THE EFFECTIVENESS OF A SELF-INSTRUCTIONAL APPROACH TO TEACHING A COLLEGE FRENCH DICTION COURSE FOR VOCAL MUSIC STUDENTS

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DISSERTATION

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By

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

The "knowledge explosion" has placed a great responsibility upon education, not only in the public schools, but also in higher education. The rapid increase in material to be learned has been accompanied by an increase in the pupil-teacher ratio. Attention has been given to innovations in education in both the psychological aspects of learning and in the technological means of presenting the material. One innovation receiving considerable attention is that of self-instruction. Various programs and media are being studied to provide the student with the most beneficial opportunities to learn in depth, and in scope, at his own pace.

Statement of the Problem

The problem under consideration was the effectiveness of a self-instructional approach to teaching French diction in a college French diction course for voice students.

Purposes of the Study

The primary purpose of the study was to test a self-instructional approach to teaching a college French diction course to determine if it would equal or surpass in effectiveness a course taught by a traditional approach. The study

sought to provide a partial solution to the problems of the increasing student-teacher ratio in colleges, and of the individualization of teaching students who have various learning rates and backgrounds. Also, the study attempted to determine the effectiveness of the video-tape recorder (VTR) as a teaching aid for a self-instructional approach. If French diction can be taught effectively by VTR, it seems that the teaching of other language diction courses by VTR is a possibility. Furthermore, such courses on video-tape should prove themselves useful in learning-centers and in computer-assisted teaching.

Hypotheses

This study was designed to test the following hypotheses:

1. The scores of the students taught by a self-instructional approach will be significantly different on a rules in French diction test, from the scores of the students taught by a traditional method.

2. The scores of the students taught by a self instructional approach will be significantly different on a phonetic writing test in French diction, from the scores of the students taught by a traditional method.

3. The scores of the students taught by a self-instructional approach will be significantly different on a French diction in singing test, from the scores of students taught by a traditional method.

4. The mean score of students in a course taught by a self-instructional approach will be significantly different from the mean score of students in a course taught by a traditional method.

Definition of Terms

Some of the specific terms used in this study are defined as follows:

1. French diction refers to the correct pronunciation of the French language when singing.

2. Instant-replay television refers to the reversing of the video-tape to the desired point for immediate viewing.

3. Programmed instruction is defined as a series of stimuli designed to exert increasing control over a gradually developing behavioral repertory. Reinforcement derived from matching behavior to the stimulus requirement accomplishes the differentiation procedure. The frames of the program are discriminative stimuli anticipating probable courses of action on the part of the student and directing his actions by limiting the range of alternatives available to him. Remaining within the bounds results in reinforcement. The bounds narrow progressively to define the ultimate form of the new repertory.[1]

4. Self-instructional approach is a process which incorporates all, or part, of the principles of programmed

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[1]Edward J. Green, The Learning Process and Programmed Instruction, (New York, 1967), p. 125.

instruction. The necessary machines and instructions are made available for the student to gain the prescribed information with a minimum of assistance from the teacher.

5. Traditional method refers to the lecture-type teaching in which the teacher discusses rules of French diction, writes the phonetic symbols and demonstrates their sounds as applied to the French language in singing. French songs are assigned for the student to write phonetically and to memorize and sing in French. Tests on rules of French diction are given periodically.

Limitations

1. While singing the designated songs, the subjects were evaluated only for their ability to pronounce the French texts correctly.

2. The control group was limited to not more than twenty, since the effectiveness of teaching the traditional method in French diction decreases beyond the enrollment of twenty in a class. The optimum number for a French diction class is fifteen.[2]

3. Because of limited viewing facilities, each subject was assigned only two hours of viewing time each week.

4. Because of limited viewing facilities and viewing time, only twelve subjects were assigned to the experimental group compared with nineteen assigned to the control group.

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[2]Statement by Stephen T. Farish, Assistant Professor of Music, North Texas State University, Denton, Texas, March 1, 1968.

Basic Assumption

A basic assumption of this study was that a panel of three recognized vocal authorities could make an adequate evaluation of the French diction in the songs sung and recorded on audio-tape by the subjects.

Background and Significance of the Study

This study had as its basis both the psychological aspects of programmed learning and self-instruction, and the development of the technology by which programs are presented. The programmed approach in this study utilized multi-media techniques, such as the video and audio tape recorders.

Programmed learning is based on the tutorial or Socratic method of teaching by questions, and is combined with the Cartesian method of breaking down course materials into small pieces arranged in a hierarchical order. This method is quite different from the expository lecture techniques which lie at the heart of audio-visual teaching by sound film, television and the like.[3]

A program may assume many forms. However, in most forms there are three basic aids to the assimilation and retention of knowledge by the student: (1) presents information and requires frequent responses by the student; (2) provides

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[3]Charles I. Foltz, The World of Teaching Machines, (Washington, D. C., 1961), p. 3.

immediate feedback to the student, informing him whether his response is appropriate or not; and, (3) allows the student to work individually and to adjust his rate of progress to his needs and capabilities.[4]

There are two main schools of thought in programming. One is that of B. J. Skinner, whose programs are constructed by atomizing a discipline into its smallest pieces to form incremental learning steps. A step is the amount of mental work that a student must do in going from one question to the next. These questions called items or frames, contain single-sentence statements with an integral word or words left out which the student must supply. The student is actually writing his own textbook by filling in the blanks. By filling in the answers, called constructed responses, and comparing them immediately to the correct answer, the student learns a little at a time until he finally understands the concept involved and may move on to a more complex step. Skinner calls this process "augmenting." This is the Watsonian idea of conditioning, in which a high frequency of reinforcement lowers the aversive consequences of being wrong. One of the bases of Skinner's method of programming is the constructed response. It is his belief that the student is forced to think more, and learns more rapidly, when he has to write in the response rather than choose from a series

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[4]Cram, David, Explaining Teaching Machines and Programming, (San Francisco, 1961), p. 8.

of alternative answers. This step-by-step process of constructed responses is called "linear programming."[5]

Proponents of the second method are led by Norman Crowder. This group believes that a program should not be broken down into minutiae, but should be presented in larger logical units of a paragraph or more, each of which would explain some principle in its entirety. By this more classical method of teaching, a rule is stated and followed by a series of examples of this rule. The student would then be tested by a series of questions on the preceding materials. In the Crowder method of programming, the response takes the form of a choice of various answers, usually multiple-choice answers. Crowder contends that multiple-choice answers can be corrected (compared) and reinforced much more rapidly; and, that since speed of reinforcement is basic to the concepts of programmed learning, this is by far the better method of response. He suggests further that larger steps are necessary for the student to get a good grounding in the principles that underlie the rules learned.

The Crowder method of programming provides a continuous review and insures the mastering of points before the student proceeds to new material. To accomplish this, Crowder employs a technique known as "branching." There are two types of branching. For the student who does not at first

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[5]Foltz, op. cit., p. 16.

understand a particular point there is the backward branching or "wash back" technique. The student who selects a series of incorrect answers will be referred by the program to a remedial sequence of steps which will give him fresh approaches to the explanations of the material. After he has mastered the material, he will be led back to the main line of the program. Forward branching is for the bright student who readily and quickly grasps the material. This technique, also called "skip-programming" or the "wash ahead" technique, allows the student to skip over the additional steps covering material already mastered.[6]

Studies have been made which vary from a totally programmed, self-instructing type experience, to those that use programmed material to augment instruction. Other studies have used a particular technical device which may not use all of the principles of programmed learning.

The significance of this study lies in the fact that the student receives the French diction lessons via the VTR in fifteen-minute segments, and gains further instructions from an accompanying text. If adequate viewing stations are available, large numbers of students could receive the lessons by machine and text with a minimum of the teacher's time required. The reduction in price and size of video-tape equipment has made the teaching of a large number of students by this method

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[6]Foltz, op. cit., pp. 12-17.

possible. The value of diction courses can be seen, for example, when voice teachers can have students learn diction from the VTR course instead of taking valuable time in the voice lesson for diction work.

Several studies have been made utilizing various media to teach the French language, such as for grammar and vocabulary, but no study has been found that endeavors to teach the skill of diction for use in singing in the language. This study provides information concerning the potential of a self-instructional approach to teaching a college French diction course for vocal music students.

Procedures for Collecting the Data

In order to test the hypotheses stated in the study, students enrolled in Music 109F (French Diction) at North Texas State University were used as subjects. By chance assignment the class of thirty-one subjects was divided into a control group and an experimental group. The control group met for one hour twice each week with an instructor teaching by a traditional method. The experimental group was taught by the same instructor via video-tape recordings in fifteen-minute segments. Special instructional materials were prepared for both the experimental and the control groups. The content of the course was the same for both groups and is outlined in Appendix A.

At the second meeting of the class following registration, the subjects were assigned to the experimental and the control groups. The control group remained with the instructor to be taught by a traditional method. The experimental group was taken by an assistant to the room prepared for video-tape viewing, where an explanation was made concerning the nature of the self-instructional approach and of the use of the equipment. A schedule of viewing times was made for the hours which mutually fitted the subjects' schedules and the availability of the room, Monday through Friday. Individuals in the experimental group progressed as rapidly as they desired, or as their development of skills permitted.

In the control group the instructor presented the rules of French diction by stating the rule and demonstrating the sound involved. The students, first collectively, then individually, responded by imitating the instructor's model sound. An immediate feedback was given to the student regarding his accuracy of response. A written test on rules in French diction was given periodically, and was graded by the instructor. The rules were applied to the text of designated French songs. A test of phonetic writing was also administered and graded by the instructor. The ability to sing the songs in French was then tested by recording the performance of each student on audio-tape for evaluation by a panel of vocal authorities.

The experimental group took the course by viewing the pre-recorded lessons on the VTR. The lessons were presented in fifteen-minute segments by the same instructor that taught the control group. Two subjects studied the VTR lessons at one time by viewing the VTR. When two students viewed, one could give the other an immediate feedback as to the accuracy of his sound compared with the instructor's model sound. An individual could study alone by utilizing a mirror for viewing himself as he spoke and by listening to an audio-tape recording of the instructor's model from the VTR followed by the students response. When a subject in the experimental group felt that he had mastered a lesson, he requested the opportunity to take the appropriate test. Tests were the same or equivalent to those taken by the control group and were administered by an assistant. The instructor graded the written tests, and a panel of three vocal authorities evaluated the singing tests which were on audio-tape. A subject in the experimental group progressed at a self-pacing rate, except that all tests in the course had to be taken within the semester.

Procedures for Treating the Data

The procedure for treating the data consisted of a *t*-test of the difference between means of independent samples for each hypothesis. Means were computed from test scores of each group in the areas listed in the hypotheses, namely,

(1) the rules in French diction test, (2) the phonetic writing test, (3) the French diction in singing test, and (4) the total test scores of each group.

The hypotheses were accepted at the .05 level of significance.

CHAPTER II

RELATED LITERATURE

Introduction

The educational process, the goals for education, and the impact of change with its techniques and devices for improving the education enterprise, may cause an outside observer to think that education is preparing to embark on a permanent revolution. Such were the sentiments of some educators in 1962.[1] Apparently, in 1969 the early chapters of this "permanent revolution" in education are being written. At present, its nature and scope are not adequately defined, but one fact stands out clearly: Technology and curriculum development will play major roles.

LaGrone points out that

> Both the history and logic of curriculum development in any area clearly indicates that a new direction for a major curriculum change is dependent upon (1) new knowledge or the discovery of new relationships among existing knowledge, (2) advances in learning theory and the application of the theory to instructional activities, and (3) in most, if not all instances, advances in technology.[2]

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[1]Robert F. Bundy, "Computer-Assisted Instruction--Where Are We?", Phi Delta Kappan, XLIX (April, 1968), 424, citing Jerome Bruner, "The New Educational Technique," Revolution in Teaching, (New York, 1962), 1.

[2]Herbert F. LaGrone, "Teaching--Craft or Intellectual Process?", Forty-Fourth Yearbook, The Association for Student Teaching, 1965, p. 99.

Many of the advances in education have been precipitated by the needs of an ever increasing number of students and by a greater emphasis upon attention to the individual, his needs, his rate of learning, his interests, and his potential. The rapid expansion of knowledge is another challenge for curriculum and technological development. It is impossible to include all accrueing information in a curriculum, therefore, the selection of the pertinent, as well as the methodology for presentation, becomes a major factor in curriculum design.

To solve these problems, it is generally agreed that abundant research is needed immediately, but there are differences of opinion as to the type of research required, basic or applied. Ebel defines basic research, generally, as that which seeks eternal verities by means of carefully designed and well controlled experiment whose conclusions are rigorously tested for statistical significance. He states that "Applied research, on the other hand, refers to the collection of data that promise help in the solution of some immediate practical problem."[3] Ebel contends that

> Basic research in education can promise very little improvement in the process of education, now or in the foreseeable future. If this is true, and if the primary task of professional educators is to improve the process of education as much as possible, as rapidly as possible, they will do well to direct their efforts, not toward basic research on the conditions of learning or the processes of instruction, but instead toward applied research

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[3]Robert L. Ebel, "Some Limitations of Basic Research in Education," Phi Delta Kappan, XLIX (October, 1967), 81.

> designed to yield information immediately useful in the solution of contemporary educational problems.[4]

Ebel further believes that basic research in education can promise very little improvement in the process of education because its past performance is poor, the justifiable explanations of that poor performance call attention to serious basic difficulties that are not likely to be overcome in the foreseeable future, and the process of education is not a natural phenomenon of the kind that has sometimes rewarded scientific study in astronomy, physics, chemistry, geology, and biology.[5] Recently, Lamke wrote,

> . . . if the research in the previous three years in medicine, agriculture, physics, and chemistry were to be wiped out, our life would be changed materially, but if research in the area of teacher personnel in the same three years were to vanish, educators and education would continue as usual.[6]

In contrast to the applied research point of view, Cronbach, a proponent of basic research, argues that efforts to improve education on the technological level would be largely futile, and that significant improvement would come

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[4] Ibid., p. 81.

[5] Ibid., pp. 81-82.

[6] Tom Lamke, "Introduction," Review of Educational Research, (June, 1955), p. 192, cited by Robert L. Ebel, "Some Limitations of Basic Research in Education," Phi Delta Kappan, XLIX (October, 1967), 82.

only out of deep understanding of such basic elements of education as learning and motivation.[7]

The background and literature with which this study is concerned are classified in three general areas: (1) a brief history of programmed instruction, (2) advances in instructional media, and (3) pertinent research in languages.

A Brief History of Programmed Instruction

The history of programmed instruction has given attention, primarily, to devices rather than programs. The U. S. Patent Office granted a patent to H. Chard in 1809 for a device designed to teach reading. Halcyon Skinner developed and patented another device in 1866 to teach spelling. Maria Montessori patented a device in 1914 to train the sense of touch. Many people credit S. L. Pressey, a psychologist, with developing in the mid-1920's practical machines that could teach as well as test. Pressey's several versions were devices programmed for multiple choice tests, which revealed immediately to the student the correctness or incorrectness of an answer. If the student chose an incorrect answer the question remained, an error was tallied on a counter, and the student had to try again. Pressey believed that devices and programs of this kind could produce changes in the effectiveness of

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[7] Lee Cronbach, "The Role of the University in Improving Education," Phi Delta Kappan, XLVIII (June, 1966), 539-545.

instruction, but by 1932 he became discouraged with the lack of reception, and dropped all work for decades.[8]

Deterline states that the impetus that was lacking in the 1920's was ultimately developed by B. F. Skinner, an experimental psychologist, who is primarily responsible for the current industry and interest in teaching machines. The lack of enthusiasm for Pressey's machines was due to the cultural inertia and the inadequacy of the principles of learning as they were understood in the 1920's. This is not to say that psychologists now completely understand the learning processes, but the importance of the concept of learning as one of the cores of psychology has resulted in the development of many effective laboratory techniques for the study of learning both in humans and in less complex organisms. It was partly as a result of his extensive research experience that Skinner was able to apply the laboratory methods of producing learning to the development of a teaching machine very different from that developed by Pressey over forty years before.[9]

The Skinner theory supplied the idea of programming instructional materials that Pressey's machines needed. Self-instruction becomes possible as the teaching machine of some sort presents the student with an orderly progression of

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[8]W. Lee Garner, Programmed Instruction, (New York, 1966), p. 8.

[9]William A. Deterline, An Introduction To Programmed Instruction, (Englewood Cliffs, N. J., 1962), p. 10.

learning matter. For each item he has the opportunity to answer a question, solve a problem, or in some way demonstrate that he has acquired the information. He then promptly compares his reply with the correct response communicated to him by the machine. When he is correct, the machine so informs him and he may advance to the next item, which may be more complex; when he is mistaken, the machine advises him of his error and directs him to corrective action.

The stimulus-response theories, as set forth by Thorndike in 1898, are demonstrated in programmed instruction as the machine supplies the student with certain information, or clues, that aids him to respond accurately. This part of the item is known as the "stimulus." The "response" occurs as the student fills in the blank space contained in the item and checks it against the machine's correct answer. Lysaught says that:

> The stimulus-response procedure figured in the planning of teaching units and in educational experiences long before Holland and Skinner incorporated the principles of reinforcement theory in their first programmed learning course in 1958. One important difference, however, distinguished theoretical views from classroom applications. Whereas the stimulus-response theories, developed to explain the learning behavior of individual students, almost always dealt with groups of learners in practical applications of lesson planning, reinforcement theory and programmed learning re-emphasized the importance and uniqueness of each student's own learning pattern, and urged that the teacher act, as well as think, in terms of individualized instruction.[10]

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[10]Jerome P. Lysaught and Clarence M. Williams, A Guide to Programmed Instruction, (New York, 1963), p. 10.

Hence, programmed learning does not break completely from previous methods of teaching. It does make each learner's experience an individual affair, maintains a constant interaction between the student and its learning material, affects the stimulus by acquainting the student with only one item at a time and presents the total number of stimuli in sequence that leads to greater understanding. Programmed learning requires that the student understand each single point before he moves to the next one. This insures his understanding of the material if the program content has been adequate.

Programmed learning demands the selection of concrete goals before the construction of the program is begun. "It affords the best opportunity for individualized tutelage, for constant evaluation of a student's progress, and for unremitting review of the program's own effectiveness in achieving its educational objectives."[11]

Many of the early studies leave much to be desired in methods and controls, but they do give some indications as to the progress made. In 1934, James K. Little, an associate of Pressey, found that students profited noticeably when informed immediately of the accuracy of their response to individual test items. Although he used simple programs and the rudimentary machines available at the time, his was the first systematic study of the effect on learning of auto-instructional methods and devices. Ten years later the first

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[11] Ibid., p. 11.

experiment reflecting reinforcement theory was made. Douglas Porter concluded that in spelling pupils who used the programmed material and teaching machines achieved more than pupils taught by a conventional method. Holland reported the success he had with programmed material which he and Skinner employed in courses in behavioral psychology at Harvard University. He found that even by expanding the number of items in a program from 1400 to 1800, the number of mistakes by the students were cut in half, and the total time to complete the program was reduced.[12] Studies increased in the late fifties and the early sixties. Most of these verified the earlier generalizations about programmed learning, such as higher grades, fewer failures, and a decrease in the actual time spent in class by the students.

With the success of programmed learning in the educational institutions, industry found it useful in its problem of training adults. Several leading corporations have begun to try learning programs in their company classrooms, among them Bell Telephone Laboratories, the Polaroid Corporation, Corning Glass Works, Hughes Aircraft Company, and the Eastman Kodak Company. Lysaught of the Eastman Kodak Company states that

> It was obvious . . . that if we were to get any real mileage out of programmed learning in the foreseeable future, we would certainly have to program many of our own industrial subjects. We

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[12] Ibid., pp. 12-13.

> were reinforced by the knowledge that other companies came to the same conclusion.[13]

Self-instruction has affected every part of the American educational structure, it seems, but extensive research to determine guidelines and limits of the capabilities of self-instruction has only begun. The use of computers as an aid to self-instruction has opened an almost unlimited potential for information storage and retrieval, readily accessible at the student's command.

Instructional Media

No attempt will be made to list all the devices and programs that have been introduced to improve education. As John W. Gustad said,

> At one time or another, radio, motion picture, filmstrips, TV, language labs, and teaching machines have been hailed as the saviors of education. So have large classes, small classes, seminars, tutorials, independent study, years abroad, work-study programs, midwinter reading periods, and year-round operation. None of these is either as bad as detractors assert or as good as zealots claim. Lacking an adequate theoretical framework in which to place these innovations, the pendulum continues to swing wildly from euphoria to cynicism.[14]

According to Stolurow, there were probably one hundred new devices under development and in use as teaching machines

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[13]J. P. Lysaught, Programmed Learning, Evolving Principles and Industrial Applications, (Ann Arbor, Michigan, 1961), p. 25.

[14]Gene Faris, "Would You Believe, An Instructional Developer?", Audiovisual Instruction, (November, 1968), p. 973.

by 1961. He classifies many of them according to their use or adaptability.[15]

The first class Stolurow calls "minimally-adaptive machines." They require a teacher or some auxiliary help to the learner for efficient instruction. An example of the minimally-adaptive teaching machine is a deck of flashcards with the stimulus or cue material on one side and associated response material on the other. The cards are presented one at a time to the learner, who responds within a limited time. The opposite side of the card is then shown the learner to provide the feedback.

The memory drum, so often used in the psychology laboratory, presents the material in the form of machine-driven paper loops or a horizontal rotating disc. There is a time limit of exposure of a segment of the material, after which, the machine moves to the answer, then to the next item.

Several of the mass-media devices are minimally-adaptive teaching machines used with a film presentation or with a lecture. Following a question asked by the teacher or projected from film, each member of the group responds, and each response is made known to the teacher. An individual multiple-choice response device is located at the student's desk, and the response of each student is recorded on a panel at the

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[15]Lawrence M. Stolurow, Teaching By Machine, (Washington, 1961), p. 21.

teacher's podium. Knowledge of results is fed back to the group either via the teacher himself or via a visual display containing counters.

To summarize, the general characteristics of the minimally-adaptive devices include varied methods of presentation and learner-response. The pacing is controlled either by the machine or the learner. Feedback is usually given by a source other than the device. Collating is not done, nor is the selector function performed by the machine, but the teacher may adjust the learning progress by dropping out items learned as a new criterion is reached. The minimally-adaptive machine's library affords all learners the same total information, and the program is linear in nature. None of the minimally-adaptive machines has a computer.

The second class of devices Stolurow calls "partially-adaptive machines." These include both the paper-and-pencil types as well as the hardware-type machines. Most of these devices measure recognition by multiple-choice response. A few require the learner to compose his response either by constructing his answer through the manipulation of sliders, by using keys, or by writing on a separate sheet of paper to be compared with the correct response that he later sees. Almost without exception, the machines requiring a written response permit immediate feedback by allowing the learner to see the correct response once he has given his answer. They differ from multiple-choice devices in that the learner

sees the correct answer only after he has responded. In the multiple-choice machines he sees the correct and the wrong answers before he responds.

The most common characteristic of these devices is that they are paced by the learner. Some can perform the selection function by dropping out the learned items, but for most of these devices the teacher does the selecting. Most of them use linear programming and have basic libraries. Among the exceptions is the "scrambled textbook" type. Other printed devices, such as the programmed text and the "cutback" booklet are described by Stolurow in his discussion of partially-adaptive devices.

The third type of device is the "adaptive machine," or the computer-based machine. This teaching-machine system allows for changes in the teaching method without requiring the building of a whole new machine. The design characteristics are determined by the computer, the typewriter input, the program, and a visual output. The presentation, or display, comes from either a printed source, such as the typewriter, or from a radar scope. The response to the display is constructed from a keyboard or written on the scope. Either the machine or the learner may determine the pacing, with the machine usually waiting upon the learner's answer. The machine is the comparator, giving an immediate feedback to the learner as to whether his answer is correct or incorrect. This feedback can be visual on the scope, on the

typewriter, or tactual. The computer-based machine collates, records and stores the answers, and selects the new presentation based upon the learner's responses. The storage of information can be extensive and the retrieval fast. The programming is usually interpretive which permits branching in any direction the learner's needs indicate. This is made possible by adapting computers to become a part of the teaching-machine system. Perhaps, some of the most outstanding adaptive machines are those designed by Pask. They endeavored to determine how the learner learned and to improve the learner's rate of learning. This was done by assessing the difficulty of the items presented at any instant to a particular learner under consideration.[16]

One of the more sophisticated studies in progress at the time of this study was a computer-assisted teaching system for music at Stanford University. Kuhn and Alvin describe the system, in part, as follows:

> Obviously, to advance research in music training, a new, direct, and essentially musical response mode is needed. This suggests the development of a reliable device which can extract pitch information directly from each note of a subject's music performance and make this pitch information available to computerized teaching device for evaluating the subject's performance. The potential of programmed instruction, particularly with reference to aural perception, appears to be great. The use of such computer-assisted teaching equipment would provide better understanding of the teaching process as well as the

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[16] Ibid., pp. 21-47.

> learning process in the areas of sight-singing and ear training where present methods rely altogether too heavily on individually formed subjective ways. Stanford University is presently evaluating such a computer-assisted teaching system for music learning.[17]

R. C. Carpenter discussed the varieties of emerging instructional technology at the 1967 convention of the Department of Audiovisual Instruction. He identified three phases of the learning cycle: a display or presentation phase, a perceptive or cognitive phase, and a cybernetic phase, involving regulatory feedback. He indicated that the display phase had been amply supplied by manufacturers. However, instructional devices for the control of the second, or cognitive, phase were almost nonexistent. Instrumental feedback has been apparent in a few instances, but more frequently to provide feedback to the teacher rather than interaction between the learner and the material.[18]

Another facet for instructional consideration is the design of the building to accommodate a learning environment. Stafford North says, "We [educators] have never recognized architecturally the role the student is supposed to have in the learning process."[19] He suggests the remedy for this

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[17]Wolfgang E. Kuhn and Raynold L. Alvin, "Computer-Assisted Teaching: A New Approach to Research in Music," Journal of Research in Music Education, XV (Winter, 1967), 306.

[18]John A. Davis, "Using Instructional Media in College," Phi Delta Kappan, XLIX (November, 1967), 152.

[19]The Dallas Morning News, November 28, 1967, Sec. A, p. 8.

situation is to build a learning center which includes a library and provides each of the students with an assigned study station equipped with electronic media, open from 7:00 a.m. to 11:00 p.m. North indicates that this has been done at Oklahoma Christian College. He further believes that the learning center is where the bulk of the learning takes place.[20]

Bundy lists several conclusions regarding studies made with the use of computer-assisted instruction (CAI). These conclusions may be tentative under strict research standards, but, taken as a whole, he feels they give a reasonable picture of the present state of the art.

1. Students seem to learn at least as well with CAI as with conventional classroom instruction, particularly where short courses are concerned. Some researchers indicate that greater learning and retention can occur with CAI, and that the performance of the lower aptitude students can be raised.

2. CAI program can adjust to the individual student's needs in sequence, depth, mode of material, and rate of progress.

3. The computer can record and manipulate data about the student during instruction. However, in view of the vast amount of information possible, it is difficult to select what should be recorded permanently.

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[20] Ibid., p. 8.

4. The computer can reduce the amount of tedious calculations and note taking usually required of the student.

5. The CAI can integrate and control a wide variety of audio-visual aids in the learning program, but some items, such as slide presentations are not necessarily better than visual materials in booklet form.

6. Present technology is capable of "time sharing," which permits a large number of students to use a computer at the same time, and from considerable distances.

7. A broad range of courses can be programmed for CAI. No known limits have been reported as yet to the kinds of subject matter or conceptual level that can be programmed.

8. Students are generally interested in and like the CAI form of instruction. Their attitude is usually related to their performance, the appropriate pacing of the material, the shorter presentations, and the opportunities for discussions with the teacher and other students.

9. There is great variability in how long a student will work at the computer instructional terminal when free to decide.

10. Branching methods can provide more efficient instruction than fixed sequence presentations. Good orientation is needed to avoid the student's frustration with the machinery.

11. A large part of a teacher's duties involving basic skills, and routine drills can be handled better by the machine.

12. Present curriculum materials can be readily adapted to the computer.

13. The computer is an excellent research lab for the study of learning.

14. Seventy-five to 150 man hours and thousands of dollars seem necessary to write, correct, and validate one hour of CAI instruction.[21]

It should be pointed out that a great deal of research and experience are being realized which do not utilize the computer. For example, the old concept of a library audio-visual department has evolved into a large media center, as is the case at El Centro Junior College. Sound and silent motion pictures, sound tapes, filmstrips with audio, transparencies, color slides, cameras, projectors, charts, maps, posters, and other items are distributed to the faculty from a media center. The faculty and technicians may produce custom-designed materials in the center. The student has a choice, or is assigned, materials that may be viewed in his carrel, or books or micro-films in a library only a few steps away.[22]

Another instance of multi-media self-instruction is the study by Postlethwait at Purdue University. He used audio-taped presentations to augment the instruction in a freshman

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[21]Robert F. Bundy, "Computer-Assisted Instruction--Where Are We?", Phi Delta Kappan, XLIX (April, 1968), 424.

[22]The Dallas Morning News, October 28, 1967, Sec. A, p. 16.

botany class. This approach, which he calls "an integrated experience approach," was derived from the fact that a wide variety of teaching-learning experiences are integrated with provision for individual student differences. Each experience was planned to present efficiently some important aspect of the subject. In the audio-tutorial booth, the student proceeded at his own pace. The material was presented in sequence for one student at a time by an instructor. Those means of presentation not available on tape were made available in other ways. Guest lecturers and long films were used at general sessions. Small discussion groups were held on a regular basis. The results indicated that the experimental group of thirty-six students did not do better than the traditionally taught class, but they did as well. The freshman botany course at Purdue has been completely restructured to provide a maximum of student freedom for independent study and an opportunity for him to make adjustments for his interests, background, and capacity.[23]

One medium which has shown rapid development and is proving its value in education is the video-tape recorder (VTR). Sporting events have provided probably the most extensive commercial use of the VTR through instant-replay television. One of the earliest uses of VTR was in the 1963 Olympic Games in Tokyo, Japan. Business concerns have

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[23]S. N. Postlethwait, An Integrated Experience Approach to Learning, (Minneapolis, 1964).

used VTR extensively to train personnel, to record and distribute important administrative information, and to demonstrate operational procedures and products. Hospitals have installed VTR systems to record and to replay tapes of operating techniques for training surgeons and nurses. Seminaries are using VTR which enables student preachers to see instant replays of their sermon presentations. Many colleges and universities are finding the VTR useful in training counselors and teachers. Leonard Reiffel stated recently that one of the more unexpected applications of the VTR appears to be in psychiatry. He said,

> A few years ago two psychiatrists got a camera and a video-tape recorder . . . and began to hold psychotherapy sessions with patients. They recorded the sessions on video-tape with the full knowledge of the patients. After recording a few minutes of a therapy session, the psychiatrists would then play back a picture of the people participating.
>
> The impact on the patients seems to have been phenomenal. For the first time, a patient got a startlingly clear picture of himself. . . . These revelations came in the first two or three sessions. In the past, a similar case might have taken many months or even years to achieve the same progress, according to the opinion of the psychiatrists doing the VTR tests.[24]

Since the VTR has been found useful in so many fields, it was felt that it would also be useful in a self-instructional approach to teaching French diction to college voice students.

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[24] The Dallas Morning News, December 4, 1967, Sec. B, p. 4.

Pertinent Research in Languages

Everett states that instructors at Antioch College designed a new program for French I, II, and III classes, which endeavored to solve the problem of large enrollments and a teacher shortage, and to utilize modern equipment, yet retain personal contact with the individual students. The core of the course was set in thirty-nine films with script which served as a basis for conversations. All students from the three courses met together to view films and slides, and to participate in group grammar pattern drills. A syllabus outlined minimum reading requirements for each level. Each student was permitted self-pacing and the opportunity to plan his own course based upon his interest. Test results indicated that the experimental group was equal to or superior in achievement to the control group taught by the traditional method.[25]

Valdman summarizes the problems and prospects for using programmed instruction in foreign language learning. The results of investigations conducted during the past six years in self-instruction in foreign languages have led researchers to conclude that total programmed instruction seems productive only in cases where the terminal behavior to be achieved is very limited. Experiments have indicated

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[25]Aaron B. Everett, "Try 'Custom French'--We Did," Education Research Information Center (Henceforth referred as ERIC), ED 012 153 (December, 1967).

that it is most useful in modules at early levels for teaching specific features of pronunciation, grammar, or vocabulary. Partial programming, such as that developed at Indiana University for multiple credit elementary French, has emerged as a possible solution to the difficulties inherent in programming languages and suggests that live teaching and programmed instruction can be complementary. The machine is used for routine drill while the teacher provides situations and opportunities for the student to transfer structure and vocabulary learned and practiced in the laboratory to natural communication in which he adjusts to the unpredictability of another human being's responses.[26]

The effectiveness of programmed learning in an audio-lingual French course was investigated by Mueller and Harris at the University of Akron. The experiment intended to determine whether a self-instructional course was more effective than a course taught under traditional classroom conditions. A comparison between the experimental and control groups indicated the following: (1) A smaller percentage of students dropped the course; (2) Low aptitude students who completed the course did well; (3) A greater percentage from the experimental group than from the control group continued in, and completed, their second year French; (4) All students of the

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[26]Albert Valdman, "Programmed Instruction and Foreign Language Learning--Problems and Prospects," ERIC, ED 011 743 (November, 1967).

experimental group attained exceptional accuracy in pronunciation; (5) Generally the students from the experimental group did as well as the students from the control group, and significantly better in their mastery of the spoken language and in their variety and accuracy of grammatical structures; (6) At the end of the second year, students from the experimental group had maintained their standing in respect to the students from the control group; (7) Low-aptitude students achieved results that compared well with those of more gifted colleagues; and, (8) A completely self-instructional program, without a teacher, is not feasible.[27]

Dugas reports that in a NDEA Institute in 1966, where teachers were video-taped while teaching fifteen-minute segments of high school French, great benefit was gained as the teacher viewed himself. He could more fully appreciate constructive criticism offered by others, could recognize his strong and weak points, and could evaluate his own performance as a teacher. Conclusions based on the institute's work indicated that: (1) "Micro-teaching" is an effective device in retraining experienced teachers; (2) It is difficult to determine how adaptable "micro-teaching" is to advanced-level courses where the subject matter is still only vaguely defined; and, (3) The video-tape recordings

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[27]Theodore Mueller and Robert Harris, "First Year College French Through An Audio-lingual Program," ERIC, ED 011 737 (November, 1967).

are an excellent means of studying a participants grammar and phonology, and an ideal basis for creating remedial materials.[28]

The present study is not an attempt to duplicate any of the above studies. However, since conclusions in the studies discussed favor such methods as programming, segmented material, audio and video presentations, and indicate generally good student response, it was felt that a study of the effectiveness of a self-instructional approach in French diction for vocal music students was a valid study.

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[28]Donald G. Dugas, "Micro-Teaching--A Promising Medium for Teacher Training," The Modern Language Journal, Vol. 51, No. 3, (March, 1967), pp. 161-166.

CHAPTER III

PROCEDURES

Setting of the Study

The present study was conceived as a result of observing French diction classes taught by a traditional method. The abundance of time required for each individual to recite, while the other members of the class awaited their turn, seemed to warrant a consideration of a mechanical method of presentation that would conserve the time of both the instructor and the waiting class members. The experiment was then designed which used video-taped lessons of the same material used in the traditional method of teaching. The content of Music 109F (French Diction) at North Texas State University consisted of rules in French diction, phonetic writing of song texts, and of singing designated songs in French. The instructor, Stephen T. Farish, Assistant Professor of Music, consented to be the instructor for the experiment. Material for rules in French diction was designed by the instructor and made available in a textbook.[1] Song texts, which were equivalent in difficulty, were selected by the instructor for use in the phonetic writing. Songs

[1]Stephen T. Farish, Lessons in French Diction for Singers, (Denton, Texas, 1968), pp. 1-43.

to be memorized and sung in French were selected from standard repertory. An outline of lessons on the rules for French diction is contained in Appendix B. Appendix C consists of the schedule of tests and the lessons contained in each test. For the lessons on video-tape, the instructor arranged the material for presentations of approximately fifteen minutes each in order to achieve some aspects of programmed instruction.

The course was recorded on video-tape in July and August of 1968 in preparation for the experiment to begin in the Fall semester, 1968. The recording equipment consisted of a VR7500 Ampex video-tape recorder (VTR), two Ampex TV cameras, one Altec microphone, two Stromberg-Carlson monitors, and fifteen fifteen-minute spools of one-inch Memorex tape. The recital hall stage of the School of Music at North Texas State University was selected as the best recording facility because of its good lighting and acoustical qualities. One camera was directed on the instructor,who was seated at a desk, while the second camera was directed at posters containing illustrations mounted on an easel. The instructor pointed to the posters to illustrate rules and examples, and the cameras were switched accordingly. The final three lessons consisted of the instructor's discussing the meaning of the text, the pronouncing of the words, and the singing of the three assigned songs in French. Approximately fifteen

hours were required to record a total of three and one-half hours of lesson presentations.

The experiment was financed by a faculty research grant to the instructor. The grant included the cost of technicians to record the course, one VR5100 video-tape recorder and monitor, and graduate students to operate the equipment for viewing by the students during the semester.

Due to the expanding enrollment in the music school, a studio for viewing had to be shared with two graduate student voice teachers. The room was sixteen feet square in size. It contained desk chairs, a VR5100 video-tape recorder, an eighteen-inch monitor, a Wollensak audio-tape recorder with microphone and tape, and a mirror. The room was readily accessible to all students of the experimental group.

The selection of a capable panel of three vocal authorities was an early consideration in the planning of the experiment. Although the panel would not function until January, it was necessary to engage them in the Fall. At the suggestion of the instructor, the following were engaged: Jack Coldiron, Associate Professor of Music, Southwestern Baptist Seminary; Bruce Govich, Associate Professor of Music, University of Oklahoma; and Frank Stovall, Professor of Music, Southwestern Baptist Seminary. All were recognized voice teachers and capable vocalists.

An adequate number of students was a major factor in performing the experiment. A study of the enrollment in

Music 109F for the past four years revealed that class size had varied from fourteen to twenty-six students. To increase the class enrollment for the experiment, the Dean of the School of Music was requested to combine with the Fall enrollment all students who planned to take the course in the Spring. The request was granted and thirty-one students enrolled in Music 109F (French Diction) for the Fall semester.

Group Selections and Instructions

The first class meeting was held with all students present. A brief description of the experiment was given by the instructor. No student was required to participate in the experiment, nor was his grade to be affected by his decision. All students agreed to participate. The experimental and control groups were determined by placing the names of the thirty-one students on cards and thoroughly mixing them. Since viewing time would be limited due to the unavailability of the assigned room, it was decided that the experimental group should contain fewer students than the control group, and that twelve in the experimental group and nineteen in the control group would be a logical division. Twelve names were drawn to form the experimental group and the nineteen remaining were designated the control group. During the first three weeks of the course, three students in the experimental and four students in the control group dropped the course. All other students in the experiment completed the course.

The control group was taught by a conventional method in which the instructor wrote the rules or words, then gave an example of the sound to be reproduced by the class. After the group recited, each individual was asked to produce the designated sound. The instructor then gave feedback in the form of correcting the sound, or of accepting it. The class moved together in assignments and tests. The instructor planned the material to be covered during the semester and the class progressed as a group. The three songs, which composed the final three tests, were practiced by the entire class singing them. The instructor kept the records of grades and attendance and gave the necessary instructions for the administration of the class.

The experimental group was informed of their selection on the second day of class. An assistant took the group to the room where the VTR viewing was to be done and where the operation of the equipment was demonstrated. Appreciation was expressed to the members of the experimental group for their participation in the experiment. The group was shown a portion of Lesson I on the TV monitor, after which, instructions for the subsequent lessons were given. During the semester, the VTR was operated by a technician, not by the viewing subjects. The subjects viewed in pairs for two hours each week. One subject made the selection at one one-hour session, and the other subject made the selection for the other one-hour session. The subject who had the

lesson selection privilege could use the audio-tape recorder to record both the instructor's voice and his own response for comparison when he replayed the audio recording. A mirror was available to assist the subject in observing his physical formation of words or sounds. If the pair of subjects desired, they could give each other an opinion of the correctness of their partner's pronunciations. A schedule of viewing time was made. (See Appendix D). The assistant operating the machine kept a record of the attendance and the lessons viewed. Attendance was checked and absences were counted as if the subjects were in a class. However, make-up sessions were arranged for those having excusable absences. Also, a subject was permitted to view with another pair if he wanted to progress faster, review, or make up lessons, but he did not have the privilege of lesson selection. The subjects, sitting in desk-chairs, viewed the lessons from a distance of their own choosing, usually about ten feet from the monitor. The subject practiced the assigned songs by singing with the recording on the VTR, with his partner, or individually.

The factors that the control and experimental groups had in common were (1) Each group used the same textbook and instructional materials. (2) The instructor who taught the control group by a traditional method also taught the experimental group via pre-recorded lesson presentations on video-tape. (3) The same, or equivalent, tests were given

to each group. If a subject from the experimental group requested a test on the day the control group was taking the test, the subject in the experimental group could have received the same test. However, to insure that the subjects in the experimental group were being tested for their own knowledge, different, but equivalent, tests were prepared by the instructor. Equivalence was gained by testing the subject as to his knowledge of the proper use of a particular rule, or vowel sound, found in the textbook or in an assigned song. For example, to test for the proper use of the phonetic sound, ɛ, the instructor would ask for the phonetic writing of chef, père, bête, reine or mais, all of which required the phonetic symbol above.[2] The phonetic writing of song texts came late in the semester and consisted of sounds and diction problems previously covered in the course. The grading of texts of varying length was made equivalent by grading on a percentage correct basis. (4) The instructor graded the written tests for both the control and the experimental groups. (5) The same panel of vocal authorities was used to evaluate the three songs sung in French by all subjects in both groups.

Testing Procedures

The four hypotheses of this study were based upon four criterion measures applied alike to both the control and

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[2]Stephen T. Farish, Lessons in French Diction for Singers, (Denton, Texas, 1968), p. 4.

experimental groups. (See Appendix E.) Criterion I consisted of the mean score for each subject for three tests on rules in French diction. Criterion II consisted of the score for one test on phonetic writing of a text selected by the instructor. Criterion III consisted of the mean score from three tests which were the singing of the three assigned songs in French. These songs were recorded by the subjects on audio-tape near the close of the semester and evaluated by the panel at the end of the course. Criterion IV consisted of the mean score computed from the sum of criterion measures I, II, III, for each subject in both groups.

All written tests in both groups were graded by the instructor on a percentage correct basis. The tests contained the same or equivalent material as adjudged by the instructor. Written tests for the control group were administered by the instructor to the entire class on a specified date. The written tests for the experimental group were scheduled upon the subject's written request. The tests were administered by an assistant in the instructor's studio at noon on Monday and Wednesday of each week, were graded by the instructor, and returned to the subject within a few days. No tests could be repeated, but subjects in the experimental group could view again the lessons containing the material missed on a previous test. All tests were taken in consecutive order and within the semester. It was possible for a student in the experimental group to finish the course in less than a

semester, if he desired. After the subjects had finished the written examinations for Criteria I and II, they were then scheduled to record the three assigned French songs for evaluation by the panel at the close of the semester.

Reliability of the Panel

The panel was assembled for only one day which was at the end of the semester and after all tests had been taken. The instructor for the course discussed with the panel factors that should be considered in scoring. After scoring a sample of all three songs played on an audio-tape recorder, the panel and instructor again discussed the criteria for evaluating the songs. There was general agreement that the procedure and the nature of scoring was understood. The fatigue factor was reduced by giving the panel a break after listening to recordings of six subjects singing three songs each. Each panel member had a sheet for each song that a subject sang which contained the melody of the song with the French text beneath the proper notes. (See Appendix F.) Each time the subject would make a mistake in diction, the panelist would circle the syllable, or syllables, involved. Only the subject's accuracy of pronunciation was considered, not his vocal ability or musicianship. The average number of syllables graded in the three songs was 119. The average range of variation from the lowest to the highest score given by the three panelists for each subject was 4.8, which

included an extreme variation of 23 due to a very low score given by one panelist for one subject. Usually, the difference between the lowest and the highest score given by the panel for a subject was from 3 to 4. (See Appendix G.)

Procedures for Treating the Data

The computer was used for computing *t*-values between the means of criterion measures upon which the hypotheses were based. Criterion I measures were determined by computing the mean of the three scores received by each subject on rules in French diction tests. Fisher's *t*-value was then obtained for significance between means of the control and the experimental groups for Criterion I measures. Criterion II measures were determined by the score each subject received on one test on phonetic writing. Fisher's *t*-value was determined to test for significant difference between means of scores of the control and experimental groups on Criterion II. Criterion III measures were determined by computing the mean score for each subject from the grades given by the panel for the singing of three songs in French. Fisher's *t*-value was determined to test for significant difference between means of the control and the experimental groups' scores for Criterion III. Criterion IV measures were determined by computing the mean score for each subject on Criteria I, II, and III. Fisher's *t*-value was determined to test for significant difference between means of the control and the experimental groups' scores for Criterion IV. For statistical

purposes, the hypotheses were stated in the null form and the research hypotheses were accepted at the .05 level of significance.

CHAPTER IV

ANALYSIS OF THE FINDINGS

Data from the control group of fifteen subjects and from the experimental group of nine subjects were used to statistically compare the effectiveness of a self-instructional approach with a traditional approach in teaching French diction for singers. The four criteria used to test the hypotheses were (1) tests on the rules in French diction, (2) a test of phonetic writing of selected song texts, (3) performance tests by singing three songs in French, and (4) a mean of the combination of the percentage scores in Criteria I, II, and III. (See Appendix E.)

Each hypothesis was treated in the null form by use of Fisher's *t*-test for significance between means of independent samples. The research hypotheses were accepted at the .05 level of significance.

Findings Related to Hypothesis 1

Hypothesis 1 stated that the scores of the students taught by a self-instructional approach would be significantly different on a rules in French diction test, from the scores of the students taught by a traditional method. On the rules in French diction test the control group had a mean percentage score of 75.84 and a standard deviation of 9.94. The

experimental group had a mean percentage score of 83.30 and a standard deviation of 9.02. As is indicated in Table I, the Fisher's *t*-ratio was 1.762. Since the value of *t* was not significant at the .05 level, Hypothesis 1 was rejected.

TABLE I

DIFFERENCES BETWEEN MEAN SCORES AND STANDARD DEVIATIONS FOR THE CONTROL AND EXPERIMENTAL GROUPS IN RULES IN FRENCH DICTION TESTS WITH *t*-TEST COMPARISONS BETWEEN THE TWO GROUPS

Group	Mean	S. D.	Fisher's *t*
Control (N=15)	75.84	9.94	1.762 NS*
Experimental (N=9)	83.30	9.02	

*Not significant at the .05 level.

Findings Related to Hypothesis 2

Hypothesis 2 stated that the scores of the students taught by a self-instructional approach would be significantly different on a phonetic writing test in French diction, from the scores of the students taught by a traditional method. On the phonetic writing test the control group had a mean percentage score of 81.60 and a standard deviation of 9.01. For the experimental group the mean was 83.00 and the standard deviation was 9.42. As is indicated in Table II, the Fisher's *t*-ratio was .347, which was not significant at the .05 level. Therefore, Hypothesis 2 was rejected.

TABLE II

DIFFERENCES BETWEEN MEAN SCORES AND STANDARD DEVIATIONS FOR THE CONTROL AND EXPERIMENTAL GROUPS WITH *t*-TEST COMPARISONS ON A PHONETIC WRITING TEST CONSISTING OF A FRENCH SONG SELECTED BY THE INSTRUCTOR

Group	Mean	S. D.	Fisher's *t*
Control (N=15)	81.60	9.01	.347 NS*
Experimental (N=9)	83.00	9.42	

*Not significant at the .05 level.

Findings Related to Hypothesis 3

Hypothesis 3 stated that the scores of the students taught by a self-instructional approach would be significantly different on a French diction in singing test, from the scores of students taught by a traditional method. On the French diction in singing test the control group had a mean percentage score of 93.56 and a standard deviation of 3.04. The experimental group had a mean percentage score of 94.52 and a standard deviation of 3.79. As is indicated in Table III, the *t*-ratio was .655.

Since the *t*-ratio was not significant at the .05 level Hypothesis 3 was rejected.

Findings Related to Hypothesis 4

Hypothesis 4 stated that the mean score of students in a course taught by a self-instructional approach would be

TABLE III

DIFFERENCES BETWEEN MEAN SCORES AND STANDARD DEVIATIONS FOR THE CONTROL AND EXPERIMENTAL GROUPS IN A FRENCH DICTION IN SINGING TEST WITH *t*-TEST COMPARISONS BETWEEN THE TWO GROUPS

Group	Mean	S. D.	Fisher's *t*
Control (N=15)	93.56	3.04	.655 NS*
Experimental (N=93	94.52	3.79	

*Not significant at the .05 level.

significantly different from the mean score of students in a course taught by a traditional method. The mean score used for this hypothesis was the average score for each student resulting from the combination of his scores in Criteria I, II, and III as discussed in Chapter III. As is indicated in Table IV, the mean percentage score for the control group was 83.67 and the standard deviation was 6.45. For the experimental group the mean was 86.94 and the standard deviation was 6.67. The *t*-ratio was 1.138 which was not significant at the .05 level. Since the t-ratio was not significant at the .05 level, Hypothesis 4 was rejected.

To summarize the findings related to the hypotheses, the *t*-tests revealed no significant difference in the means between the control and the experimental groups on any of the four criterion measures. None of the four research hypotheses was accepted. However, even though the *t*-tests

TABLE IV

DIFFERENCES BETWEEN MEAN SCORES AND STANDARD DEVIATIONS FOR THE CONTROL AND EXPERIMENTAL GROUPS WHERE THE MEAN SCORE FOR A SUBJECT CONSISTED OF HIS AVERAGE SCORE FROM CRITERION MEASURES I, II, AND III COMBINED

Group	Mean	S. D.	Fisher's *t*
Control (N=15)	83.67	6.45	1.138 NS*
Experimental (N=9)	86.94	6.67	

*Not significant at the .05 level.

did not reveal a significant difference, the mean scores of the experimental group were higher than the mean scores of the control group for all of the criterion measures.

Additional Findings

Additional information was gathered from the individual viewing records of the experimental group. (See Appendix H.) The mean number of hours viewed by the subjects in the experimental group was 11.58 hours. A subject with perfect attendance in the control group for sixteen weeks was in class a total of thirty-two hours.

At the close of the semester a questionnaire was given subjects in the experimental group. (See Appendix I.) Approximately half of the subjects indicated that they were curious when they learned that they had been selected for the experimental group. Other responses varied from frightened, or apprehensive, to agreeable. After the first viewing

six of the nine subjects indicated they liked the method. The others were unimpressed or apprehensive. The advantages of the VTR approach listed by the subjects included a relaxed atmosphere, convenience, study at one's own rate, the ability to repeat lessons, and faster than the classroom method. Disadvantages listed were no contact with the teacher for answering questions, limited schedule for viewing, and self-motivation required. Five of the nine subjects indicated that they would have finished the course sooner if more viewing time had been available. Six of the nine subjects felt that a partner was of benefit in correcting the sounds produced, but the others felt no benefit was derived or that they did not consider themselves qualified to judge the sounds produced by their partner. All but one subject stated that the audio-tape recordings of their responses to the instructor's model sounds were of benefit.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The primary purpose of the study was to test a self-instructional approach to teaching a college French diction course to determine whether it would equal or surpass in effectiveness a course taught by a traditional approach. A second purpose was to seek to provide a partial solution to the problems of the increasing student-teacher ratio in colleges and of the individualization of teaching students who have various learning rates and backgrounds. A third purpose of the study was to attempt to determine the effectiveness of the video-tape recorder as a teaching aid for a self-instructional approach.

Students enrolled in Music 109F (French Diction) at North Texas State University were used as subjects for the experiment. From a total of thirty-one enrolled in the course, twelve names were drawn by chance to form the experimental group. The remaining nineteen composed the control group. Nine subjects in the experimental group and fifteen subjects in the control group completed the course. The control group met for one hour twice each week with an instructor teaching by a traditional method. The experimental

group progressed as rapidly as they desired, as their development of skills permitted, or as the viewing facilities were available.

The t-technique was used to determine whether significant differences existed between scores of the control and experimental groups for criteria listed in the hypotheses. It was decided that the research hypotheses would be accepted at the .05 level of significance.

Hypothesis 1 stated that the scores of the students taught by a self-instructional approach would be significantly different on a rules in French diction test, from the scores of the students taught by a traditional method. In testing Hypothesis 1 it was found that the t-ratio was not significant at the .05 level. Therefore, Hypothesis 1 was rejected.

Hypothesis 2 stated that the scores of the students taught by a self-instructional approach would be significantly different on a phonetic writing test in French diction, from scores of the students taught by a traditional method. In testing Hypothesis 2 it was found that the t-ratio was not significant at the .05 level. Therefore, Hypothesis 2 was rejected.

Hypothesis 3 stated that the scores of the students taught by a self-instructional approach would be significantly different on a French diction in singing test, from the scores of students taught by a traditional method. In

testing Hypothesis 3 it was found that the t-ratio was not significant at the .05 level. Therefore, Hypothesis 3 was rejected.

Hypothesis 4 stated that the mean score of students in a course taught by a self-instructional approach would be significantly different from the mean score of students in a course taught by a traditional method. In testing Hypothesis 4 it was found that the t-ratio was not significant at the .05 level. Therefore, Hypothesis 4 was rejected.

Even though the study revealed no significant differences in the groups statistically, a higher mean score was made by the experimental group than the control group on all four criterion measures. Furthermore, the actual mean viewing time spent by subjects in the experimental group was approximately one-third as much as was spent in class by the control group.

A questionnaire administered to the subjects of the experimental group at the end of the semester revealed a favorable attitude by all the subjects in the experimental group toward the self-instructional approach. However, almost all of the subjects made suggestions for improving the course, such as these: personal contact with the instructor in discussion sessions, more flexible viewing times, and deadlines for tests to be taken to offset the lack of self-motivation. Advantages of the self-instructional video-taped approach listed by the students were relaxed atmosphere,

study at ones own rate, lessons can be repeated, and convenience.

Conclusions

The findings in the study were limited by the small number of subjects available, by the restricted time for viewing, and by the lack of viewing stations. However, the results of the study tend to support the findings of previous studies of this nature and make feasible the following conclusions:

1. French diction for singers can be learned as effectively by the self-instructional approach as by a traditional method.

2. Since the traditional method decreases in effectiveness with a class of more than twenty students, and since the media of a self-instructional approach is not limited to twenty students, a greater number of students can be taught effectively by the self-instructional approach than by a traditional method.

3. Colleges and universities can offer a self-instructional course in French diction for singers more economically in terms of time and cost than they can a course taught by a traditional method.

4. Students are predominantly receptive toward learning by a self-instructional approach.

5. The video-tape recorder is a valuable aid in teaching a self-instructional course in French diction.

Recommendations and Suggestions

The following recommendations and suggestions for designing a course of the nature of French diction to be taught by a self-instructional approach are based upon the information gained from this study.

1. Self-instructional courses of this nature should be used as a required course for undergraduates studying voice, a rapid refresher course for those returning for graduate work, an in-service training course for voice faculty members, and a general enrichment course for laymen.

2. The self-instructional approach should be used by large university systems to replace their French diction course taught by a traditional method. Small colleges which have not had diction courses in their curriculum should initiate such courses by using a self-instructional approach. This approach would eliminate the necessity for voice teachers to teach diction during private lesson time and thereby permit more time for vocal technique and interpretive work.

3. One institution should be the center from which the materials are designed, produced and distributed, and to which the participating institutions can send the tests for grading. One faculty member, preferably a voice teacher, in each institution should administer the course, conduct general discussion periods and answer individual questions. If he is adequately qualified, he may choose to do his own grading, but the written tests in rules of French diction should be

designed for machine grading. Since the students would be proceeding through the course at varying rates, the tests to be scored would be flowing to the center at distributed intervals.

4. The course should be duplicated upon video-tape or film depending upon the media and self-instructional facilities available in a particular institution.

5. For computer-based learning centers with the latest and most sophisticated equipment, a course of this nature could be programmed into the system with the computer doing the grading in the form of immediate feedback and of branching techniques to guide the student. One exception would be in the singing in French tests. At this time, no known computer system has been designed that is capable of discriminating adequately between vowel sounds that would permit a measurement of their accuracy in a song. However, machine evaluation would not be necessary since the voice teacher would give the final evaluation of the student's ability to sing songs in the language.

Recommendations for Future Research

The following recommendations for future research are made on the basis of the findings and conclusions of the study:

1. Other diction courses for singers, particularly German, Italian and English, should be designed and tested.

2. A study should be made to compare the retention abilities between subjects taught by a traditional method and subjects taught by a self-instructional approach.

3. A study should be made to determine why some students complete the course sooner than others.

4. A study should be made to determine any variation in the speed of progress for individual students.

5. A study should be made of the characteristics of students who have self-motivational abilities.

APPENDIX A

MUSIC 109F: FRENCH DICTION FOR SINGERS

COURSE OUTLINE

PART I - THE RULES OF FRENCH DICTION

A. The Vowel Sounds.

1. The Pure Vowels.
2. The Front Rounded Vowels.
3. The Nasal Vowels.

B. Syllabication and Stress.

C. The Semi-Vowels

D. The Consonant Sounds.

1. General Discussion.
2. The Nasal Consonants.
3. The Plosive Consonants.
4. The Lateral Consonant [l].
5. The Trilled [r].
6. The Fricative Consonants.

E. Consonant Sounds and Spelling.

1. General Rules.
2. Circumstantial Rules.

F. Elision, Tréma, and Liaison.

G. Exceptions to the Rules of Pronunciation.

1. Exceptional Vowel Pronunciations.
2. Exceptional Consonant Pronunciations.

PART II - PRACTICE IN VOCAL LITERATURE

A. Sight Reading of French Song Texts.
B. Phonetic Writing of Song Texts.
C. Singing of Designated Songs in French.

APPENDIX B

LESSONS IN FRENCH DICTION FOR SINGERS
(Textbook)

T A B L E O F C O N T E N T S

APPENDIX C

MUSIC 109F - TEST SCHEDULE

Rules in French Diction

Test I - Lessons I - III in the textbook.

Test II - Lessons IV - VIII in the textbook.

Test III - Lessons IX - XI in the textbook.

Phonetic Writing

Test IV - Phonetic transcription of a given French song test.

Songs To Be Sung In French*

Test V - Jeune fillette - Dalayrac

Test VI - Que l'heure est donc breve - Massenet

Test VII - Romance - Debussy

*Note: These French songs are standard repertoire and are found in various anthologies. These songs were assigned for the semester in which the study was made, but the assigned songs are varied each semester.

APPENDIX D

Music 109F - Viewing Schedule - Experimental Group

	Monday	Tuesday	Wednesday	Thursday	Friday
10 a.m.	Hayes* Anderson		Hayes Lee*		Loe Anderson*
11 a.m.	Stevens Woodward*	Bunting* Smith	Stevens* Woodward	Bunting Smith*	Cooper* Ransdell
12 noon	Ransdell* Lacy	Smith Hausenfluke	Cooper Lacy*	Moore Hausenfluke*	

*Controlling viewer

1. Controlling viewer determines the material to be viewed. Viewing session will proceed at rate of controlling viewer. Controlling viewer will respond to video tape and buddy will compare response.

2. Absence from a scheduled viewing constitutes class absence.
   Excessive class absence will result in a failing grade.

3. Tests will be administered by Mr. Capps. Tests may be scheduled whenever student reaches appropriate juncture in lessons. All tests must be concluded prior to dead week.

APPENDIX E

CRITERION NO.

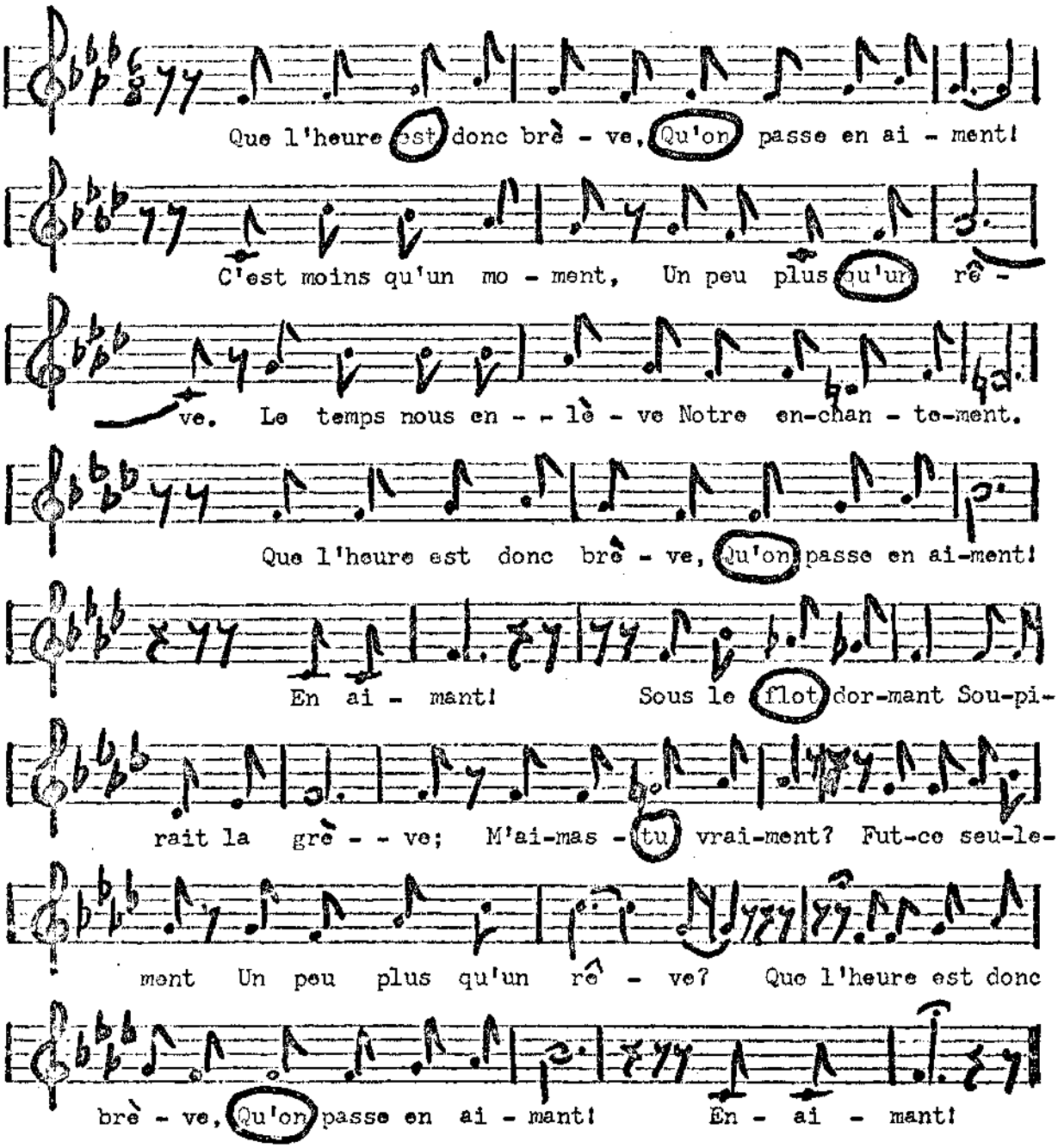
Experimental:

Subj. No.	I Scores on Rules Test				II Phon. Wrtg.	III Singing Test				IV
	#1	#2	#3	Mean		#1	#2	#3	Mean	Mean of I,II,III
1.	81	71	84	78.67	73	98.38	92.05	97.06	95.83	82.50
2.	84	82	70	78.67	69	97.78	95.45	91.17	94.80	80.82
3.	98	84	75	85.67	84	96.97	88.26	92.71	92.65	87.44
4.	97	95	92	94.67	91	98.99	95.08	95.33	96.47	94.05
5.	96	99	99	98.00	99	99.65	99.83	96.40	97.29	98.10
6.	79	66	80	75.00	79	97.58	95.45	98.16	97.06	83.69
7.	76	81	86	81.00	84	97.98	96.97	93.13	96.03	87.01
8.	95	83	91	89.67	93	97.78	95.08	95.42	96.09	92.92
9.	96	50	59	68.33	75	94.55	80.31	84.31	84.46	75.93
Control:										
1.	69	86	73	76.00	79	97.38	93.56	92.16	94.33	83.11
2.	100	86	84	90.00	99	98.79	97.35	96.73	97.62	95.54
3.	87	67	60	71.33	70	98.79	85.99	81.37	88.72	76.68
4.	92	56	65	71.00	73	96.77	87.77	87.58	90.74	78.25
5.	80	80	78	79.33	91	95.56	87.50	90.85	91.30	87.21
6.	59	52	55	55.33	76	94.55	94.32	93.79	94.22	75.18
7.	66	65	72	67.67	70	95.80	85.23	90.85	90.63	76.10
8.	97	71	68	78.67	87	97.78	96.59	92.15	95.51	87.06
9.	69	63	79	70.33	73	96.73	86.74	77.78	87.08	76.80
10.	45	68	76	63.00	73	98.18	96.22	97.06	97.12	77.71
11.	80	70	75	75.00	86	97.98	88.63	97.71	94.74	85.25
12.	97	87	89	91.00	96	97.98	93.94	90.95	94.26	93.75
13.	82	74	90	83.00	88	97.58	97.35	95.75	96.89	89.30
14.	92	92	91	91.67	82	95.76	92.42	95.75	94.64	89.44
15.	74	79	70	74.33	81	95.96	91.28	99.34	95.53	83.62

APPENDIX F

Student #4 Panelist J.C. Grade 81

QUE L'HEURE EST DONC BREVE Massenet



APPENDIX G

ASSIGNED SCORES, MAXIMUM VARIATIONS, MEANS AND MEAN PERCENTAGE SCORES FOR SINGING IN FRENCH DICTION TESTS

Subj. No.	Song Number	Panelist A	B	C	Maximum Variation	Mean	Mean Percentage Score
1.	1*	159	160	162	3	161.33	97.78
	2**	83	85	84	2	84.00	95.45
	3***	91	93	95	4	93.00	91.17
2.	1	161	164	164	3	163.00	98.79
	2	86	84	87	3	85.67	97.35
	3	100	98	98	2	98.67	96.73
3.	1	163	164	163	1	163.33	98.99
	2	85	83	83	2	83.67	95.08
	3	93	97	96	4	95.33	93.46
4.	1	159	158	157	2	158.00	95.76
	2	81	82	81	1	81.33	92.42
	3	97	100	96	4	97.67	95.75
5.	1	159	158	158	1	158.33	95.76
	2	83	78	80	5	80.23	91.28
	3	92	91	91	1	91.33	99.34
6.	1	162	161	161	1	161.33	97.78
	2	81	85	85	4	83.67	95.08
	3	99	97	96	3	97.33	95.42
7.	1	162	161	164	3	162.33	98.38
	2	82	78	83	5	81.00	92.05
	3	100	97	100	3	99.00	97.06
8.	1	158	163	164	6	161.67	97.98
	2	84	86	86	2	85.33	96.97
	3	96	94	95	2	95.00	93.13
9.	1	165	164	164	1	164.33	99.65
	2	85	83	85	2	84.33	95.83
	3	100	96	99	4	98.33	96.40
10.	1	155	157	156	2	156.00	94.55
	2	75	68	69	7	70.67	80.31
	3	87	81	90	9	86.00	84.31

*Possible score for Song 1 - 165
**Possible score for Song 2 - 88
***Possible score for Song 3 - 102

APPENDIX G (Continued)

Subj. No.	Song Number	Panelist A	Panelist B	Panelist B	Maximum Variation	Mean	Mean Percentage Score
11.	1	163	160	162	3	161.67	97.98
	2	85	78	85	7	82.67	93.94
	3	92	89	97	8	92.67	90.85
12.	1	161	159	163	4	161.00	97.58
	2	86	83	88	5	85.67	97.35
	3	100	94	99	6	97.67	95.75
13.	1	159	159	161	2	159.67	96.73
	2	79	72	78	7	76.33	86.74
	3	87	64	87	23	78.33	77.88
14.	1	160	157	156	3	157.67	95.56
	2	78	71	82	11	77.00	87.50
	3	93	92	93	1	92.67	90.85
15.	1	161	160	163	3	161.33	97.78
	2	87	82	86	5	85.00	96.59
	3	97	88	97	9	94.00	92.15
16.	1	162	159	161	3	160.67	97.38
	2	83	80	84	4	82.33	93.56
	3	97	90	95	7	94.00	92.16
17.	1	160	161	162	2	161.00	97.58
	2	84	82	86	4	84.00	95.45
	3	102	98	101	4	100.33	98.16
18.	1	161	159	160	2	160.00	96.97
	2	80	76	77	4	77.67	88.26
	3	95	92	93	3	93.33	92.71
19.	1	162	163	161	2	162.00	98.18
	2	85	82	86	4	84.67	96.22
	3	100	98	99	2	99.00	97.06
20.	1	160	160	159	1	159.67	96.77
	2	77	77	78	1	77.33	87.87
	3	88	89	91	3	89.33	87.58
21.	1	164	157	164	7	161.67	97.98
	2	80	72	82	10	78.00	88.63
	3	101	97	101	4	99.67	97.71

APPENDIX G (Continued)

Subj. No.	Song Number	Panelist A	Panelist B	Panelist C	Maximum Variation	Mean	Mean Percentage Score
22.	1	151	157	160	3	156.00	94.55
	2	82	83	84	2	83.00	94.32
	3	96	96	94	2	95.67	93.79
23.	1	158	158	158	0	158.00	95.80
	2	72	72	81	9	75.00	85.23
	3	91	91	95	4	92.67	90.85
24.	1	164	161	164	3	163.00	98.79
	2	75	71	81	10	75.67	85.99
	3	81	77	91	13	83.00	81.37

APPENDIX H

LESSONS VIEWED, NUMBER OF TIMES LESSONS REPEATED, AND TOTAL HOURS SPENT IN VIEWING BY THE EXPERIMENTAL GROUP WITH EACH LESSON APPROXIMATELY FIFTEEN MINUTES LONG

Subj. No.	Lesson Numbers														Total Times	Total Hours
	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
1.	3	4	5	1	3	3	2	3	1	2	2	4	3	5	41	10.25
2.	1	2	2	2	1	1	5	3	2	2	3	4	5	5	38	9.50
3.	3	4	6	0	4	2	3	2	2	2	2	2	2	1	35	8.75
4.	3	6	5	4	5	3	5	2	1	1	2	2	2	2	43	10.75
5.	6	6	7	6	4	2	8	2	2	3	3	3	4	5	61	15.25
6.	3	4	3	6	6	3	7	4	2	2	3	4	5	5	57	14.25
7.	5	3	3	3	3	2	4	4	3	3	2	2	2	2	41	10.25
8.	1	3	3	2	2	1	2	1	5	5	5	7	8	8	53	14.25
9.	1	3	3	3	3	1	3	1	4	5	4	5	4	4	44	11.00

APPENDIX I

EXPERIMENTAL GROUP QUESTIONNAIRE - MUSIC 109F

Your answers will not in any way affect your grade in the course. Your free and honest evaluation will be most helpful -- V. Capps

1. Name_____ Classification _____

2. What was your initial reaction in being assigned to the Experimental Group?

   _____

   _____

3. What was your opinion after the first viewing?_____

   _____

4. After finishing the course, what is your evaluation of this method of presentation of the material?

   Advantages:_____

   _____

   Disadvantages:_____

   _____

5. Did you feel the need of a conference with the teacher during the course:_____

   For what purpose?_____

6. Would you have viewed more if the VTR had been available?___

7. Could you have finished the course sooner with accessible viewing?_____

8. Was the "partner system" of value?_____ How?_____

   _____

9. Was the audio tape recorder helpful?_____ Why?_____

10. Make any comment desired._____

    _____

BIBLIOGRAPHY

Books

Cram, David, Explaining Teaching Machines and Programming, San Francisco, Fearon Publishers, 1961.

Deterline, William A., An Introduction to Programmed Instruction, Englewood Cliffs, N. J., Prentice-Hall, Inc., 1962.

Farish, Stephen T., Lessons in French Diction for Singers, Denton, Texas, North Texas State University Bookstore, 1968.

Foltz, Charles I., The World of Teaching Machines, Washington, D. C., Electronic Teaching Laboratories, 1961.

Garner, W. Lee, Programmed Instruction, New York, The Center for Applied Research in Education, Inc., 1966.

Green, Edward J., The Learning Process and Programmed Instruction, New York, Holt, Rhinehart and Winston, Inc., 1967.

Lysaught, Jerome P. and Clarence M. Williams, A Guide to Programmed Instruction, New York, John Wiley and Sons, Inc., 1963.

Lysaught, J. P., Programmed Learning, Evolving Principles and Industrial Applications, Braun and Brumfield, Inc., Ann Arbor, Michigan, 1964.

Postlethwaite, S. N., An Integrated Experience Approach to Learning, Minneapolis, Burgess Publishing Co., 1964.

Stolurow, Lawrence M., Teaching by Machine, Washington United States Printing Office, 1961.

Articles

Bundy, Robert F., "Computer-Assisted Instruction--Where Are We?", Phi Delta Kappan, XLIX (April, 1968), 424.

Cronbach, Lee, "The Role of the University in Improving Education," Phi Delta Kappan, XLVIII (June, 1966), 539-545.

Davis, John A., "Using Instructional Media in College," Phi Delta Kappan, XLIX (November, 1967), 152.

Dugas, Donald G., "Micro-Teaching--A Promising Medium for Teacher Training," The Modern Language Journal, LI (March, 1967), 161-166.

Ebel, Robert L., "Some Limitations of Basic Research in Education," Phi Delta Kappan, XLVIII (June, 1966), 81.

Everett, Aaron B., "Try 'Custom French'--We Did," Educational Research Information Center, ED 012 153 (December, 1967).

Faris, Gene, "Would You Believe, An Instructional Developer?" Audiovisual Instruction, (November, 1968), 973.

Kuhn, Wolfgang E. and Raynold L. Alvin, "Computer-Assisted Teaching: A New Approach to Research in Music," Journal of Research in Music Education, XV (Winter, 1967), 305-315.

Mueller, Theodore and Robert Harris, "First Year College French Through An Audio-lingual Program," Educational Research Information Center, ED 011 737 (November, 1967).

Valdman, Albert, "Programmed Instruction and Foreign Language Learning--Problems and Prospects," Educational Research Information Center, ED 011 743 (November, 1967).

Unpublished Materials

Stephen T. Farish, unpublished notes, School of Music, North Texas State University, Denton, Texas, 1968.

Publications of Learned Organizations

LaGrone, Herbert, "Teaching--Craft or Intellectual Process?", Theoretical Basis for Professional Laboratory Experiences in Teacher Education, Forty-fourth Yearbook, The Association for Student Teaching, 1965, p. 99.

Newspapers

Dallas, The Dallas Morning News, December 4, 1967.

_____, November 28, 1967.

_____, October 28, 1967.