	8
31	0	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	0	9
32	0	1	1	1	0	1	0	0	0	0	1	0	1	1	1	0	0	0	1	0	9
33	0	0	1	1	1	0	0	0	1	0	1	1	0	1	0	1	1	1	1	0	11
34	0	1	0	1	1	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	5
35	0	1	1	1	1	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	6
36	1	1	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	6
37	0	0	0	1	0	1	0	1	1	0	1	0	0	0	0	1	0	0	1	0	5
38	1	1	0	1	0	1	0	1	1	0	1	1	0	0	0	1	0	0	0	0	6
39	1	1	0	0	0	0	1	1	0	0	1	1	0	0	1	0	0	0	0	0	5
40	1	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	4
41	1	1	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	1	0	0	5
42	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
43	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	3
44	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
45	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	3
46	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2
47	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	3
48	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3
49	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	3
50	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3
TCR	33	32	27	26	32	29	14	16	24	6	32	32	31	28	32	27	18	19	19	8	485
FV	.66	.64	.54	.52	.64	.58	.28	.32	.48	.12	.64	.64	.62	.56	.64	.54	.36	.38	.38	.16	
DI	.57	.43	.64	.29	.57	.50	.57	.43	.57	.43	.50	.43	.71	.57	.50	.57	.43	.36	.50	.50	

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2d

Right-Wrong Analysis of Test Scores of Control Group

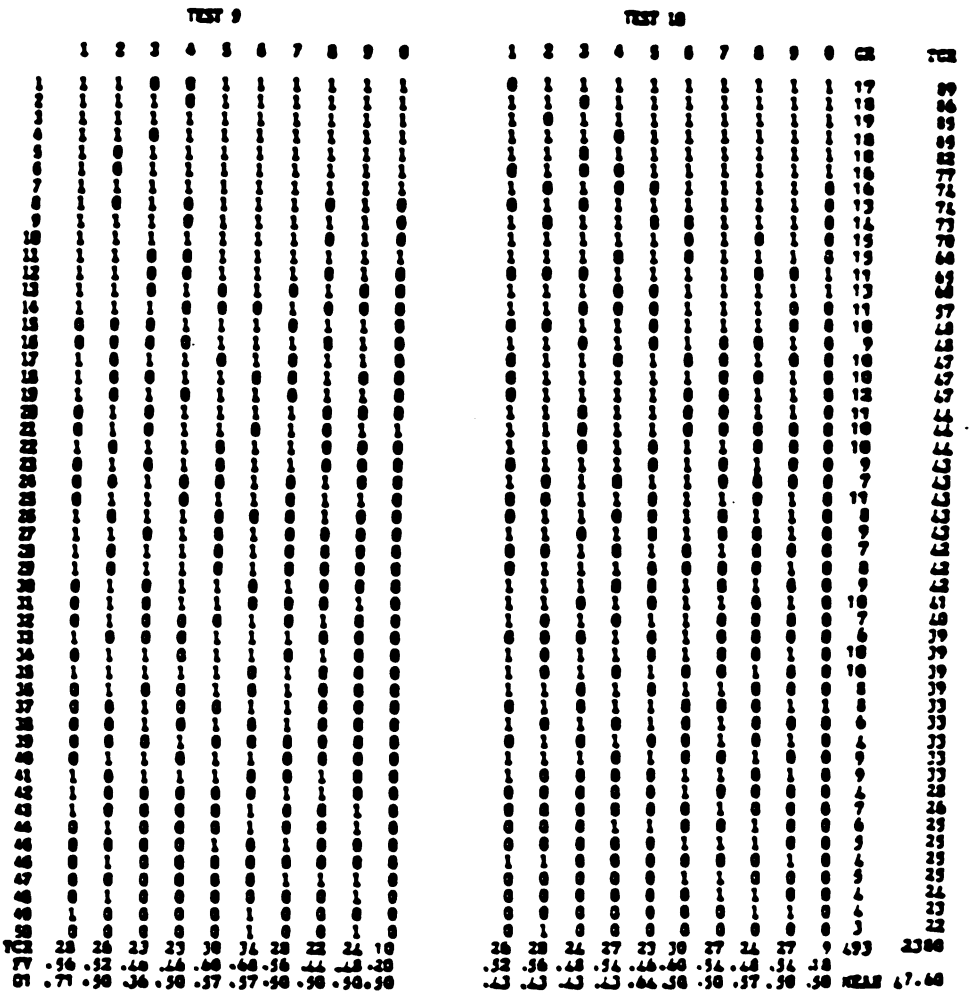
	TEST 7										TEST 8										
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	
1	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	17
2	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
3	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	18
4	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	18
5	1	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	15
6	1	0	1	1	0	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	14
7	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	0	1	1	1	15
8	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	16
9	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	16
10	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	16
11	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	0	1	1	0	15
12	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	16
13	1	0	1	1	1	0	0	0	1	0	1	0	0	1	1	0	1	0	1	0	10
14	1	1	1	1	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	13
15	1	0	1	1	1	0	0	1	0	0	1	0	1	0	0	0	1	1	1	0	10
16	1	0	1	0	0	0	1	0	1	0	1	1	0	1	0	1	0	1	0	0	8
17	0	0	0	1	1	1	0	1	0	0	1	1	1	0	1	1	0	0	0	0	9
18	1	1	1	1	0	1	0	1	0	0	1	1	0	1	0	0	1	0	0	0	11
19	0	0	1	0	1	0	1	1	0	0	1	0	0	1	1	1	0	1	0	0	9
20	1	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	6
21	0	1	0	1	0	1	0	1	0	0	0	1	0	0	1	1	0	0	0	0	7
22	1	0	0	1	1	0	0	0	1	0	1	1	0	0	1	0	0	1	0	0	8
23	0	1	0	0	0	0	1	0	1	0	0	1	0	1	1	0	0	1	0	0	7
24	0	1	1	1	0	1	0	0	1	0	1	1	0	1	0	0	1	0	1	0	10
25	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	8
26	1	0	0	1	1	0	0	1	e	e	1	e	e	e	e	e	1	1	e	e	7
27	1	1	1	1	0	1	0	0	0	0	1	0	1	0	1	0	1	0	0	0	9
28	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	8
29	0	1	1	0	1	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	9
30	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	1	1	0	1	0	8
31	1	0	1	0	0	1	0	0	0	0	1	0	1	0	1	1	0	0	0	0	7
32	1	1	1	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	8
33	1	1	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0	1	1	0	8
34	0	1	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1	0	6
35	1	0	1	0	1	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	7
36	1	0	1	0	1	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	7
37	1	0	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	5
38	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	1	0	1	0	0	5
39	0	1	1	1	0	0	1	0	1	0	1	0	0	0	1	0	0	1	1	0	8
40	1	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	1	7
41	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	1	0	0	0	7
42	0	0	1	0	1	0	0	1	1	0	1	0	0	1	0	0	1	0	1	0	8
43	1	0	1	0	1	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	6
44	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	5
45	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	5
46	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	1	0	6
47	1	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	5
48	1	0	0	0	0	0	1	0	1	0	1	1	0	0	0	1	0	1	0	0	7
49	0	1	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	5
50	1	0	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	6
TCR	35	25	33	26	24	26	21	24	19	7	37	22	21	29	29	29	21	28	24	8	.88
FV	.70	.50	.66	.52	.48	.52	.42	.48	.38	.14	.74	.44	.42	.58	.58	.58	.42	.56	.48	.16	
DI	.50	.43	.57	.57	.14	.36	.43	.50	.50	.36	.50	.50	.36	.57	.50	.57	.43	.79	.64	.57	

TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2a

Right-Wrong Analysis of Test Scores of
Control Group

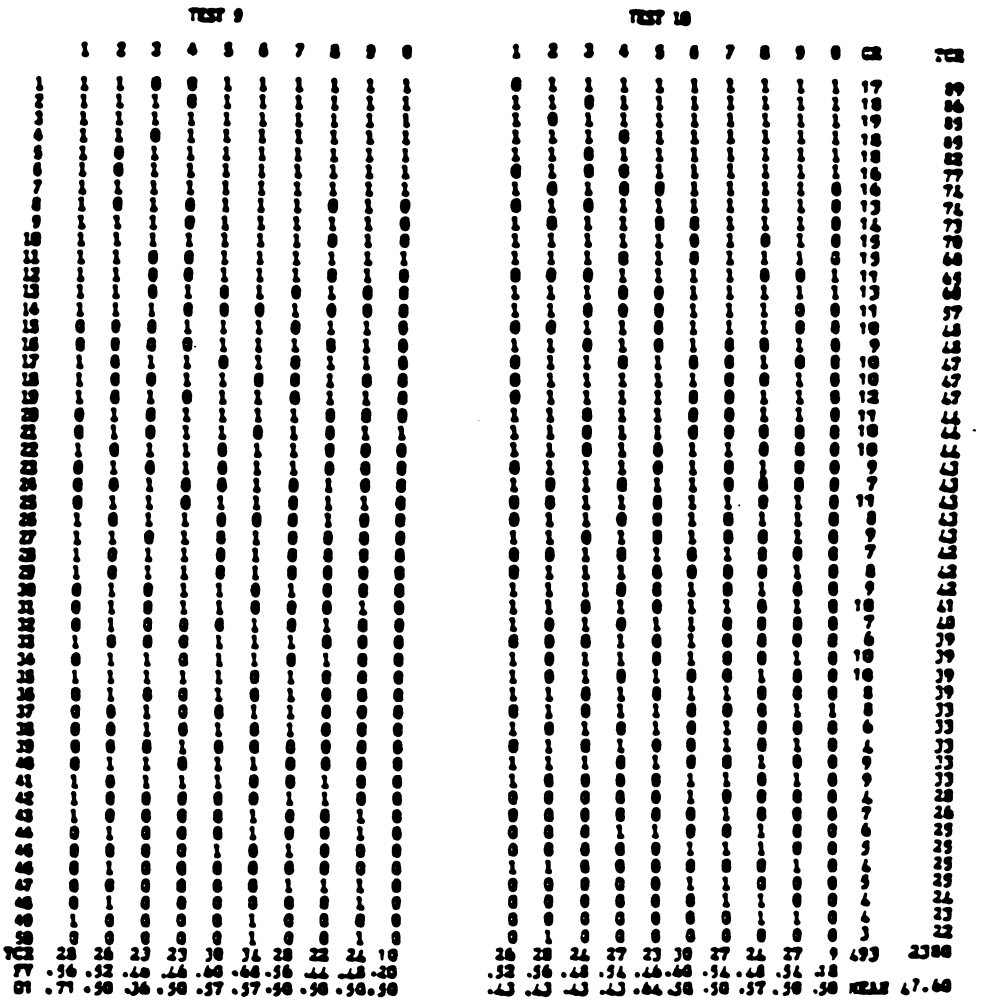


TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

Table 2s

Right-Wrong Analysis of Test Scores of
Control Group



TCR = Total Correct Responses. FV = Facility Value (Difficulty).

DI = Discrimination Index.

From the scores of listening comprehension tests of the experimental and the control groups, the mean, median, mode and range were calculated as shown in Table 3.

Table 3. The Mean, Median, Mode and Range of the Experimental and Control Groups.

Group	Experimental	Control	Difference
Number of testees	50	50	-
Mean	69	47.6	21.4
Median	70	43	27
Mode	69	33/43	
Range	34-97	22-89	

The mean of the experimental group was calculated and found to be 69. The median 70, mode 69 and the range 34 to 97.

The mean of the control group was calculated and found to be 47.6, the median 43, modes 33 and 43 and the range 22 to 89.

The difference in means and medians between the experimental and the control groups were calculated and found to be 21.4 and 27 respectively.

Test Question 1: Table 4 shows the percentage of listening comprehension test scores of the experimental and the control groups for tests 1 to 10, question 1, "What is the main idea" question.

Table 4. Percentage of Test Scores of Experimental and Control Groups for Question 1.

Tests	Experimental	Control	Difference
1	80	40	40
2	74	50	24
3	82	64	18
4	72	44	28
5	76	66	10
6	80	64	16
7	78	70	8
8	86	74	12
9	78	56	22
10	76	54	22

The range of test scores of the experimental group is 72-86. The difference is 14. The highest score is 86, found in test 8, while the lowest is 72, found in test 4.

The range of test scores of the control group is 40-74. The difference is 34. The highest score is 74, found in test 8, while the lowest is 40, found in test 1.

The greatest percentage difference between the experimental and the control groups is found in test 1, which is 40, while the smallest difference is 8, found in test 7.

Test Question 2: The percentage of listening comprehension test scores of the experimental and the control groups for tests 1 to 10. Question 2, the content questions with multiple-choice answers are shown in Table 5.

Table 5. Percentage Test Scores of the Experimental and the Control Groups for Question 2.

Tests	Experimental	Control	Difference
1	78	46	32
2	80	62	18
3	84	62	22
4	84	50	34
5	74	64	10
6	82	64	18
7	76	50	26
8	74	44	30
9	82	52	30
10	80	56	24

The range of test scores of the experimental group is 74-84. The difference is 10. The highest score is 84, found in tests 3 and 4, while the lowest is 74, found in tests 5 and 8.

The range of test scores of the control group is 44-64. The difference is 20. The highest score is 64, found in tests 5 and 6, while the lowest is 44, found in test 8.

The greatest percentage difference between the experimental and the control groups 34, found in test 4, while the smallest difference is 10, found in test 5.

Test Question 3: The percentage of listening comprehension test scores of the experimental and the control groups for tests 1 to 10, question 3, the content questions with multiple-choice answers are shown in Table 6.

Table 6. Percentage Test Scores of the Experimental and Control Groups for Question 3.

Tests	Experimental	Control	Difference
1	78	46	32
2	76	50	26
3	76	48	28
4	86	52	34
5	76	54	22
6	70	62	12
7	74	66	3
8	74	42	32
9	78	46	32
10	80	48	32

The range of test scores of the experimental group is 70-86. The difference is 16. The highest score is 86, found in test 4, while the lowest is 70, found in test 6.

The range of test scores of the control group is 42-66. The difference is 24. The highest score is 66, found in test 7, while the lowest is 42, found in test 8.

The greatest percentage difference between the experimental and the control groups is 34, found in test 4, while the smallest difference is 8, found in test 7.

Test Question 4. The percentage of listening comprehension test scores of the experimental and the control groups for tests 1 to 10, question 4, the content questions with multiple-choice answers are shown in Table 7.

Table 7. Percentage Test Scores of the Experimental and Control Groups for Question 4.

Tests	Experimental	Control	Difference
1	70	58	12
2	72	54	18
3	80	46	34
4	78	58	30
5	70	52	18
6	76	56	20
7	76	52	24
8	70	58	12
9	70	46	24
10	76	54	22

The range of test scores of the experimental group is 70-80. The difference is 10. The highest score is 80, found in test3, while the lowest is 70, found in tests 1, 5, 8, and 9.

The range of test scores of the control group is 46-58. The difference is 12. The highest score is 58, found in tests 1, 4 and 8, while the lowest is 46, found in tests 3 and 9.

The greatest percentage difference between the experimental and the control groups is 34, found in test 3, while the smallest difference is 12, found in tests 1 and 8.

Test Question 5: The percentage of listening comprehension test scores of the experimental and the control groups in tests 1 to 10, question 5, the content questions with multiple-choice answers are shown in Table 8.

Table 8. Percentage Test Scores of the Experimental and Control Groups for Question 5.

Tests	Experimental	Control	Difference
1	76	54	22
2	80	62	18
3	78	54	24
4	78	56	22
5	74	64	10
6	80	64	16
7	76	48	28
8	68	58	10
9	84	60	24
10	78	46	32

The range of test scores of the experimental group is 68-84. The difference is 16. The highest score is 84, found in test 9, while the lowest is 68, found in test 8.

The range of test scores of the control group is 46-64. The difference is 18. The highest score is 64, found in tests 5 and 6, while the lowest is 46, found in test 10.

The greatest percentage difference between the experimental and the control groups is 28, found in test 7, while the smallest is 10, found in tests 5 and 8.

Test Question 6: The percentage of listening comprehension test scores of the experimental and the control groups for test 1 to 10, question 6, the content questions with multiple-choice answers are shown in Table 9.

Table 9. Percentage Test Scores of the Experimental and Control Groups for Question 6.

Tests	Experimental	Control	Difference
1	78	42	36
2	78	58	20
3	76	38	38
4	74	66	8
5	80	58	22
6	74	54	20
7	68	52	16
8	70	58	12
9	82	68	14
10	68	60	8

The range of test scores of the experimental group is 68-82. The difference is 14. The highest score is 82, found in test 9, while the lowest is 68, found in tests 7 and 10.

The range of test scores of the control group is

38-68. The difference is 30. The highest score is 68, found in test 9, while the lowest is 38, found in test 3.

The greatest percentage difference between the experimental and the control groups is 38, found in test 3, while the lowest is found in tests 4 and 10.

Test Question 7. The percentage of listening comprehension test scores of the experimental and control groups for tests 1 to 10, question 7, the WH questions with multiple-choice answers are shown in table 10.

Table 10. Percentage Test Scores of the Experimental and Control Groups for Question 7.

Tests	Experimental	Control	Difference
1	74	46	28
2	70	44	26
3	70	48	22
4	56	42	14
5	70	28	42
6	66	36	30
7	70	42	28
8	60	42	18
9	56	56	0
10	58	54	4

The range of test scores of the experimental group

is 56-74. The difference is 18. The highest score is 74, found in test 1, while the lowest is 56, found in test 4 and 9.

The range of test scores of the control group is 28-56. The difference is 28. The highest score is 56, found in test 9, while the lowest score is 28, found in test 5.

The greatest percentage difference between the experimental and control groups is 42, found in test 5, while the lowest is 9, found in test 9.

Test Question 8: The percentage of listening comprehension test scores of the experimental and control groups for tests 1 to 10, question 8, the true-false questions are shown in table 11.

Table 11. Percentage Test Scores of the Experimental and Control Groups for Question 8.

Tests	Experimental	Control	Difference
1	70	46	24
2	62	44	18
3	70	46	24
4	60	40	20
5	50	32	18
6	66	38	28
7	58	48	10
8	60	56	4
9	60	44	16
10	56	48	8

The range of test scores of the experimental group is 50-70. The difference is 20. The highest score is 70, found in tests 1 and 3, while the lowest is 50, found in test 5.

The range of test scores of the control group is 32-56. The difference is 24. The highest score is 56, found in test 8, while the lowest is 32, found in test 5.

The greatest percentage difference between the experimental and the control groups is 28, found in test 6, while the lowest is 4, found in test 8.

Test Question 9: The percentage of listening comprehension test scores of the experimental and control groups for tests 1 to 10, question 9 the true-false questions are shown in table 12.

Table 12. Percentage Test Scores of the Experimental and Control Groups for Question 9.

Tests	Experimental	Control	Difference
1	62	36	26
2	70	34	36
3	68	42	26
4	60	36	24
5	52	48	4
6	60	38	22
7	58	38	20
8	64	48	16
9	72	48	24
10	60	54	6

The range of test scores of the experimental group is 52-72. The difference is 20. The highest score is 72, found in test 9, while the lowest is 52, found in test 5.

The range of test scores of the control group is 34-54. The difference is 20. The highest score is 54,

found in test 10, while the lowest score is 34, found in test 2.

The greatest percentage difference between the experimental and the control groups is 36, found in test 2, while the lowest is 4, found in test 5.

Test Question 10: The percentage of listening comprehension test scores of the experimental and control groups for tests 1 to 10, question 10 the "supply the answer" questions are shown in table 13.

Table 13. Percentage Test Scores of the Experimental and Control Groups for Question 10.

Tests	Experimental	Control	Difference
1	50	12	38
2	42	16	26
3	46	20	26
4	38	16	22
5	42	12	30
6	46	16	30
7	42	14	28
8	28	16	12
9	40	20	20
10	40	18	22

The range of test scores of the experimental group is 28-50. The difference is 22. The highest score is 50, found in test 1, while the lowest is 28, found in test 8.

The range of test scores of the control group is 12-20. The difference is 8. The highest score is 20, found in tests 3 and 9, while the lowest is 12, found in tests 1 and 5.

The greatest percentage difference between the experimental and the control groups is 38, found in test 1, while the lowest is 12, found in test 8.

Table 14. Mean Difficulty of Experimental and Control Groups Questions 1 - 10.

Questions	Experimental	Control
1	.78	.54
2	.79	.55
3	.77	.51
4	.74	.53
5	.77	.57
6	.75	.55
7	.65	.44
8	.61	.44
9	.63	.42
10	.41	.16

The highest means of difficulty for the experimental group is .79, found in question 2. The lowest is .41, found in question 10. This means that the experimental group found question 2 easiest, while the most difficult questions were question 10.

The highest means of difficulty for the control group is .57, found in question 5. The lowest is .16, found in question 10. This means the control group found question 5 easiest, while question 10 were the most difficult. difficult.

Table 15. Mean Difficulty of Experimental and Control Groups Tests 1 - 10.

Tests	Experimental	Control
1	.72	.43
2	.70	.57
3	.73	.47
4	.68	.46
5	.66	.48
6	.70	.49
7	.68	.48
8	.65	:50
9	.70	.50
10	.67	.49

The highest means of difficulty for the experimental group is .73, found in test 3. The lowest is .65, found in test 8. This means that the experimental group found test 3 easiest, while the most difficult test was test 8.

The highest means of difficulty for the control group is .57, found in test 2. The lowest is .43, found in test 1. This means that the control group found test 2 easiest, while the most difficult test was test 1.

Table 16. Mean Discrimination of Experimental and Control Groups Questions 1 - 10.

Questions	Experimental	Control
1	.51	.49
2	.52	.44
3	.52	.44
4	.53	.46
5	.50	.49
6	.44	.45
7	.51	.57
8	.53	.64
9	.47	.55
10	.71	.47

The highest mean of discrimination for the experimental

group is .71, found in question 10. The lowest is .44, found in question 6. This means that question 10 is able to discriminate the upper level students from the lower level up to 71%, while question 6 is able to discriminate only 44% of the upper level students from the lower level.

The highest mean of discrimination for the control group is .63, found in question 8. The lowest is .44, found in questions 2 and 3. This means that question 7 is able to discriminate the upper level students from the lower level up to 63%, while questions 2 and 3 are able to discriminate only 44% of the upper level students from the lower level.

Table 17. Mean Discrimination of Experimental and Control Groups Tests 1-10.

Tests	Experimental	Control
1	.58	.45
2	.52	.47
3	.44	.45
4	.57	.41
5	.52	.51
6	.46	.50
7	.47	.44
8	.49	.54
9	.59	.52
10	.49	.49

The highest mean of discrimination for the experimental group is .59, found in test 9. The lowest is .44, found in test 3. This means that test 9 was able to discriminate the upper level students from the lower level up to 59%, while test 3 was able to discriminate only 44% of the upper level students from the lower level.

The highest mean of discrimination for the control group is .54, found in test 8. The lowest is .41, found in test 4. This means that test 8 was able to discriminate the upper level students from the lower level up to 54%,

while test 4 was able to discriminate only 41% of the upper level students from the lower level.

Table 18. The Mean of Difficulty and Discrimination of Questions 1 to 10 for tests 1 to 10 of the Experimental and Control Groups.

Question Type	"Main Idea" (M-C)	Content Questions (M-C)	True-False questions	"Supply the answer" questions
Question Number	1	2-7	8-9	10
Experimental				
FV	.74	.62	.75	.41
DI	.51	.49	.49	.71
Control				
FV	.58	.52	.43	.16
DI	.49	.47	.53	.47

Table 18 shows a summary of difficulty and discrimination for questions 1-10, according to their type. For the experimental group; question 1, the "main idea" question, shows a difficulty of .74 with .51 discrimination. Questions 2-7, the content questions with multiple-choice (M-C) answers, show a difficulty of .62 with .49 discrimination. Questions 8-9, the true-false questions, show a difficulty of .75 with .49 discrimination. Question 10, the "supply the answer" question, shows a difficulty of .41 with .71 discrimination.

For the control group; question 1 shows a difficulty of .58 with .49 difficulty. Questions 2-7 show a difficulty of .52 with .47 discrimination. Questions 8-9 show a difficulty of .43 with .53 discrimination. Question 10 shows a difficulty of .16 with .47 discrimination.

From the data, the experimental group found true-false questions the easiest, followed by the "main idea" questions with multiple-choice answers and content questions with multiple-choice answer. The most difficult is the "supply the answer" question and its difficulty is also shared by the control group. However, the control group found the "main idea" question with multiple choice answer easiest, followed by content questions with multiple-choice answers and the true-false questions.

Table 19. The Mean, Standard Deviation, Reliability, Standard Error of Measurement, T Value.

Group	Experimental	Control	Difference
Number of Samples	50	50	
Mean	69	47.6	21.4
Standard Deviation	20.13	19.19	
Reliability	.95(6)	.94(1)	
Standard Error of Measurement	4.19	4.67	
t Value	5.45		

Table 19 shows the t-test for difference between means of listening comprehension of the experimental and the control groups.

The data was analyzed by using t-test to determine if there was significant difference in the means of percentage scores of listening comprehension tests for the experimental and the control groups.

From the data, it was calculated and found that a t value of 5.45 exceeds 2.39 for the listening comprehension test at 98 degrees of freedom. The null hypothesis is rejected at the .01 level of significance. This means, if this experiment were replicated with random samples from the same population, the probability is that a difference between mean performance as great as that observed would result from sampling error in fewer than 1 out of 100 replications.

This test would indicate very strong evidence that the treatment would probably make a difference in the scores on a listening comprehension test when applied to a similar population of testees. Therefore, the null hypothesis stating that there is no significant difference between the mean percentage scores of the listening comprehension test of the experimental and the control groups may be rejected in this study.

Table 20. Chi Square Values of Relationship between Grouping and Visual Dependency.

Scores	Experimental	Control	Total
Actual (Vid)	2416	1643	4059
Expected	(2402)	(1657)	
Actual (Vd)	1053	737	1772
Expected	(1049)	(723)	
Total	3451	2380	5831

Table 20 shows the Chi Square values for the visual dependent and the visual independent groups for the listening comprehension tests.

In testing the null hypothesis, no significant relationship is found between ESL student grouping and visual dependency of listening comprehension test scores at the Malaysian National University via videotape. The Chi Square value of .66 fell short of 3.84, the established level of significance at .05. This result indicates that there is no significant relationship between ESL student grouping and visual dependency for listening comprehension tests at the Malaysian National University via videotape.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

In Chapter IV, test results of the study were presented. In this chapter, a summary of the study, the findings and discussion of this research, conclusions drawn from the study, and recommendations for further research and future action using the tests are presented. The differences in the test results are discussed in this chapter. Recommendations for change and future implications for use of listening comprehension tests using videotape are also examined.

Summary

The problem addressed in this study was the effectiveness of videotape as a tool for increasing listening comprehension among Malaysian ESL students at the Malaysian National University.

The experimental group was shown videotapes with audio narration twice. Identical presentations were also conducted on the control group, but without the visual images on the screen.

Two null hypotheses were formulated for this study. First, it was postulated that there would be no significant

difference in the mean test scores of the experimental group using videotape for listening comprehension as against those in the control group using audiotape. The second null hypothesis postulated that there would be no significant relationship between experimental and control student grouping and visual dependency of listening comprehension test scores at the Malaysian National University via videotape.

One hundred students at the Malaysian National University representing beginning, intermediate and advanced levels of English language proficiency were selected at random and equally divided into the experimental and the control groups.

Ten tests for a total of 100 items were conducted at the Malaysian National University and the data were collected and used for the study. A right-wrong analysis of the data was used. Comparative differences in the mean test scores were the basis for reporting the results of this study with respect to the first null hypothesis.

A one-tailed t-test comparing the listening comprehension mean scores of the experimental and the control groups showed a significant difference between the two. However, a chi square test on relationship grouping and visual dependency showed no significant difference.

Findings and Discussion

Findings from this right-wrong analysis of the data indicated significant differences in the mean test scores of the experimental and the control groups. Based on the results of the analyses for Hypothesis 1, which stated that there is no significant difference between the listening comprehension test scores of the experimental and the control groups, the null hypothesis was rejected. In plain words, the experimental group who watched and listened to the videotape fare significantly better in their test scores of listening comprehension than the control group who only listened to the videotape without the visual images on the screen.

The visual component (visual images on the screen) of the presentation to the experimental group appeared to be a significant factor in producing more correct responses to the test than was the case with the control group. Use of visual imagery in conjunction with audio narration provides immediate and concurrent messages to the student observing. As visual images, speech sounds, and other sound effects, when effectively combined to convey a mental concept, work together, the students in the experimntal group seem to be better able to grasp and retain the concept than would be possible with only the audio narrative being presented alone.

Findings from the test of relationship between grouping and visual dependency indicated no significant relationship and dependence between the two. This confirmed Null Hypothesis Two, which stated that there is no significant relationship between grouping and visual dependency of listening comprehension test scores of ESL students at the Malaysian national University. This may be due to the fact that the test questions were based solely on the transcripts.

Overwhelming evidence of differences in test scores between the experimental and the control groups may be attributed partially to external factors which are beyond the researcher's control. The positive or negative attitude of students toward the test and different strengths of these attitudes in each student may have played an important part in the outcome of the test. Psychological influences like the eagerness of the experimental group toward the video and the negativity of the control group toward the audio cannot be ignored. For example, the experimental group was observed to be more alert, attentive, and eager to participate in the test. Some even expressed their sense of pride in being chosen for the test. Many stated they tried their best to furnish all the answers

for the test.

On the other hand, the control group was observed to be less alert, less attentive and not as eager as the students in the experimental group. They expressed their displeasure for having to sit for the test. They came late for the test and some arrived on several occasions while the test was in progress, distracting other testees. On other occasions, some students in the control group had to be coaxed into attending and taking the test. Some even made it known that they could care less about the outcome of the test.

The possibility of finding differences in students' ability within the same level of ESL proficiency should also be taken into consideration. We know that no one person is the same physically and mentally. The five levels of ESL students in the control group (ESL 1113, ESL 1123, ESL 1133, ESL 1162, and TESOL II) who were selected at random may have by chance a lower ability level within the selected levels and as a group when compared to the students in the experimental group.

The results of the tests are all tied up in one way or the other with factors cited earlier in the discussion of the findings. Trying to explain the test results in facts and figures alone is not enough, for external factors which may unknowingly influence test results cannot be quantified, and sometimes even words are not enough to explain the phenomenon.

Conclusions

In this study, the results indicate the extreme importance of perceiving the role of videotape as a tool for improving listening comprehension of a second language. Videotape would provide the necessary preparation for students learning a second language, especially in a geographical region where native speakers are not readily available.

Recommendations

Through the leadership of universities and colleges, it is recommended that preference be given to second language programs on listening comprehension using videotape.

Elementary and high school teachers, principals and ESL program planners in countries where native speakers are not readily available should be made aware of the findings of this study so that educational leaders can plan their second language programs and take into account the importance of videotape in formulating such programs.

For further research on listening comprehension using videotape, it is recommended that this study be replicated using a larger sample which should include other universities, community colleges, and teachers colleges which offer courses in English as a second language as part of their academic program.

Prior to replication of the test, it is recommended that a placement test for listening comprehension using videotape be given to students before they are selected as testees. The test would ensure the researcher of getting students of equal English ability in both groups by dividing them according to their placement test results.

It is also recommended that subjective questions like the "supply the answer" questions in question 10 be replaced, for they proved to to be too difficult for both groups as shown in the results of the study. Completion questions which require the students to produce only a partial answer instead of a full answer are recommended as a replacement for the "supply the answer" questions.

To eliminate the control group's poor attitude toward the audio, it is recommended that this study be restructured by having each group assigned to sit for both videotape tests and audio tests alternately.

It is recommended that funding for further research on listening comprehension using videotape with nonnative speakers be made available by universities and other institutions which may benefit from the results of the study.

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Appendix A

Script for Test 1

The Pentagon says that laser beams will one day play a vital role in our national defense. Jeff Kayman has a progress report on the race to put weapons in space.

This Air Force film, made earlier this year, demonstrates the ability of laser beam weapons fired from planes to knock down pilotless drones aircraft and faster air-to-air missiles. In each case the laser was fired from a relatively short distance.

The Department of Defense has recommended to the President a space-based laser defense against Soviet intercontinental ballistic missiles. That system would not be ready until the year two thousand at the earliest. It would cost at least twenty billion dollars in research and development alone because so much still has to be invented including a power source that would let the lasers function effectively from space.

An effective ICBM defense system called "High Frontier" does not use lasers and according to its developers, High Frontier could be deployed and be able to stop eighty percent of the soviet first strike at a fraction of the laser system's cost in only twelve years. The creator of the High Frontier concept, retired Army General Daniel Graham said President Reagan is being pulled in two

directions as he moves toward a decision on the so called "Star Wars" defense project.

There is a school of thought that says no defense is any good unless it pays, and they are the people that make noises about how it would cost hundreds of billions of dollars and take twenty years of research to, possibly, get to that capacity. The other school of thought says what you want is the best defense you can get... as that is good enough to deter the Soviets from ever making the first strike against the United States.

Retired U.S. Navy Admiral Gene Lurocque commanded an American nuclear fleet. Now he runs the privately supported Center for Defense Information. He charges that the President's Star Wars defense plan would encourage the Russians to attack before the ballistic missile defense system is operational.

"I think President Reagan has one goal in mind, and that is to reduce the potency, the power of the Soviet Union to the point where it will be ineffective in the world, and he is going to do it as best he can either economically or if he can't, I think President Reagan' probably will even be willing to resort to nuclear war."

In recent speeches to the United Nations General Assembly and to the Japanese Parliament, the President

has declared that a nuclear war cannot be won and must never be fought. But earlier, Mr. Reagan suggested that a tactical nuclear war could be fought in Europe and won.

Appendix A.01

Instructions for the Tests

Answer all questions. If you cannot answer a question, go on to the next one and come back to it later.

1. For questions 1 to 7, cross out the correct answer given in a, b, or c.

   EXAMPLE:

   The Air Force film was made _____.

   (a) not too long ago

   (b) about a decade ago

   (c) only very recently

2. For questions 8 and 9, cross out the letter T for true or F for false in the spaces provided.

   EXAMPLE:

   T F The President did contemplate fighting a tactical nuclear war in Europe for he said that it can be fought and won.

3. For question 10, write down your answer in the blank spaces provided.

   _____

   _____

Appendix A.1

Questions for Test 1

1. What is the main point of the documentary?

   The main point is about _____.

   (a) the Star Wars defense system against a Russian nuclear attack on the United States

   (b) the United States plans to deploy laser beams as a defense against a Russian attack

   (c) the best possible defense plan to be adopted by the United States against a Soviet nuclear missile attack

2. The Air Force film demonstrates _____.

   (a) that an aircraft can be shot down by laser beam weapons placed in space stations called High Frontier

   (b) the ability of laser beam weapons fired from planes to knock down pilotless drones aircraft and air-to-air missiles

   (c) the ability of high frontier weapons to knock down pilotless drones aircraft and missiles

3. The creator of High Frontier is _____.

   (a) Admiral Gene Lurocque

   (b) the U.S. Defense Department

   (c) General Daniel Graham

4. The Air Force film was made _____.

   (a) not too long ago

   (b) about a decade ago

   (c) only very recently

5. _____has to be invented for the laser beam to function effectively in space.

   (a) A power station

   (b) A docking station

   (c) A landing station

6. What are the differences between laser beam defense and the high frontier concept?

   The differences are their _____.

   (a) cost, effectiveness, and length of time until each can be deployed

   (b) concept and acceptance by the President and Defense Department of the United States

   (c) vulnerability and potential threat to the Russian defense system

7. What are the charges made by Admiral Gene Lurocque against President Reagan?

   (i) the President is a war-monger

   (ii) President Reagan wants to reduce Russian power so as to make it ineffective throughout the world

(iii) the President is not willing to wage tactical nuclear war in Europe for fear of an all out war against the Russians

(iv) the President wants to reduce Russian power by willing to wage an all out war against the Russians

(a) i, ii, and iv (b) i, and ii (c) i, ii, and iii

8. T The President did contemplate fighting a
F tactical nuclear war in Europe for he said that it can be fought and won.

9. T The advantage of the high frontier defense system
F is that it can stop a Soviet first strike by destroying all of the enemy's missiles.

10. How can the high frontier defense system be a disadvantage against Russian first strike?

_____

_____

Appendix B

Script for Test II

The early Peruvians exploited the harvest of the sea so successfully that they too, just as in the Middle East, could settle in one place in large numbers. The people of the coast still live off the sea, and many of their techniques have altered little in the last five thousand years. Here they have caught sand-crabs in a net bag with its mouth suspended on an open frame. It's a very ancient technique and very efficient. This haul took less than ten minutes. Many of the shellfish remains found in ancient sites were probably caught like this.

The modern fishermen of Juan Chetto are carrying on a tradition that stretches back several thousand years. The nets may now be made of nylon but the basic techniques remain the same. We know that because the knots the modern fishermen use are identical to the ones found on ancient fishing nets. Here's one of them that has been preserved for thousands of years in the dry Peruvian conditions, and these equally old bone fish hooks showed that man was fishing with lines as well as with nets.

The modern fishermen use these boats made of reed bundles, here drying out on the shore. We know this is also a very ancient design because they are represented in merchant pottery from this area which is a thousand years old.

The fishermen of Juan Chetto also use another resource that goes back to the prehistory of the area. Even on this desert coast, it is possible to find sufficient fresh water for small sunken gardens to flourish only a few yards from the crushing surf. To the present day Peruvians, as they must have been to their ancestors, these gardens are crucial. They are dug down for about six feet until fresh water is reached. It's drinkable, though slightly brackish. Here they grow the "tottora" reed from which they fashion their reed boats for fishing.

On the coast where there is no tree, reed boats are the only possible kind. There is enough water here to drink but not enough to grow sufficient crops to feed the population. A large population in the desert could only be fed by exploiting the resources of the sea; reeds for boats, cotton for nets, and girds for fish floats.

The deep ocean currents here create an upswelling which carries to the surface a tremendous concentration of nutrients and it is this that supports the billions of microscopic plants that in turn support a food chain of unparalleled variety and magnitude.

There wasn't one fixed pattern for settling down. It happened in different ways depending on local conditions, based on the sea here in Peru, on cereals in the Middle East and Africa, on rice in the Far East, but whatever

the basic resource that began it all, once it occurred, it always led to profound social changes. The unregulated life of the hunter-gatherer was replaced by hierarchies and bureaucracies of kings and priests, by all the trappings of the centralized state. Settling down quickened the pace of change. Animals were domesticated and pressed into the service of men. The invention of the plow greatly increased the efficiency with which the people could sow and grow their crops. With domestic animals, there was now a permanent supply of fresh meat and milk in one spot. The hunter became a fulltime farmer.

Appendix B.1

Questions for Test II

1. What is the main idea of the documentary?
   The main idea of the documentary is centered around _____.
   (a) the ancient civilization of Juan Chetto in Peru
   (b) a Peruvian fishing settlement of Juan Chetto in Peru
   (c) the hunters of Juan Chetto in Peru

2. The main occupation of the people of Juan Chetto is _____.
   (a) farming
   (b) fishing
   (c) gardening

3. There is enough drinking water in Juan Chetto but _____.
   (a) not enough for gardening
   (b) not enough for agriculture
   (c) not enough for domestic use

4. The basic resources that led to the profound social changes in the Middle East and Africa and in the Far East are _____.
   (a) fish and rice
   (b) oats and cereals
   (c) cereals and rice

5. Men first used the hooks and lines to catch fish _____.

   (a) a century ago

   (b) during the middle ages

   (c) several thousand years ago

6. Is there much difference between the ways the modern fishermen of Juan Chetto catch fish than the ways of their ancestors five thousand years ago?

   (a) Yes, there is, for today the fishermen of Juan Chetto catch fish by using modern nets pulled by boats.

   (b) No, there isn't, except that the modern fisherman of Juan Chetto use nylon nets to catch fish.

   (c) Yes, there is, for today the fishermen of Juan Chetto use modern boats and nets to catch fish.

7. Agriculture in Juan Chetto developed in the service of fishing by cultivating _____.

   (i) reeds for boats

   (ii) cotton for nets

   (iii) animals for fats

   (iv) girds for fish floats

   (a) ii and iii (b) i, ii, and iv (c) i and iii

8. T The sea of Juan Chetto consists of upswelling
F currents which kill all the plants and the fish food in the sea.

9. The unregulated life of the hunter-gatherer was replaced by hierarchies consisting of kings and priests.

T

F

10. How did the hunter become a full-time farmer?

_____

_____

Appendix C

Script for Test III

Skylab was the next manned space flight. Launched first was a two-story orbital workshop. Then the first of three, three-men crews departed to meet, join, and began living in, the orbiting laboratory. Those crews would stay twenty-eight, fifty-nine, and eighty-four days respectively. One of the major objectives was to find out if astronauts could physically withstand extended stays in space and continue to do useful work there. The answer was a resounding "yes".

Experiments in astronomy, earth resources observation, materials processing, and crystal growth, all proved highly successful. Then ASTP, Apollo-Soyuz Test Project, a joint endeavour between the Soviet Union and the United States, and the mission called for a mutual docking and crew exchange to develop the necessary equipment for international space rescues.

Before, during, and after Apollo, skylab and ASTP, NASA's unmanned planetary programs were giving scientists exciting new glimpses into the history of the solar system from early explorers to the infra-red astronomy satellites. Seven Mariner spacecraft flew by the

planet Mars, Venus, and Mercury sending back a stream of pictures and data.

Ten Pioneer spacecraft did likewise, including Jupiter fly-bys and probes through the atmosphere of Venus. Pioneer Ten became the first man-made object to leave the solar system.

Atmosphere Physics, Astronomy, Meteorology, and Geodesy, these are just a few of the scientific disciplines studied by dozens of Explorer class orbiters through the years.

Hundreds of sounding rockets have probed the atmosphere above where balloons are effective but below the area that satellites fly. Bio-satellites were sent aloft to answer basic biological questions. Will cells divide normally while weightless? How does zero G affect plant growth? Would radiation and weightlessness be a hazard on long duration space flights? Everything from plants to primates were orbited aboard bio-satellites to find out.

Appendix C.1

Questions for Test III

1. The documentary is about _____.
   (a) NASA's space program
   (b) the Apollo-Soyuz Space Project
   (c) Pioneer Ten's flight out of the solar system

2. The three-men crews departed to meet, join, and begin living in _____.
   (a) the Mariner spacecraft
   (b) the orbiting laboratory
   (c) the Pioneer spacecraft

3. The longest stay in orbit for the three-men crews was _____.
   (a) fifty-nine days
   (b) eighty-four days
   (c) one hundred and twenty-eight days

4. Astronauts proved that _____.
   (a) they can withstand extended stays in space and do useful work there
   (b) Pioneer Ten can probe the solar system giving scientists exciting glimpses into the history of our planets
   (c) scientific disciplines studied by dozens of Explorer class orbiters can be useful

5. Dozens of Explorer class orbiters studied _____.

   (a) everything from primates to plants

   (b) the atmosphere of Venus, Mercury, Mars, and Jupiter for astronauts to live there

   (c) Atmosphere Physics, Astronomy, Meteorology, and Geodesy

6. NASA's unmanned planetary program gave scientists exciting new glimpses into the history of our solar system by sending _____.

   (a) a mission to dock with Soyuz to probe the planets of Mars, Venus, and Mercury

   (b) infra-red and bio-satellites to probe the planets Mars, Venus, and Mercury

   (c) seven Mariner and ten Pioneer spacecraft to probe the planets of Mars, Venus, Mercury, and Jupiter

7. What is true about the Skylab?

   (i) It was a two-story orbital workshop

   (ii) It was an orbiting laboratory

   (iii) It was a project which called for link-up with Soyuz

   (iv) It was meant for astronauts to stay in, and work there for over an extended period of time

   (a) i and ii (b) i, ii, and iii (c) i, ii, and iv

8. T Everything from primates to plants were orbited
F abroad the orbiting Skylab.

9. T The ASTP called for mutual docking and crew ex-
F change between the Soviets and the U.S.

10. What kind of information are the bio-satellites expected to give to the scientists?

_____

_____

Appendix D

Script for Test IV

Sunrise on the Equator. For a few brief moments, the snows of the great volcano Catopaksi blush with pink before turning to gold. The sun climbs swiftly. To the East far, far below, beneath the counter pane of cloud, the mighty Amazon rose through a stifling world of tropical heat.

Four miles above strides a great avenue of volcanoes locked in ice, caught in one of the severest climates in the world. Here men once sought El-Dorado, blind to the jewels lying at their feet -- crystals of frozen dew.

Dawn breaks the spell and life awakes. A humming bird at fourteen thousand feet. The "chimbrel-rockso-hill-star" warmed by the first rays of the sun. Stretching restores muscles that have chilled to half of their normal temperatures during the bitter night. Wild luken leaves survive a frosting of ice with a defense of little hairs.

Already the crystals are melting. A warm breeze soon clouds the slopes of the volcano Antisana. The ice-cap, hundreds of feet thick, mocks the heat of the tropical sun. But on its lowest edge, within an hour of dawn the frost has lost its grip. The stream-bed, dry throughout the night, suddenly begins to sparkle. Today, as every day, the waters of the Amazon once more set off on their

journey to the sea.

Across the icy plateau called the Paramo, a thousand streams start along their way to join the brimming river. The wind begins to climb the lava cliffs and from its crag, the condor launches into clouds hanging on wings ten feet across.

The "chimbrel-rockso-hill-star" can nest at fifteen thousand feet, higher than almost any other bird. To keep such a tiny ball of feathers warm needs energy and the birds depend on the Tukiracca flowers which yield nectar abundant in sugar. Noisy groups of envion palders flock down to feed along the melting marshes. Beyond towers a third volcano, Kiambay. Wild horses, first brought to the Andes by Pizzaros Kantisdaros ....

The condors are hungry too, searching and soaring in a silent sky. They can go for weeks without food, but today, an animal's misfortune has brought the promise of a meal. A wild horse has succumbed to age and infirmity and the giant candor's turn has come. A mountain cara-cara, a kind of hawk, may be hungry too, but no bird quarrels with the condor.

On the edge of the lava flow stands the condor's mate and on a cold ledge, their chicks wait to be fed. The male has now eaten his fill. Beneath the yellow patch on

its breast, his crop is bulging with food. He walks uphill for an easier take-off. The cara-cara has his chance. The condor flies farther, past the full moon itself.

On the narrow ledge whitened with droppings, the chick begs for food. Swaddled in a warm muff of feathers, it braces itself from falling off the nest. The adult regurgitates food directly into the chick's throat. In comparison, the cara-cara chicks feed almost daintly.

Appendix D.1

Questions for Test IV

1. What is the main point of the documentary?

   The main point of the documentary is about _____.

   (a) wildlife on the Andes and the Andean volcanoes

   (b) the Amazon, her tributaries and her vegetation

   (c) the Andes--their beautiful surroundings, their climate, and their wildlife

2. The "Chimbrel-rockso-hill-star" is _____.

   (a) a humming bird

   (b) a large bird

   (c) a kind of a hawk

3. The El-Dorado was once sought by _____.

   (a) the wild horses

   (b) men

   (c) envion palders

4. The spring bed began to sparkle _____.

   (a) within an hour of dawn

   (b) when the humming bird stretches its wings

   (c) when dawn breaks the spell

5. The cara-cara is _____.

   (a) a kind of bird with tiny feathers

   (b) an envion palder

   (c) a kind of a hawk

6. The condor _____.

   (a) lives on flesh of other animals

   (b) lives on the Tukiracca tree

   (c) lives on nectar abundant in sugar

7. The three volcanoes named by the narrator are _____.

   (a) Catopaksi, Paramo, and Antisana

   (b) Catopaksi, Antisana, and Kiambay

   (c) Paramo, Kiambay, and Antisana

8. T The horses were brought to the Andes by the
   F Amazonians.

9. T The condor can withstand hunger and can go
   F without food for as long as a week.

10. How many kinds of "jewels" are there found in the Andes? And what are they?

_____

_____

Appendix E

Script for Test V

Six Surveyor spacecraft made soft landings on the moon over a two-year period. A robot arm dug a trench. Lunar soil was like wet sand. Men and equipment could safely land there.

Panoramic views like these are assembled from hundreds of individual photographs. Communication via satellite exploded into a whole new industry. That first live inter-continental transmission by Telstar One was just the start. Relay, designed to transmit television, telephone and high speed data. Syncom, for the Olympic coverage from Tokyo, and Early Bird One, all were follow-ons to previous research and development.

Since rendezvous, docking, and having astronauts work outside the spacecraft were critical to lunar missions, NASA began Project Gemini using the Mercury capsule as a model and the Gemini spacecraft was enlarged to hold a two-man crew. Gemini would provide design answers for the upcoming Project Apollo ... and who could ever forget that spectacular first walk in space made by astronaut Ed White.

Ten times, pairs of astronauts flew into orbit, walking in space, rendezvousing, and docking; Gemini had blazed the trail for Project Apollo, the three-men space-craft that would carry astronauts to the moon.

More than eight years were poured into designing, building, testing, and preparing astronauts, rockets and spacecraft for the first lunar landing. (Here's a visual look-back...)

In 1967, tragedy struck. The nation mourned the loss of the crew that would have flown the Apollo spacecraft on its maiden voyage. Astronauts Gus Grissom, Ed White, and Roger Chaffe died in a flash fire as they were conducting a pre-flight test on the launch pad.

The manned-flight schedule was delayed eighteen months as the command module underwent redesign. While these changes were being made, the parts and pieces needed to assembly the Giant Saturn Five moon rocket came together at the Kennedy Space Center, Florida.

Everything associated with the Saturn Five was huge. The rocket itself, the building where it was assembled, and the crawler transporter that carried it to the launch pad. The fully loaded Apollo Saturn Five was three hundred sixty-three feet tall. Its main engines alone generated one hundred sixty million horsepower and its fuel pumps pushed fuel to the engines with a force of thirty diesel locomotives. As Saturn Five lifted off the launch complex Thirty-Nine for the first time, it weighed more than twenty-eight hundred tons.

The pace quickened. Starting with Apollo Eight,

every Saturn Five launch had a three-man crew. Two days before Christmas in 1960, astronauts Borman, Lovell and Anderson became the first humans to pass out of Earth's gravatational control and into that of another body in the solar system...the moon!

The hardware to travel to the moon had worked well and the landing sites looked good. Our earth seemed small and fragile hanging in the vastness of space. This view of ourselves from lunar distance would change the way we think about earth for all times. It raised profound questions, especially those associated with the earth's finiteness and unlimited resources.

The next two flights, Apollo Nine and Ten, were continued dress rehearsals for the first lunar landing. All systems were indeed ready. Astronauts Neil Armstrong, Edwin Aldrin, and Michael Collins would make the historic journey. Next stop.....Tranquility Base! .....

Across the country and around the world the Apollo crews were welcomed back as heroes!

Appendix E.1

Questions for Test V

1. What is the main idea of the documentary?

   The main idea of the documentary is about _____.

   (a) NASA's preparation to land American astronauts on the moon

   (b) Gemini and Mercury projects to send men around the moon

   (c) the rights of putting the first American on the moon

2. The lunar soil was like _____.

   (a) wet paint

   (b) wet sand

   (c) wet cement

3. The first people to venture into the moon's gravatational control were _____.

   (a) Lovell, Borman, and Anderson

   (b) Michael Collins and Edwin Aldrin

   (c) Lovell, Borman, and Michael Collins

4. The flight took place _____.

   (a) on Christmas Day, 1967

   (b) two days before Christmas, 1968

   (c) during Ed White's space walk

5. Some of the space feats accomplishd by Project Gemini were _____.

   (a) flying into orbit, walking in space, rendezvous- and docking in space with a two-man crew on board

   (b) flying around the moon, landing on the moon, and making the first space walk while in orbit

   (c) landing on the moon with a three-man crew and splashing into the Sea of Tranquility

6. The Mercury capsule was able to carry _____.

   (a) a three-man crew

   (b) a two-man crew

   (c) a one-man crew

7. What is associated with the Saturn Five large size?

   (i) the rocket

   (ii) the crawler transporter

   (iii) the assembly building

   (iv) the weight of Saturn Five

   (a) i and ii (b) i and iii (c) all of the above answers

8. _T_ Neil Armstrong, Lovell, and Edwin Aldrin made
   _F_ the historic journey to the moon and they landed at Tranquility Base.

9. _T_ NASA was successful in landing men on the moon
   _F_ but had trouble bringing them back to earth.

10. How does the earth look from the moon? And what question does it raise as the earth is seen from far above?

_____

_____

Appendix F

Script for Test VI

"The undisputed ruler of the Arctic, the polar bear, they have no natural enemies. They swim like dogs, using only their front legs. They hunt seals, fish, birds, and small mammals. This mother with her cubs have no fear of men, never having seen one."

"These cubs' favourite pastime is riding 'bear-back'. Their mother warms and suckles them through the long Arctic nights until they are two feet long, about twenty pounds and ready to face the world."

"Stalking a female with cubs can be very danger-ous business. The Eskimos are reluctant to go, but Seal-man insisted. They took two dogs with them for protection. Sealman never carries firearms and asks the Eskimos not to shoot no matter what happened."

"Nanook of the North is especially dangerous when she is protecting her cubs. She picks up a strange scent. The danger is unmistakable. Time to release the dogs ..."

"The mother bear finds an ideal position to de-fend her cubs and Sealman feels they must be left in peace."

The far reaches of the Arctic yielded some wonder-ful pictures, but now it's time to journey westward from the Canadian Arctic in quest of caribou, the Arctic deer."

"It's late Autumn. The Arctic wasteland begins to put on a white winter coat. By the last days of September, winter's approaching. The Arctic winds begin to sweep over the treeless Tundra and that's the cue for the caribou to start their long migration southward. Some of them travel thirteen hundred punishing miles across the ice to the sheltered wooded forest of their winter feeding grounds. The hoof of the caribou is well adapted for their long journey over snow, ice, and marsh. At first the caribou travel in small herds. But as they meet others on the way, they form a great regiment on the march."

"October, and the call of the wild, is migration. Go south, my feathered friends, for here soon blows a wind fit only for seals and polar bears."

"A million members of a thousand species wing their way southward to warmer climes. The continental United States, a haven for many is this wilderness area, the Florida Everglades, a protected refuge, the winter playground of the wild winged tourists from far away places. For a chosen few, Mother Nature had created a winter vacation in Florida, all expenses paid. Below, the favoured breeding ground of the wood-ibis. In these mangrove thickets of marshlands, Einch Sealman again stopped with his camera. His companion is Fred Kuslow who knows

the Everglades like the back of his hands. To greet each other, the wood-ibis open their beaks, 'welcome home'."

Appendix F.1

Questions for Test VI

1. The main point of the documentary is about the _____.

   (a) polar bear, the caribou, and the wood-ibis

   (b) Tundra, the Everglades, and the Arctic marshes

   (c) the Eskimos, the Tundra, and the Artic deer

2. The polar bear hunts _____.

   (a) dogs, caribou, and Arctic deer

   (b) seals, fish, birds, and small mammals

   (c) Arctic deer, dogs, and Eskimos

3. The polar bears swim like _____, using only their front legs.

   (a) the arctic deer

   (b) the caribou

   (c) dogs

4. The Eskimos are reluctant to go because _____ can be dangerous business

   (a) hunting caribou

   (b) stalking polar bear

   (c) stalking Arctic deer

5. The last days of September mark the approaching of _____.

   (a) Summer (b) Winter (c) Autumn

6. The caribou start their migration when _____.

   (a) the winds begin to sweep over the treeless Tundra

   (b) they start to meet others on their way westward

   (c) the wood-ibis greet each other with their beaks

7. What is true about the caribou?

   (i) The hoof of the caribou is well adapted for long journeys across the snow, ice, and marsh.

   (ii) The caribou is also known as the Arctic deer.

   (iii) Small herds of caribou meet to form a great regiment on their march southward.

   (iv) The caribou travel southward to protected refuge called the Everglades.

   (a) i, ii, and iv (b) i, ii, and iii (c) i and ii

8. T / F The Everglades in Florida is described as a haven for winged birds from far away places.

9. T / F The polar bear is afraid of men because men are strange to them and they have never seen them before.

10. Why is the mother bear dangerous? And when is the mother bear considered most dangerous?

_____

_____

Appendix G

Script for Test VII

Pearl Harbor, Hawaii...the name was a battlecry for a generation. The pride of the American Pacific Fleet still rode in anchor here. They call that stretch "battleship row". The California was anchored just down there, and then the Oklahoma and the Maryland. And out there... the Tennessee and the West Virginia, and then, the Arizona. That gleaming white monument marks where she floated and where she still lies...just beneath the water. Oil still rises from the underwater tomb of over two thousand sailors. They were the first American victims of World War Two.

On December sixth, 1941, Pearl Harbor seemed impregnable. It was home-base for nine battleships and three aircraft carriers, but it was a peace-time fleet. Most ships returned to port on Friday so that the crews could spend weekends on shore. For some, it was a nine-to-five job despite the threatening stance of the Japanese in the Pacific.

For U.S. Naval Intelligence, the location of the Japanese fleet was a mystery. It was known that their task force, including six aircraft carriers, had left Japan in late November. To find them a search was concentrated in the most likely area, over five thousand miles away in the South China Sea. The Japanese at that moment, however,

were rapidly approaching Pearl Harbor. They had escaped detection during their voyage across the Pacific by maintaining strict radio silence. The mission assigned to the Japanese Navy was determined a month before in Tokyo. The task force was to attack Pearl Harbor on Sunday morning December seventh, 1941.

For peace-time sailors, a week-end pass in Honolulu was a ticket to Paradise. For them life was good. They didn't know that it was the final day of an innocent age.

Beyond the horizon, the Japanese fleet was approaching, but in Pearl Harbor no alarms disturbed the pleasant Saturday evening. Top naval and army commanders had nothing more important planned for Sunday than a game of golf.

By 6:00 a.m. the Japanese attack force was two hundred miles from Pearl Harbor. For the pilots, it was a proud moment. In chronicles, documentaries, and newsreel films, never before had such an enormous airbourne armada been launched at sea. A fatal mistake, however, had already been made by the Japanese. Fearful of counterattack, they were ordered to make only one raid; a second, potentially more devastating attack, was forbidden by Tokyo.

In Honolulu, the only visible precautions being

taken were at Hickam Field, where the primary concern was defense against sabotage. The planes were grouped on the runways to make them easier for the Americans to guard and unfortunately for the Japanese to destroy. By 6:15, the entire Japanese attack force was airborne.

At the same time, a Japanese submarine was trying to enter Pearl Harbor. It was detected over an hour before the attack began. Ironically, the first shot fired at Pearl Harbor came from an American destroyer. The commander immediately reported the incident to his superiors, but the message was delayed by the chain of command.

The first wave of Japanese bombers was detected at about seven o'clock by a novice radar operator. His report, however, was discounted by his supervisor. No one in Hawaii apparently expected anything unusual to happen that Sunday. To military personnel, the drone of the Japanese planes aroused curiousity but not concern. The frightening fact of war was not accepted until the first bombs began to fall. Within the first few minutes, the entire Pearl Harbor Air Force was all but destroyed on the ground. The Navy had considered Pearl Harbor a safe anchorage; its shallow water a protection against torpedo attack. The Japanese, however, had modified their torpedoes especially for this occasion. For about two hours, the attack continued. In the end, eight battleships

would be seriously damaged or sunk and over two thousand Americans would be killed.

Appendix G.1

Questions for Test VII

1. What is the main point documented in this tape?

   The main point documented is _____.

   (a) the Japanese attack on Pearl Harbor on December seventh, 1941

   (b) the beauty of Pearl Harbor and the American Pacific Fleet in Honolulu, Hawaii

   (c) the Japanese preparation for war against the United States Pacific Fleet at Pearl Harbor

2. For a generation, the American battle cry was_____.

   (a) battleship row

   (b) Pearl Harbor

   (c) Hikam Field

3. The first person to detect Japanese bombers approaching Pearl Harbor was _____.

   (a) the commander of the American destroyer

   (b) the American Naval Intelligence

   (c) the novice radar operator

4. The Japanese task force left Japan _____.

   (a) in late November

   (b) in late October

   (c) in late September

5. At six Sunday morning,December seventh, 1941, the Japanese attack force was _____.

   (a) 200 miles off the coast of Hawaii

   (b) in the South China Sea

   (c) in the middle of the Pacific

6. What was the fatal mistake made by the Japanese?
   The fatal mistake made by the Japanese was _____.

   (a) to make only one raid on Pearl Harbor because a second more devastating raid was forbidden for fear of American counterattack

   (b) to make only two raids on Pearl Harbor for fear of American destroyers making a counterattack on their fleet

   (c) to make an attack from aircraft carriers, for they were detected by American destroyers patrolling the seas

7. Why was the frightening fact of war not accepted by the Americans until the first bombs began to fall?

   (i) No one in Hawaii apparently expected anything unusual to happen on that particular Sunday, December seventh, 1941.

   (ii) Pearl Harbor was considered a safe anchorage for American battleships.

   (iii) Pearl Habor's shallow water was protection against

any torpedo attack.

(iv) Pearl Harbor as impregnable, was taken for granted.

(a) i, and ii (b) i, ii, iii, and iv (c) i, ii and iii

8. T The Japanese task force was not detected because
F they sailed from Japan at night and kept strict radio silence.

9. T The only precaution taken by the Americans at
F Pearl Harbor prior to the attack was at Hickam Air Force Base.

10. In what way or ways was the Japanese attack on Pearl Harbor a success?

_____

_____

Appendix H

Script for Test VIII

"What you see may surprise you, for in a wild world there is really no underdog, no loser. Everything that happened is designed for one purpose--to preserve life. It is a world which may disappear in our lifetime, yet one we need because it is our heritage too. Perhaps as we come to know these predators better, we will come to a better understanding of the most successful predator of all--man!"

"For a mediator, the business of living is complicated. There may be plenty to eat but try to catch it, which is exactly what it means to be a predator."

"To a bob-cat with two bob-kittens to feed, almost anything qualified as a meal - squirrels, rabbits, birds, mice, and fish. It is not often that trout ventures into shallow water, but a bob-cat's keen eyesight is not likely to overlook the possibility."

"Her twin kittens were born in the Spring and in the Fall they will leave her. But during the intervening Summer, the bob-cat does nothing else but find food for them. She is a good mother which, in the wilderness, means she is a vigorous and resourceful hunter."

"The snow-shoe-hare ducks as she passes. The hare has blundered into more trouble. The weasels are small but they are among the most aggressive hunters in nature. They

are also curious. The four pound snow-shoe-hare is not likely to let itself be the prey of a half-pound weasel. All predators have a great respect for the hare's hind legs. The weasel's flowing movement is clearly shown here in slow-motion. Its streamlined body has evolved during millions of years of chasing moles and rodents into their underground holes."

"Far above the wooded valleys, the bob-cat hunts for pikas, a small creature akin to the rabbit. Among the rock slides escape is easy, and they feel quite secure. To catch a pika, surprise and speed are essential. The alarm is sounded. In seconds the pika colony has scurried to safety, except for one which strayed too far. The 'all clear' sounds and the pikas returned to their work as if nothing had happened."

Appendix H.1

Questions for Test VIII

1. The documentary is about the _____.

   (a) bob-cat (b) snow-shoe-hare (c) pika

2. _____is the most successful predator of all.

   (a) The weasel (b) Man (c) The bob-cat

3. The twin kittens born in _____will leave their mother in Fall.

   (a) the Summer (b) The spring (c) the Winter

4. Being a good mother means the bob-cat _____.

   (a) hunts for food for her twins and herself

   (b) hunts for food for her twins but not herself.

   (c) hunts for food with her kittens

5. The bob-cat is said to have keen eyes, for it _____.

   (a) feeds on squirrels, rabbits, birds, mice and fish

   (b) can spot a pika in the rock slides

   (c) does not overlook the trout that venture into shallow water

6. All predators respect the hare, for _____.

   (a) it has a streamlined body that has evolved for millions of years

   (b) it has two powerful hind legs that can be used as a weapon when attacked

   (c) its flowing movement can catch a pika by surprise

7. What is true about the pika?

(i) To catch a pika, surprise and speed is essential.

(ii) A pika is a small animal of the cat family.

(iii) Among the rock-slides, the pika feels quite secure.

(iv) The "all clear" sounds and the pikas returned to their work as if nothing had happened.

(a) i, ii, and iii (b) i and iii (c) i, iii, and iv

8. T The business of living is complicated because the
F bob-cat eats almost everything.

9. T According to the narrator, "in a wild world there
F is really no underdog for everything that happens is designed to preserve life."

10. "It is a world that may disappear in our lifetime, yet one we need because it is our heritage." What does he mean by "our heritage?"

_____

_____

Appendix I

Script for Test IX

The B52 Stratofortress, an imposing name, an historic plane, long the backbone of the US manned-bomber force. Today, in this aircraft graveyard outside Tucson, you'll find many of the once proud old bombers wasting away in the Arizona Desert.

Just twenty-five years ago, these airplanes carried nearly all of America's strategic nuclear weapons, but as missiles have increasingly taken over that role, more and more B52s are brought here for retirement...an aeronautical junkyard with planes often being cannibalized for spare parts to keep the gradually shrinking fleet of active B52s flying.

Twenty years after the last B52 rolled off the assembly line, here at Edwards Air Force Base, the concept of a manned-bomber is discovering new life. Slowly evolving in an expensive often controversial aircraft, the B1-B

Compared to the old B52 it replaces, the B1 is as sleek as a jet-fighter, carries more bombs, is faster, harder to detect on enemy radar, and is more maneuverable.

The B1 is just the latest attempt at replacing the aging fleet of B52s, something the Air Force has been trying to do for twenty-five years, but the B1 has been on the drawing board for thirteen years, so long that some critics say..."advances in Soviet air defenses will soon

make it obsolete and that a new bomber, an even better bomber than the B1, is just around the corner."

Some even contend that in a missile age, the manned-bomber concept itself is a relic of the past. "Not so," according to General Lawrence Skantze, Air Force Vice-Chief of Staff, "the manned-bomber, first of all, is the type of system which you can launch and recall before you have to commit it...It is not the same as missiles... missiles, once you let them go, they are gone."......

It was a manned-bomber on a solitary mission in August of 1945 that ended the war decisively and changed the nature of warfare forever. It happened when the Enola Gay dropped the world's first atomic bomb on Hiroshima.

After World War Two, the Strategic Air Command's fleet of bombers became America'a principal nuclear strike force. Huge new B52s became the "Doomsday Machines" of SAC in the early 1950s. But even back then, the Air Force had begun the long search for a successor to the B52...a search which would lead them into partnership with the Rockwell Corporation. Marked first with failure, then success, and consuming billions of dollars along the way.

Rockwell's first design was a supersonic high altitude bomber called the B70. Only two were ever built.

Advances in the Soviet air defenses had made the B70 obsolete before it ever got into production.

The Air Force and Rockwell tried again. This time coming up with a new prototype, the B1. But in 1977, the B1 met the same fate as the B70. President Carter decided to scrap the B1, believing new less expensive missiles could do the same job. However, President Reagan disagreed and once in the White House delivered on his campaign promise to produce the B1.

The B1 bomber today is more than just a gleam in the test pilot's eye. Actual production is already on the way. Within a couple of years, at this massive assembly plant in Mohavi Desert, they'll be turning out B1s at the rate of about one a week. Then, finally, after twenty-five years of trying, Rockwell International will be producing a new strategic bomber.

This new upgraded version of the bomber, now called the B1B, is described by the Air Force as the most advanced bomber ever built. It's a complex maze of wires linking computers and controlling instruments which are packaged out of sight, deep within the B1 air frame. But critics charged that no matter how advanced its technology, the B1 will suffer the same fate as its predecessor, the B70...obsolescence, due to improved Soviet air defense technology.

Appendix I.1

Questions for Test IX

1. The main topic in this documentary is about the _____.
   (a) aging American manned-bomber, the B52, and its replacement, the B1
   (b) cannibalizing of the B52s for spare parts to help keep the shrinking fleet flying
   (c) once proud bombers wasting away in the Arizona Desert outside Tucson

2. Just twenty-five years ago _____.
   (a) the B52s carried nearly all of America's strategic nuclear weapons
   (b) the B1 carried nearly all of America' nuclear weapons
   (c) the missiles carried nearly all of America's nuclear weapons

3. The B52's were built at _____.
   (a) the Arizona Desert, outside Tucson
   (b) Edwards Air Force Base
   (c) the present aircraft graveyard

4. The B1 _____.
   (a) is sleek, faster, carries more bombs, harder to detect and more maneuverable than the B52

(b) is bigger, carries less bombs and cannot be detected on radar and less expensive than the B52

(c) is a sleek jet-fighter, faster, more maneuverable, and harder to detect on radar than the B52

5. The _____has been on the drawing board for thirteen years.

(a) B52 (b) B1 (c) B70

6. Critics opposed to the building of the B1 say that _____.

(a) the B1 is slow and obsolete compared to the Cruise

(b) advances in Soviet air defense will make the B1 obsolete

(c) the B1 can be launched and recalled before you have to commit it

7. What is true about the B52s or the "Doomsday Machines" as they call it?

(1) The B52 was the first manned-bomber which dropped the atomic bomb on Hiroshima

(ii) it was a huge bomber and was the main American nuclear strike force after World War Two.

(iii) The B52 was a supersonic high-altitude bomber

(iv) Advances in the Soviet defenses had made the B52s obsolete

(a) i and ii (b) ii and iv (c) i, ii, and iii

8. T Rockwell had first intended to replace the B52s
F with the B70 bombers.

9. T One of the reasons why the B1 came into being
F was because Congress passed the B1 budget without any resistance.

10. Why is the B1-B considered the most advanced bomber ever built?

_____

_____

Appendix J

Script for Test X

Defense analyst Gordon Adams said that the Carter decision to cancel the B1 was a smart one because the B1 was quite obsolete at that time. According to him, there was other technology more helpful for the mission.

He was talking about the unmanned Cruise-missiles. The low drones can be launched from aircrafts safely outside an enemy's borders. Harold Brown, the Secretary of Defense, who talked President Carter out of the B1, explains how the Cruise missile operates.

"They are much smaller, harder to see on the radar, and can fly even lower, closer to the ground than B52s or B1s...so we thought that the Cruise missile was a better idea than B1."

The Air Force agrees the Cruise missile is an important new weapon and plans to mount them on both B52s and the new B1s. But the Air Force argues that the Cruise missiles aren't enough. It also wants the flexibility of a manned-bomber that can sneak in under enemy radar and allow pilots to select alternate targets at closer range.

In the electronic age, bombers no longer have to fight their way through skies to reach enemy targets. The trick to penetrating enemy territory now is to avoid being detected by radar, and the Air Force has tried to

design the B1 to do just that. Its sleek silhouette makes the B1 appear one hundred times smaller on radar than the B52. B1 test-pilot, Colonel Shroeder explains how. "...the real reason is not to present a large radar return."

The B1 also incorporates some new futuristic electronic devices. "It's a smart system. It can look at all the signals that are coming from radars looking for the B1B. It can sort them out, tell you where they are, what the nearest threats are, it can tailor the power, it can put false targets out there, it can take the signals from the enemy radar, and send them back in such a way the radar either misses it or thinks it's in the wrong place."

That highly advanced technology is a major reason for the high cost of the B1. It was originally envisioned as a twenty-eight million dollar airplane, but now the price has jumped tenfold up to two hundred and eighty million dollars per bomber, easily making it the most expensive aircraft ever produced. The B1, in this year's Pentagon budget is the single biggest item, yet sailed through a budget-cutting Congress with little resistance. How? The answer may lie less in technology than in geography. The Rockwell Corporation, contractor for the

B1, has spread the work around.

"Rockwell is very proud of the fact that they have three to five thousand subcontractors and suppliers on the B1 program, and those subcontractors and suppliers are located in forty-eight states and some say in all but four Congressional Districts in the House of Representatives. As a result, of course, they have a fantastic network in Congress, and they use that network."

This is how it works. Here are the principal components of the B1, and this map shows the geographic spread of states where the plants which build them are located. This provides a web of broad legislative support which has helped fend off repeated attempts to kill the B1, but even with Rockwell's smoothing the way through Congress, the B1 has encountered yet another unexpected threat to its survival.

It began with a high level news leak in the heat of the 1980 Presidential Campaign. A top secret project to build a second, new bomber was disclosed. One called "Stealth." The Air Force believes Stealth will be superior to the B1. So difficult to detect on radar, this one is called the "Invisible Bomber." They want them both and planned to buy the Stealth bomber shortly after the B1 is deployed.

The Washington experts, who should know about

the Stealth Bomber, have vastly different views on it. First, the Chairman of the Senate Intelligence Committee, Senator Goldwater. "...I don't think we are going to have it for a long, long time."

"It's right on target. It can be deployed as the Air Force indicates. It will be in the early 1990s."

Senator Carl Levin leads the Congressional battle against the B1. "I don't think we can afford two bombers. I think we should go with our best one and it's clear which is the best one. The B1 is a second rate bomber because it won't be able to perform the penetrating function very well for more than a few years. The Stealth Bomber will."

Whatever the arguments about the Stealth Bomber, the fact remains that it's still on the drawing boards, while the B1 is here, now, and you can see it.

In this trim new bomber, you can also see a multi-billion dollar defense price tag attached to a plane which if critics are right, may be eligible for admission to the aircraft graveyard just a few years after it's deployed... obsolete, overtaken by either an improved Stealth Bomber or better Soviet air defenses. When it comes to war planes, advances in technology, like the desert winds, are relentless.

Appendix J.1

Questions for Test X

1. The main point is about the _____.
   (a) controversy over the B1's production and development
   (b) B70's production and deployment
   (c) the need for the Stealth Bomber's production

2. The Cruise missiles were a better idea than the B1's or the B52s because _____.
   (a) they are much smaller, harder to see on radar, and fly even lower, closer to the ground than the bombers
   (b) the Air Force agrees that Cruise missile is an important weapon and plans to mount them on the B52s and the new B1s
   (c) bombers no longer have to fight their way through skies to reach enemy targets as long as they can avoid being detected by radar

3. The major reason for the high cost of the B1 is due to _____.
   (a) its geography rather than its technology
   (b) its highly advanced technology
   (c) Congress, which does not cut on its spending

4. Rockwell has subcontractors and suppliers located in _____.

   (a) Congress, which supports and has helped to defeat repeated attempts to kill the B1

   (b) this trim new bomber, which has a multibillion dollar defense tag attached to the plane

   (c) forty-eight states except for some Congressional Districts in the House of Representatives

5. According to Senator Carl Levin, the B1 is a second-rate bomber because _____.

   (a) it won't be able to perform the penetrating function very well for more than a few years

   (b) the Stealth Bomber can penetrate enemy territory more effectively than the B1

   (c) the B1 will be obsolete, overtaken by either an improved new bomber or better Soviet defenses

6. The news about the Stealth Bomber was leaked _____.

   (a) when President Reagan was delivered to the White House

   (b) during the 1980 Presidential Campaign

   (c) when President Carter left the White House

7. The Stealth Bomber is _____.

(i) called the "invisible Bomber"

(ii) said to be better than the B1

(iii) now being assembled by Rockwell

(iv) still on the drawing board

(a) i and ii (b) i, ii, and iii (c) i, ii, and iv

8. _T_ One expert who is opposed to the Stealth Bomber

_F_ is Senator Carl Levin.

9. _T_ According to the narrator, the B1 will become

_F_ obsolete because of improved Soviet air defense technology

10. Given a choice between the B1 and the Stealth, which of the bombers would you choose? And why?

_____

_____