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Learning packages versus conventional methods of instruction

E. Bruce Meeks
Iowa State University

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Learning packages versus conventional methods of instruction

by

E. Bruce Meeks

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
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INTRODUCTION

The American public school is lagging far behind its potential in the change needed to meet the needs of the youth in a complex society. Until recent decades practically nothing had been done in generations to change the educational approaches which were used in the schools. However, within the past few years some changes have been made. The most noteworthy of these are integration, consolidation, and various attempts at individualizing instruction. As one might suspect some of these changes have improved the instructional process, others have failed. In some cases the ones which failed discouraged other changes from being implemented.

It is difficult to change the educational processes within the public schools. Change is painful for almost all who are involved. There are other reasons for the lack of change. Many times a change will require an increase in expenditures. To change, does not guarantee improvement. Many newly adopted programs have failed. However, it might be said that many new programs which have failed were not properly administered.

One of the major changes in American education in recent years was instigated and promoted by Dwight Allen and Robert Bush of Stanford University. The ideas of Bush and Allen were released to the public in a book which they had

authored in 1964 titled: A New Design For High School Education. The "New Design" to which they referred was a plan to provide the student with a more practical schedule, better use of the teacher's time, a more relevant curriculum and better use of materials and equipment (11).

Specifically, the traditional student schedule of six or seven periods per day has tended to be an uneconomical means of using student and teacher time. Many educators have preferred the various flexible (variable) schedules over the old "lock-step" schedule. A variable schedule which allows for varied lengths of class time and different modes of instruction (small group and large group instruction, open labs, etc.) is thought to be a more effective way to use the teacher's and student's time. Also ridding the teacher of nonprofessional responsibilities by using auxiliary personnel supports this effort (11).

The "New Design" promotes a meaningful program for the student, one in which he could achieve at his own rate. This requires excellent materials, equipment, and supporting instructional staff (11).

Statement of Problem

No change in the public schools requires more orientation and continuous in-service education for the teacher than the adoption of the "New Design". In general, where these needs have been properly considered, the transition to

the new program has been successful. Conversely, where the teachers were not prepared for the change, the new program was no better than the conventional one or it failed altogether.

There has been no accepted procedure to orient in-service and pre-service teachers to the "New Design" program. This study was an attempt to provide teachers who are confronted with a New Design program for the first time with the basic orientation which is needed. It is understood that this study deals only with orientation. There must be a continuous in-service program provided which will follow this initial orientation. An attempt was made in this study to describe what should be contained in the orientation program, as well as what methods should be used in the orientation.

Consideration must be given to a definite plan of orienting teachers at some time other than when they are in a structured setting. It is worth noting that B. Frank Brown (10, p. 84) makes this observation about independent study and materials which can be used without the immediate supervision of the teacher:

- The school must take advantage of every opportunity for the more active participation of students in their own learning.
- The most meaningful learning takes place when an individual makes a personal commitment to learning and becomes deeply involved in his own education.

---The essence of independent study is choice, decision making, and commitment.

---Independent study places the student in a more active role in the learning process.

---An individually tailored curriculum provides a student with time to think and work as an individual.

---The purpose of independent study is to help each student to learn how to take charge of the development of his own learning and to understand that he alone is largely responsible for his education.

---Independent study is designed to help each student to develop confidence in his own ability to learn, to be able to think imaginatively, and to explore ideas which appeal to him.

---Learning strategies should center around the ability to comprehend, apply, analyze, and synthesize. These objectives are best attained when students are working independently and realistically.

The writer surveyed 106 innovative schools across the United States. This was an attempt to determine what phases of the New Design should be included in the orientation program. All schools which were surveyed were identified as New Design schools. These schools indicated their opinions with a 92 percent return of the completed questionnaires. After analyzing the results of the survey, it was observed that the most frequently mentioned phases of the New Design which should be included in an orientation program were philosophy and attitudes, behavioral objectives, learning packages, independent study, team teaching, auxiliary personnel, small group instruction and large group instruction.

After some research and consideration of various methods of instruction, it was decided that the means of instruction to be examined in this study would be via conventional classroom methods and by learning packages. One-half of the teachers would use one mode of instruction and the other half would use the other mode. A comparison would then be made between the two modes to determine if one is significantly more effective than the other one.

Specifically the problem was to answer the following questions and to test these hypotheses:

Question 1: Can learning packages be effectively used to orient teachers to the New Design?

Question 2: What is the quality of the learning packages which were developed specifically for this study?

Question 3: Is there an economy of time involved by the use of these materials?

Question 4: How does the experience of using the learning packages affect the attitude of the teachers?

Null Hypothesis 1: There is no significant difference in the learning (as measured by the post-tests after adjusting for pre-test differences) by using the conventional classroom methods and the learning package method of instruction in orienting teachers to the New Design.

Null Hypothesis 2: There is no significant difference in the amount of time (as indicated by a record of time) required to orient teachers to the New Design using the two modes.

Null Hypothesis 3: There is no significant difference in the attitude of the teachers who are in the experimental group toward learning packages after the experiment has been completed (as measured by a pre- and post-opinionnaire).

Terminology

Learning Package: Written materials developed to teach a concept or skill. The package's components are (1) the stated concept, (2) pre-test, (3) behavioral objectives, (4) learning activities, (5) quest activities and (6) post-test. A package is to be self-instructional. It should require very little direct supervision by the teacher. It may be self-contained or it may require many supporting aids such as films, books and tapes. It is a guide for students to use in their learning.

Time Check: Each person both in the control and experimental group kept a record of the amount of time he spent in becoming oriented to the New Design.

Pre-Test: An achievement test given to the teachers over the concepts of the New Design program before any instruction is given.

Post-Test: An achievement test given to the teachers over the concepts of the New Design program immediately after all instruction has been completed.

Opinionnaire: A device which measured attitude was given to the experimental group at the beginning and at the end of the instruction period.

Delimitations

The study was confined to the problem of orienting teachers to the New Design. In determining what was needed in this program, 106 innovative schools across the nation were surveyed. All phases of the New Design were not treated. The eight aspects which were considered and consequently written into learning packages were: (1) Philosophy/Attitudes, (2) Behavioral Objectives, (3) Learning Packages, (4) Small Group Instruction, (5) Large Group Instruction, (6) Independent Study, (7) Auxiliary Personnel and (8) Team Teaching.

The number of teachers, who were a part of the study to determine the effectiveness of the learning packages, was limited to 144. Some of them had been exposed to certain phases of the New Design, to others the New Design was completely unfamiliar.

The control group was taught in a conventional manner in an education class for a period of four weeks. It was taught by a regular college instructor. Teachers in both groups kept a log of the amount of time they studied during the experiment. This must be considered only as accurate as the teachers were diligent in keeping an accurate record.

The final delimitation was the use of the college instructor to instruct the control class. This person's knowledge of the learning packages might have influenced

the instruction. It is not certain whether this has had any adverse effects on the study, but nevertheless it should be kept in mind.

Sources of Data

Data pertinent to this study were collected primarily in two ways. First, a survey of 106 schools was made to determine what should be included in the orientation of teachers to the New Design. It was concluded that those schools which were actively engaged in the field would be in a position to most readily assess the needs of what should be included in the orientation program. Knowledge gained from the results of the survey, the practical experiences of the writers of the packages, and a thorough research of literature were the sources of the data in determining the contents of the learning packages.

Second, during the fall quarter of 1970, the learning packages were tested in a course which is regularly offered. This course was presented to three classes, one on campus and two by extension. Each of the classes was randomly divided to contain both a control and experimental group. Both groups were given a pre-test to measure their knowledge of New Design concepts. The experimental group was asked to complete an opinionnaire instrument before the experiment. The control group was taught by conventional classroom methods; the experimental group was furnished with eight

learning packages. At the end of the instruction period, a post-opinion questionnaire was given to the experimental group to determine if there was a difference after experiencing the learning packages. An achievement post-test was given to both groups to measure their achievement since the pre-test so that a comparison could be made between the achievement of the experimental group and that of the control group.

Organization of Study

The material for this study was organized and presented in five chapters. The first chapter included the background and setting, statement of the problem, and its purpose, sources of data, delimitations and organization of study. Chapter two contained a summarization and analysis of related literature and research. The review of literature included phases of a New Design program.

Chapter three discussed the methodology and procedures used for the study. A discussion of the findings of the data assimilated from the study was included in the fourth chapter. In conclusion, chapter five contains the summary pertinent to the investigation, some possible side benefits of the experiment, and recommendations for further study.

REVIEW OF LITERATURE

Both research pertaining to learning packages and the "New Design" program are included in the review of literature. There is much more that has been written about different phases of the New Design than has been written about learning packages. Both concepts are products of the 1960's. The reader should be reminded that the learning package is the method of instruction which is to be used for this study while the New Design is the concept to be learned. Included in this chapter are learning packages as a means of instruction and a description of the various phases of the New Design.

Instruction via Learning Packages

There is an absence of research pertaining to learning packages. However, in recent years, there have been several studies dealing with audio-tutorial (A-T) instruction. A-T instruction is a form of learning package which requires materials and facilities to supplement a written package. It is not essential that supplementary materials be a part of learning packages; however, it is advisable. Audio-tutorial instruction, of course, does require tapes, films and other media which are to be used in a self-instructional learning center.

Some of the most significant work in audio-tutorial

instruction has been done by S. N. Postlethwait, a biology professor at Purdue University. Postlethwait found that in his botany class he was not allowing for individual differences. Some students were progressing at a much slower rate than others, because they had not had proper prerequisites for botany. Faced with this problem he began supplementing his class lectures with supplementary tapes. These tapes could be used at some time other than when the regular class met. Originally, he developed diagrams and photographs for students to use. The taped voice would direct the student to examine the diagrams and photographs. Later, tapes progressed to the stage that the student was directed to open his textbook and follow the explanation offered there in conjunction with the lecture which was on the tape. The next step was to add living plants to the package of materials. Still later, a lab manual was included which instructed students to do certain experiments from each lesson. By the end of the first semester a weekly learning package had been developed which would guide students through various learning experiences for a week without ever having to attend the regular classroom sessions (74).

Postlethwait was so hopeful for this type of instruction that he decided to run an experiment with 36 students. The only instruction this experimental group would get would

be on tape. The only teacher contact the students would have was a once-a-week meeting where materials which had been covered were discussed and the students were tested. The experimental group was required to take the same tests as the control group. At the end of the semester a comparison was made between the two groups. The results showed there was no significant difference in achievement between the two groups (74).

The individual members of the experimental group were interviewed to get their opinions of how a program in freshman botany could be developed. This would give students who had a weak botany background the prerequisites to prepare them for the advanced botany course. With this assistance from his students, Postlethwait permanently established a freshman botany course utilizing the audio-tutorial method of instruction (74).

Since Postlethwait's first endeavors into audio-tutorial instruction, other studies of A-T have been made. Many of these studies have no scientific basis for their findings. Only findings of a subjective nature are cited in these instances.

At the University of Illinois, Norman Ekresman did a study in 1966 to compare the effectiveness of structured printed materials to unstructured printed materials. The structured material was a variety of materials which had

been accumulated and compiled into a booklet. The unstructured material was loosely organized without being compiled. The structured units had no effect on student achievement; they were, however, a time-saver for the teacher. The teachers who used the structured materials included more new material. Ekresman concluded that teachers should be made more aware of the materials and how to use them so their effectiveness may be realized (24).

Ted E. Surdy of Kansas State Teachers College, has been using A-T instruction in his bacteriology classes for four years. This procedure combines the laboratory and lecture content into one course which is individualized for the student. Surdy feels that this method is highly successful, primarily because of the close teacher-student contact. This practice gives both the teacher and student more opportunities to be available for conferences. However, he feels the most benefit derived from this kind of program is that it places most of the responsibility for learning on the student (87).

A programmed instruction experiment in Soil Science was reported by H. D. Foth, R. J. Crabtree, and J. W. Schafer at Michigan State University. This experiment dealt mainly with how the course was structured. The results were concerned primarily with the attitudes of the students who were involved in the program. All results were not favorable.

About one-third of the students indicated that their minds wandered while they were listening to the tapes. Perhaps this is an indication that more visual aids or other media should be used. However, two-thirds reported that this particular course had been the most interesting and stimulating science course they had taken in college (27).

Audio-tutorial methods in Plant Science instruction have been used at the University of Tennessee by H. C. Smith and L. N. Skold. They found that students can control their rate of progress and amount of time spent studying. Learning and retention were improved through repetition, and interest was increased by the different approaches which were used. They cited better utilization of staff, equipment, and space as an advantage. Also, the instructor's enthusiasm and the students' study habits were improved (83).

After Postlethwait had observed his A-T method for several years, he had advice for those who would develop an A-T lesson. First, he suggested "List all of the objectives of the unit. Have it stated so that both teacher and student can be reminded of what is being sought." Second, "List all of the available media and teaching aids which might be useful in accomplishing the above objectives." This would include anything which would aid the instructional task. Third, "Select the media adapted to the subject." An effective way of doing this is to list all

appropriate media alongside each objective. Fourth, "List the study activities in their proper sequence." It is important that the activities be placed in proper order so that one can build off the other. Fifth, "Assemble the materials to be programmed by the audio tape." The tape should be used in such a manner that the student feels as though the instructor is speaking personally to him. Sixth, "Have the audio tape transcribed and edited critically." A tape might be used many times but it does not need to sound like a "canned" presentation. Seventh, "Make the final tape." This is the final product after the editing procedure (74).

Also, Postlethwait indicated that teaching should be approached in much the same manner that a scientist handles a research problem. First, the problem must be identified; then, resources must be adopted to find the solution to the problem. The teacher has the responsibility of the best possible utilization of facilities and has the task of doing everything possible to motivate his students. Postlethwait feels as though it is possible to include 50 percent more information when the A-T method is used. He concludes that A-T instruction is a partial solution to the problem of the increasing subject matter which is being required (74).

An agronomist at Iowa State University, Detroy Green,

accepts Postlethwait's findings and is willing to suggest three other advantages of A-T instruction which Postlethwait does not list. They are (31, p. 55):

1. Fewer students perform poorly and drop the course.
2. More time is available for the teaching staff to improve teaching materials and methods.
3. The instructor in the A-T laboratory is available to help the student when a problem arises, rather than discussing the laboratory subject matter before the student is fully aware of its importance.

Another study at Iowa State University was completed in 1968 by Stuck. Stuck used the "Simulated School" package method of instruction with one-half of the class in an education course. A unit from this education course in school law was chosen for the experiment. He compared the lecture and A-T method of instruction. He compared students on achievement, college grade point, student teaching experience and the group which they were in (experimental or control). He found that students saved time by the use of A-T instruction. The experimental group achieved significantly more than the control group (86).

Arden Johnston conducted an experiment at Iowa State University in 1969 in which he compared audio-tutorial and traditional instruction in seventh grade mathematics in the Boone, Iowa Junior High School. There were no significant differences in the post-test scores of the control group and those using the audio-tutorial method.

Seventy-five percent of the experimental group wanted to continue with A-T instruction.

Johnston listed these advantages (40, p. 15):

1. More individual pupil-teacher contact.
2. Students may review difficult concepts as many times as necessary.
3. Students have the opportunity to work at their own rate within an assigned period of time.

After examining the literature available relating to this type of instruction, there appeared to be sufficient evidence to warrant the attention of educators. There are numerous approaches to instruction. Some of these have been tried and proven, others are in the experimental stages. Within the next decade educators will likely have more answers as to what is the best method. However, until that time arrives, experimentation is warranted.

New Design Program

In order to develop materials to be used in this study, much literature had to be reviewed. All phases of the "New Design" were examined. However, learning packages were written on only eight phases. They were Small Group Instruction, Philosophy/Attitudes, Learning Packages, Behavioral Objectives, Independent Study, Teacher Aides, and Team Teaching. These were the phases most frequently mentioned by the 96 schools which responded to the questionnaire used in this investigation.

Philosophy/Attitudes

When writing of individualizing instruction, Theodore Clymer and Nolan C. Kearney of the University of Chicago, cited a number of needs that every teacher should consider (66, p. 275).

1. The need to know the students.
2. The need to recognize that not all teachers will adjust to individual differences in the same way.
3. The need to provide generous time allotments.
4. The need to plan carefully whatever is to be done in the classroom.
5. The need to work effectively with the groups as a whole.
6. The need to move slowly into any type of adjustment to individual differences.
7. The need to accept more noise and more confusion.
8. The need to recognize failure and being again.
9. The need to accept less than 100 percent adjustment to individual differences.
10. The need to recognize that adjusting to individual differences calls for plain hard work.

A study completed at the University of Alabama by Billie Doughty (20) gave some factors affecting innovation as identified in educational literature and as perceived by selected teachers. The findings of this study revealed the presence of influences outside the school system which exerted noticeable influence on whether change will be introduced in a particular school. The factor which

teachers considered of the greatest importance in successfully initiating change was provision of adequate training, time, guidance, and resources for the teachers involved. Finally, teachers perceived themselves as relatively autonomous, independent professional individuals who encourage worthwhile changes in their classrooms. Yet they seldom instigated changes and when change was to be made, they welcomed detailed guidelines which they could follow.

Edward Fauble of Pleasant Valley, Iowa, Community School District, very adeptly gives a rationale for individualizing instruction when he states that an educational program must start with a set of objectives or beliefs. It is essential for a child to have a feeling of success in school in order for him to have a wholesome attitude toward his entire school life. A child should not be expected to learn that which reaches beyond his capabilities. Each child should be provided with a program which gives him the opportunity to progress at his own rate of learning. Continuous progress opportunities should be provided in such a manner that no child should be required to omit or repeat any part of the education program. Children differ in their rate of mental growth and development just as much as they differ in weight, height, and emotional make-up. The age of a child or the length of time he has spent in school should not determine the level at which he is taught (26).

More specifically, a vehicle which assists in individualizing instruction is the flexible schedule. Instead of a rigid six or seven period daily schedule, a flexible schedule is a variable schedule which has various length of periods for different classes, depending upon the needs of the individual. A study completed at the University of Indiana by John Duncan indicated what teachers thought of flexible scheduling in three different schools (21, p. 4715).

Teachers generally agreed that:

1. The teaching-learning process was more rewarding under flexible scheduling. They felt that flexible scheduling brought about an increased professionalization of the teacher's role.
2. Flexible scheduling carried with it less lecturing by the teacher. The teachers believed strongly that flexible scheduling kept them busier than before, because of the individual contacts with students.
3. Faculty interpersonal relations improved under flexible scheduling.
4. Teaching was more enjoyable under flexible scheduling.
5. Classroom management was easier under flexible scheduling.
6. Student achievement had improved under flexible scheduling.

Conclusions:

1. Schools desiring to initiate flexible scheduling do not have to be located in wealthy school corporations which spend large amounts of dollars per pupil for instruction.

2. Flexible scheduling was a satisfactory arrangement in the schools in which this organization was introduced.
3. Exhaustive demands upon the teachers' time served as the central point of negative feeling in the study.
4. Flexible scheduling can meet the vast majority of expectations which teachers believe it can meet before they have any experience with flexible scheduling.
5. Flexible scheduling will aid in bringing about a changing role of the teacher, emphasizing the teacher as a director of learning.
6. Flexible scheduling may be one means of providing the educator with a method of meeting individual needs of students.
7. Students will assume more of the responsibility for their learning under flexible scheduling.
8. Other schools may experience the same degree of teacher acceptance of flexible scheduling if they initiated similar plans of flexible scheduling as the three schools included in the study.

Behavioral objectives

In recent years much attention has been focused on behavioral objectives. There is a trend for teachers to state the objectives for their courses in behavioral terms. With well stated objectives, it can be recognized when a student reaches a goal. Robert F. Mager (58) was credited with being the leader in this movement.

In Preparing Instructional Objectives, Mager states that unless the goals of a course are made clear, tests are misleading, irrelevant, unfair or useless. With well

defined objectives, a student can define his own progress at any time during the course and re-organize his studying or efforts if he needs to. The words the teacher uses in stating objectives should be as concise as possible. Words like "to know," "to understand," "to appreciate," are open to many interpretations and are frequently unmeasurable. Words like "to write," "to solve," "to recite," "to identify," are narrower in interpretation. Mager (58, p. v) asks these questions:

1. What is it that we must teach?
2. How will we know when we have taught it?
3. What materials and procedures will work best to teach what we wish to teach?

He adamantly believes that not only must these questions be answered to instruct effectively, but it is essential that they be answered in the proper order, i.e., the first question must be answered before the others. He further states (58, p. 53):

1. A statement of instructional objectives is a collection of words or symbols describing one of your educational intents.
2. An objective will communicate your intent to the degree you have described what the learner will be DOING when demonstrating his achievement and how you will know when he is doing it.
3. To describe terminal behavior (what the learner will be DOING):
 - a. Identify and name the over-all behavior act.

- b. Define the important conditions under which the behavior is to occur (given restrictions, or both).
 - c. Define the criterion of acceptable performance.
4. Write a separate statement for each objective; the more statements you have, the better chance you have of making clear your intent.
 5. If you give each learner a copy of your objectives, you may not have to do much else.

Later, Mager wrote in another of his books, Developing Attitudes Toward Learning, that a person learns so that his learning can help in the future. Whether he wants to use his learning later in life depends on his attitude towards a subject. These attitudes are influenced by teachers, parents, peers, idols, etc. The best way to begin to teach them is to clarify the objectives so that you know where your students are headed and do not end up some place else (56).

If a student verbalizes his convictions against a particular subject, it is unlikely that he will have anything to do with the subject again. A teacher can act to increase the tendency of a student to approach a subject rather than avoid it and to find out whether or not he succeeded. A teacher should arrange so that when the student is in the presence of subject matter, positive conditions are present and adverse conditions are as few as possible (56).

R. J. Kipler is also a recognized authority on the subject of behavioral objectives. In his book, Behavioral

Objectives and Instruction, he suggests that behavioral objectives serve two major functions. First, they are used to communicate the goals of instructional units to such interested persons as:

- (a) students planning to complete the unit,
- (b) instructors who teach preceding and following units,
- (c) persons responsible for planning and evaluating curriculum.

Each of these functions requires a different type of behavioral objective (44, p. 1).

Furthermore, Kipler says that if a student does not master objectives it is because (44, p. 1):

- (1) he was not adequately prepared,
- (2) he was not motivated,
- (3) he did not have enough time.

Independent study

Most good teachers realize that students should have a portion of their time unscheduled throughout the school day. The portion of unscheduled time might vary from 20 percent to 100 percent. The student's study habits, age, and ability coupled with the subject being studied, materials and facilities should determine just how much of his time is unscheduled. Nevertheless, the time which students are spending out from under the direct supervision of the teacher, is being recognized as a vital part of the instruc-

tional program. It is the part of the program which makes the student more responsible for his own learning.

Robert Kessler from Stanford University reports in a study pertaining to the students' use of unstructured time. There were three groups of students. Group I had no unstructured time. Group II had unstructured time in school work areas. Group III had unstructured time in school work areas and student commons. There was no difference in attitude and grade points in the nine week study. Groups I and II spent much more time in work oriented areas during the last six weeks, whereas there was no difference during the first three weeks (42).

William Alexander, Vynce Hines and Associates have become recognized authorities in the field of independent study. They have done much research in this area. They found that three procedures have been used to individualize instruction. They were individualized assignments or projects, task-oriented small group work, and teacher guidance of individual learning. In reviewing about 30 individual high school independent study plans, they observed a wide variation of the types of programs offered. It was quite obvious that schools used special community resources. One school for instance, released students to work in a science laboratory in the community. Others that are university affiliated, allow seniors to take college

courses if they are qualified in any area. These authors also noted that there was much enthusiasm in the independent study programs, that enthusiasm spreads from superintendents to principals to teacher to students (2).

In a research paper on independent study, Diana Tracy found that students of above average ability perform about as well studying independently as studying in the classroom. Self-sufficiency is related to achievement in an independent situation or tasks requiring students to analyze and draw conclusions, but not on tasks requiring knowledge of specific facts. Students have a generally favorable attitude toward learner-directed study (89).

Alexander, Hines and Associates found that teachers and administrators cited the following advantages of having independent study programs (2, p. 92).

Develops independence, responsibility, self-direction, allows study of topics beyond the regular curriculum, provides for needs and interests of the individual, increased achievement in special areas, improves student performance beyond high school, in college, vocational, or technical training.

A study of 256 Missouri schools by George Beltz (8) revealed that there were two determinants of whether a school would have an independent study program or not. These factors were wealth per child and size of school. There was also some indication that the educational level of the principal had some influence. A general expression

of enthusiasm for independent study by principals, teachers, students, and librarians was present. "Problems thought to be corollaries of independent study--time waste, lack of direction, additional discipline--had plagued Missouri's early innovators." However, they saw these problems as being surmountable and expressed a desire to expand the program (8, p. 2600).

Small group instruction

A comprehensive study completed by Associated Public School Systems, an organization of selected schools cooperating with Columbia University, indicated that small group instruction was one of the most effective teaching techniques. This approach far excelled methods such as lecture, test, film, and television. The small group is a student-centered learning activity which gives the student the opportunity to interact with his peers as well as the teacher.

Gaylor Petrequin (72) has written in his book, Individualizing Learning Through Modular-Flexible Programming, that there are observable changes in student behavior and attitudes toward learning which seem widespread enough to justify the validity of small-group instruction. One of the changes which he most frequently mentions is that students develop a sense of responsibility for their own learning. He continues, students have learned to think

independently of the teachers. Students have become more confident in the validity of their own ideas, and in themselves as individuals. They learn from each other as they work in small groups; questions which were once directed to the teacher are now directed to other members of the group. Students have become more skilled in dialogue with each other and have developed greater awareness of the possibilities for learning. Exposure to diverse ideas within their own group have broadened the outlook of many students. Forced into the role as a listener, teachers have become more acutely aware of individual and group problems. Discipline problems are less frequent in the small group. Teachers have generally become more flexible in their regard for subject matter. Both students and teachers have become more aware of the goals and objectives toward which they are striving. As a result of being more involved, students have shown a greater interest in their school work (72).

B. Frank Brown suggests that small group instruction offers an opportunity for the student to gain a sense of humor, it develops the ability to listen to people; it provides a tendency to accept the other fellow's point of view; and it encourages a fondness for people. He says in small groups students have a chance to talk; they feel relaxed with other people; they help to create something;

and they are frequently forced to support a position (10).

A case history was completed by Thomas Kernan (41) of Columbia University on the topic of students working in small groups. He chose two sociometrically grouped classes, one of seventh grade math and the other a girls' health class composed of eighth and ninth graders. He reported that progress was not significantly better in subject matter but the arrangement made for a more interesting class. Opportunities for social growth increased. There was more individual attention given to the student. Missed work was easy to make up. In a small group students may ask questions which could be answered by one of their peers more clearly than the teacher. Not adhering to the subject and poor group behavior were listed as disadvantages of this type of instruction.

Large group instruction

Large group instruction is an important phase of the New Design. It is the phase which provides an opportunity for the teacher to give a presentation, show a film, etc., to large groups of students. Instead of a resource person being required to remain at the school and deliver the same presentation five different times to 30 students each time, with large group instruction he may give one presentation to the entire 150. Large group instruction can be an effective means of better staff utilization and an exciting

way to teach.

Carl H. Peterson, former principal of Easton Area High School, Pennsylvania, is recognized as one of the most authoritative authors on the subject of large group instruction. In his book, Effective Team Teaching: The Easton Area High School Program, he describes the worthwhile experiences which his school has had. He maintains it is not enough for a school to provide large instruction facilities and say to the teacher, "There, now go unto them and lecture." In large group instruction, as in anything else, careful preplanning and on-going evaluation invariably achieve the best results. The instructional staff needs to develop a "philosophy of large group instruction." Suggested criteria should be established by both teachers and administrators (71, p. 99).

Recently J. Lloyd Trump has become the person most deserving of credit for promotion of more change in American education. He is Associate Secretary of the National Association of Secondary School Principals, and among many significant works has co-authored Secondary School Curriculum Improvement with Delmas F. Miller. In referring to large group instruction they report that it is being carried on effectively in all subject areas. Large group instruction refers to teacher-planner presentations either provided by the teacher himself, by some other person, or

by a film or recording (91).

In 1961, Trump and Baynham in Focus on Change sketched "Images of the Future." They were far-sighted enough to declare that some classes will assemble large groups of students, perhaps as many as 300, for instruction. Trump and Baynham reported that a study by the National Association of Secondary School Principals revealed that both teachers and students adjust quickly to the large group setting, probably because this is the type of instruction to which most students have been exposed. They wrote that in the school of the future, more students will be exposed to skilled teaching in all subjects because the most capable teachers will give the large group presentations (90).

Bush and Allen, in A New Design For High School Education, state that large group instruction places primary emphasis on presenting materials with a minimum of interaction. The purposes of having large group instruction are these: to conserve teaching time, to improve the quality of the presentation, to make effective use of resource persons, to capitalize on special talents of staff, to make efficient use of films, television, and other audio-visual aids, and to better use equipment and facilities (11).

Team teaching

The team teaching concept is a part of the New Design which encompasses a different way to utilize teacher time and effort. A teaching team might be so basic that it consists of a teacher and an aide, or it might be so sophisticated that it might be several teachers with different professional status representing different disciplines. Two or more teachers are given the responsibility, working together, for all, or a significant part of, the instruction of the same group of students. The size of school, capabilities of teaching staff, and the degree of innovative climate should determine whether the staff will be organized as teams.

Robert Bush and Dwight Allen, who coined the term "New Design," suggest that the professional staff should consist of a senior teacher in each field who has done graduate work in his field and in professional education. He should work closely with students and guide the professional growth of the staff. There should be staff teachers who will have advanced degrees and will try to specialize. There should also be first year teachers and intern teachers (11).

Bush and Allen recommend that the supporting staff consist of teaching assistants with bachelor's degrees in a particular field, technical assistants for operation and maintenance of equipment, and clerical assistants. They

suggest that a part of the instructional staff should be community resource persons, e.g., psychologists, lawyers, and newspaper editors (11).

William Irvin reports in a study which he made in the intermediate grades, that team teaching neither impaired nor improved the growth of students significantly. He observed that team teaching causes changes in teacher behavior more than that of students. The team teaching approach is more expensive than an individual teacher in a self-contained classroom. He also observed that there is more opportunity for specialization without departmentalization (38).

A significant study was completed by Russell Graham (30) at the University of Missouri in 1966. He concluded that there is an increase in the adoption of team teaching. School personnel were not adequately knowledgeable concerning team teaching. There were no widespread use of written guidelines to use in team teaching, and noncertified personnel had not been widely used in the school studied. Graham listed the lack of proper facilities and in-service education programs as the greatest handicaps to further the development of team teaching. Team teaching also had not been adequately evaluated.

John Waters found in his research that team teaching and conventional teaching of English result in about the same achievement in literary comprehension and appreciation

on the part of seniors in regular English classes (94).

A study done at Columbia University by James Oneyer revealed that school administrators seldom got involved in solving problems of team teaching. Curriculum development and instructional supervision changed drastically when team teaching was adopted. It was found that in the better team teaching schools the school administrators were the active leaders and ardent supporters of the team teaching programs. Most of the problems which were associated with team teaching were related to intra-personal relationships within the teaching team; a lack of administrative leadership and support for the teaching team; attitude of other teachers toward team teaching; some students' inability to adjust to instructional change; and, teachers having difficulty with small classes (62).

John Di Santo reported a study he made of mid-western elementary schools. Team teaching was widespread in elementary schools. The teaching teams have experienced limited success in their efforts to use the special competencies of individual team members. In most cases flexible scheduling was practiced where teams were used. Team teaching seemed to promote more professionalism among the teachers. Curriculum planning improved where team teaching was practiced. Teachers still were not getting relief from the sub-professional and clerical tasks by

paraprofessional personnel. Finally, but significantly, team teaching had stimulated the increased use of modern teaching aids and equipment (18).

Auxiliary personnel

To provide for proper utilization of teacher time and to develop the most effective instructional staff within the New Design, it is essential that persons other than professional teachers be used in the instructional process. These supporting persons can range from students to community residents. Typically, the supporting staff has been limited by the lack of imagination of teachers and administrators, by state law and by school policies. There are many types of teacher aides; several types will be recognized in this review.

The use of students as tutors in after-school study centers was studied by Laurence Edler of the University of California. He found that the use of tutors appears to be sound educationally and represents an educational resource which is largely untapped. He had findings too numerous to call to the attention of the reader; however, some of the most significant were that older tutors seem to do better, and that students who perform as tutors are generally motivated to higher personal achievement and greater understanding of basic subject matter and methods of learning (22).

A similar study was done by Bob Hutchins at the University of Ohio. He compared the relationship of selected factors to performance of teenage teacher aides in 11 Appalachian school districts. He reported that a criterion of effectiveness was measured by four ratings: (1) a self rating, (2) one by an advisor, (3) one by the supervisors, and (4) an event check over a two week period. Of 29 independent variables which were used, only one, grade-point average, seemed to correlate with teacher-aide effectiveness (37).

A study done by Ernest Moreland at the University of Indiana reported that audio-visual specialists were not released a sufficient amount of time to perform their audio-visual duties. In spite of this, these specialists were making important contributions to teaching teams by providing consultative services, producing audio-visual materials, ordering and scheduling media, and maintaining equipment (64).

Norman Jensen at Oregon State University made a study similar to Moreland's. He went one step further with recommendations to improve the role of the audio-visual specialists. Jensen suggested that state certification standards be established, that in-service training be developed for the audio-visual specialist, teachers and administrators, and that school systems establish clearly

defined policies pertaining to the audio-visual specialist's role (39).

A study of teacher aide employment for the 1966-67 school year in selected school districts of Missouri was completed by Solon Haynes. He reported that there was a plentiful supply of candidates for these salaried positions. Most schools had no in-service program for their aides. The aides did many kinds of jobs even though most schools separated the aides from instruction (35).

An interesting study was undertaken by Moody at Pennsylvania State University. He attempted to analyze the aide position in selected Pennsylvania schools. It was found that teacher aides should be: mature adults, high school graduates or have some college education, fond of children, cooperative with the professional staff, and have average or above intelligence. Moreover, teacher aide applicants should be carefully screened members of the administrative staff. Aides performed many nonprofessional tasks plus some instructional ones. The teacher-aide professional relationship was good and role functions were satisfactory. Major obstacles reported were: (1) a lack of planning by teachers to effectively use the aides, (2) inadequate equipment and instructional materials, (3) poor communication between teachers and aides, and (4) insufficient funds to hire additional aides (63).

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Summary

The learning package is the learning method treatment used in this study. Eight different concepts of the New Design are to be learned. A search of the literature reveals that very few controlled experiments have been used in the development of learning package instruction; however, there has been related research. Postlethwait has pioneered much of this with his audio-tutorial approach. Each of the authors reviewed in this study had praise for the element of the New Design with which he was concerned.

DESIGN OF EXPERIMENT

The problem of this study was to determine if the learning packages (on file Educational Administration Section College of Education, Iowa State University) might effectively be adopted to teach New Design concepts to in-service teachers. It was also designed to determine if this type of instruction was significantly more effective than conventional methods of instruction. This chapter describes the methods and procedures that were used to develop the materials utilized in this study, and to gather and analyze the data required for the study. It has been divided into five parts: (1) selection of the samples, (2) preparing the materials. (3) orientation, execution and review, (4) testing, and (5) treatment of the data.

Selection of the Population

A course, taught by Associate Professor Richard P. Manatt of Iowa State University, was developed to prepare in-service teachers with the needed concepts to effectively perform in a New Design program. Generally speaking, students who were enrolled in this course were teachers interested in making some changes in their methods of instruction. The students in the course were from varied backgrounds, of both sexes, from large and small schools, and a mixture of administrators and teachers. The course

offered three quarter hours of graduate credit. This study was conducted with three sections of the course during the fall quarter of 1970. One section met on the Iowa State campus and the other two met as extension classes at Linn-Mar Community School District at Marion, Iowa and Alta Community School District at Alta, Iowa.

One hundred and forty-four students were enrolled in the course. The enrollees were divided into experimental and control groups. The total group was divided equally using the standard table of random numbers. Each of the three class sections was divided in this way.

Preparing the Materials

Learning packages

In attempting to identify specific New Design concepts, 106 selected schools in the United States were polled. These selected schools were listed by key educators in several states as the most innovative schools, both elementary and secondary, in the nation. A questionnaire was devised which listed 19 New Design concepts. Richard P. Manatt and E. Bruce Meeks identified these 19 concepts as those which were being practiced to some degree in New Design schools. Officials from the selected schools were asked to check the concepts which needed the most emphasis. There was a 92 percent return of questionnaires. Eight concepts were most

frequently mentioned. They were: (1) Small group instruction, (2) Large group instruction, (3) Team teaching, (4) Auxiliary personnel, (5) Philosophy and attitudes, (6) Behavioral objectives, (7) Learning packages, and (8) Independent study. Manatt and Meeks decided that these eight concepts would be presented in learning package form to the experimental group while the conventional method of teaching these same eight concepts would be used with the control group.

There were no learning packages previously developed which taught these particular concepts; therefore, they were written by Manatt and Meeks. The original draft effort for each package was shared in the following way. Manatt developed Large group instruction, Team teaching, Philosophy and attitudes, and Learning packages. Meeks initiated the remaining four. Mrs. Doris Dick was employed as an illustrator to prepare cartoons and diagrams for each package. Approximately one year was spent in developing the packages. Each concept listed above was presented in a separate learning package. Certain common components were used in every package. Each package contained (1) concepts and sub-concepts, (2) behavioral objectives, (3) pre-tests, self-tests and post-tests, (4) learning activities, and (5) quest activities.

Other materials

Pre- and post-tests were developed to measure the proficiency and growth of each student in each treatment. One hundred eighty questions were written which measured the performance levels prior to the treatment and at the end of the study. The questions were of the multiple choice and true-false nature. By using a table of random numbers, the 180 questions were divided equally into two groups. A panel of educators representing New Design schools was used to establish validity of the items was used to determine validity of the test items (88). One set of questions was used as a pre-test and the other set was used as a post-test. Experimental practices were tested by a judgement panel knowledgeable in the New Design.

Certain personal descriptive data were recorded on the answer sheet of the pre-test. These data were: (1) sex, (2) teaching experience, (3) was the individual in an innovative school, (4) grade level, (5) position, and (6) attendance center.

A ten-statement opinion survey was devised with the possible answers indicating the degree (ranging from one to five) with which the student agreed with the statement. This instrument was used as a pre-test to obtain a measure of opinion toward learning packages. It was administered

before the students were exposed to the packages which were prepared for the experiment. The same device was also used as a post-test to measure opinions after having completed the experiment. The opinion survey was developed to be used with the experimental group only; individuals who responded did so anonymously.

A time sheet was given each of the students. Students in the experimental group recorded the time (in number of hours) they spent working on the learning packages in the four-week period of the experiment. They had a place to record the amount of time spent on each package, the amount of time spent on quest activities, and if they planned to spend more time on quest activities after the experiment.

On the time sheet for the control group, the amount of time spent in class and homework was recorded on a weekly basis and compiled for the total four-week period.

Orientation, Execution and Review

The first exposure the students had to the experiment was an introduction of the experiment to all 144 students during their first class meeting. They were informed that the purpose of the experiment was to test how learning packages compared with the conventional method of instruction. It was noted that this topic needed to be researched. They were informed of the duration of the experiment, testing procedures, and selection of experimental and control groups.

After orienting the students to the experiment, the pre-test was given to all students. The pre-test consisted of 90 objective questions. The answer sheets were numbered. These randomly selected numbers divided the students into the experimental and control groups. The answer sheet to the pre-test also had space for some personal descriptive data. More specific reference will be made to this data later. The two groups did not meet together again until the end of the experiment when the post-test was administered.

Meeting in a separate area from that of the experimental group, the control group was given a time sheet and informed as to its use. During the next four weeks, for three hours per week (one session), this group was taught the New Design by Professor Manatt. He used the conventional lecture method.

Following the pre-test, the experimental group was given the opinion survey. They were asked to omit their names from the tests. Hopefully, this procedure assured unprejudiced answers. These students were informed of the procedure used in selecting the eight specific concepts to be taught. The authorship of the packages and how they were written was also explained. Each student was furnished with a complete set of the eight packages. At that time the format of a package was introduced. The components of a package were discussed. The students were to complete

the packages in the following four weeks. At the end of four weeks, they were to return to class prepared to take the post-test. They did not attend class during the four weeks duration. At the end of two weeks, if they had any questions pertaining to the experiment, they were invited to meet with the investigator.

Testing

As indicated earlier in the execution phase, the testing was done in two different stages. The pre-testing for performance level for both groups was on the first day of class; the experimental group also completed the opinion questionnaire. The post-testing to measure growth for both groups was completed during the last session of the experiment which was four weeks after the pre-testing. Again, the experimental group completed the opinion questionnaire to indicate whether they preferred to be in the experimental group and what their opinion of learning packages was after the experiment. All tests were hand scored.

Treatment of Data

The primary objective of the experiment was to assess the relative effectiveness of the learning package method of instruction to the conventional method, as measured by the pre-test and post-test. It was also used to investigate whether the relative effectiveness of the two methods

differed by other classifications of the subjects, i.e., whether: (1) the subject is male or female, (2) he works in an innovative school or not, (3) varying degree of experience, (4) his job responsibility, (5) the grade level at which he works, and (6) difference in the three attendance centers.

The appropriate analysis for the experiment can be defined as an analysis of covariance with repeated measurements on subjects. The factors consisted of group, achievement level and whether any of the various other variables significantly affected achievement. The covariance treatment provided adjustment for pre-test differences.

For a description of the analysis and computation procedures applicable to this experiment, see section 7.7 in Anderson and Zelditch (4).

The raw data were placed on code sheets, then punched and verified on I.B.M. cards. The facilities of the Iowa State University computer center was used to analyze the data on the 360 I.B.M. machine.

FINDINGS

Four questions were posed under the problem in Chapter 1 and three null hypotheses were set forth to be tested.

The questions were:

Question 1: Can learning packages be effectively used to orient teachers to the New Design?

Question 2: What is the quality of the learning packages which were developed specifically for this study?

Question 3: Is there an economy of time involved by the use of these materials?

Question 4: How does the experience of using the learning packages affect the attitude of the teachers?

Because of the nature of the questions, none of them can be completely answered in this chapter. Three of the questions will be dealt with in this chapter and the final chapter. Because of the nature of the remaining question, which deals with the quality of the learning packages, it will be discussed only in the final chapter.

The three null hypotheses were tested as a part of the over-all analysis of the study. This analysis prompted deletion of the sex and school type variable from the model. The analysis of variance is presented in Table 1. Null hypothesis number 1: There is no significant difference in the learning (as measured by the post-tests after adjusting for pre-test differences) by using the conventional classroom methods and the learning package method of instruc-

tion in orienting teachers to the New Design, was rejected.

In the process preceding the covariance analysis, stepwise regression was applied to the data to identify variables that might be affecting post-test scores. Also, this analysis provided for a reduction of the model, i.e., deletion of insignificant variables sex and school type, from the analysis. The model used to isolate the effects of the variables treatment, sex, and school type was as follows:

$$Y_{ijklm} = M + T_i + S_j + St_k + TS_{ij} + TSt_{ik} + SSt_{jk} + TSSt_{ijk} + e_m(ijk)$$

where

$$i = 1, 2, 3$$

$$j = 1, 2$$

$$k = 1, 2, 3$$

$$m = 1, 2, \dots, n_i$$

where

$$n_i = \text{number of subjects within the } ij\text{th cell}$$

$$Y_{ijklm} = \text{post-test score of } m\text{th person in the } ij\text{th cell}$$

$$M = \text{overall mean}$$

$$T = \text{treatment group}$$

$$S = \text{sex}$$

$$St = \text{school type}$$

- TS = effect of interaction of the i th treatment group with j th sex
- TSt = effect of interaction of the i th treatment group with k th school type
- SSt = effect of interaction of j th sex with k th school type
- TSSt = effect of interaction of i th treatment group with j th sex and k th school type
- e_{ijklm} = random error associated with m th subject within the $ijkl$ th cell.

The F values in Table 1 are conservative because the sums of squares were calculated by finding the regression sums of squares on the full model less the regression sums of squares on the model excluding the variable of interest.

Since there was an unequal number of subjects within each of the cells, a regression sums of squares attributable to all of the variables in the model was computed. Then the post-test scores were regressed on a reduced model which excluded sex. The sums of squares obtained here were subtracted from the sums of squares obtained by regression on the full model. This difference is attributable entirely to the differences between sexes. Similarly, models excluding school type and treatment were used to obtain a sums of squares due to difference among school type and treatment group respectively.

Therefore, recognizing .10 level as significant is justified.

Table 1. Analysis of variance

Source	d.f.	Sum of squares	Mean squares	F
Full model	12	1169.74		
Treatment	1	94.18	94.18	3.73*
Sex	1	0.02	0.02	< 1
School type	2	10.46	5.23	< 1
T x S	1	4.61	4.61	< 1
T x ST	2	68.43	34.21	< 1
S x ST	2	1.85	0.93	< 1
T x S x ST	2	1.49	0.75	< 1
Residual ^a	131	3307.57	25.25	
Total	143			

^aFrom full model.

* $p < .10$.

Since none of these are significant in this model except for treatment, an analysis of covariance was computed using the pre-test scores as the covariate and classifying post-test scores according to the treatment groups. Post-test scores were adjusted for prior knowledge of the subject matter by using pre-test scores as the covariate. The model used was as follows:

$$Y_{ij} = M + T_i + B(X_{ij} - \bar{X}_{..}) + e_{ij}$$

where

$$i = 1, 2, 3$$

$$j = 1, e, \dots, n_i$$

where

n_i = number of subjects in the i th treatment group.

Y_{ij} = post-test score of j th person in the i th treatment group

M = overall mean

T = treatment group

X_{ij} = pre-test score of the j th person in the i th treatment group

e_{ij} = error associated with the post-test score of the j th person in the i th treatment group.

These findings are presented in Table 2.

Table 2. Analysis of covariance: post-test score is the criterion variable

Source	d.f.	Sum of squares	Mean squares	F
Treatment	1	381.84	381.84	14.87*
Covariate	1	475.43		
Residual	141	3620.04	25.67	
Total	143	4477.31		

* $P < .01$.

The resulting F value is found to be highly significant when the pre-test scores are used as covariate. Therefore the first null hypothesis must be rejected when an analysis of covariance is computed.

Table 3 contains the means and standard deviations of the pre- and post-tests of the experimental groups and the pre- and post-tests of the control group.

Table 3. Means and standard deviations of achievement of experimental and control groups on pre- and post-tests

	Experimental n = 70		Control n = 74	
	Mean	Standard deviation	Mean	Standard deviation
Pre-	63.27	6.10	62.32	9.28
Post-	73.34	5.69	70.09	4.97

Table 4 displays data pertaining to time spent in each of the two groups. Null hypothesis number 2: There is no significant difference in the amount of time (as indicated by a record of time) required to orient teachers to the New Design using the two modes.

The test for homogeneity of variance was computed by comparing the ratio of the experimental group variance to control group variance with the table F value at 69 and 73

Table 4. Means and standard deviations of time spent by experimental and control groups^a

	Experimental n = 70	Control n = 74
Mean	12.86	12.73
Standard deviation	7.58	4.42

^aUnits = hours.

degrees of freedom. The results reveal a highly significant difference at .05 level between the variances. This requires the use of the separate t test to check for differences in time between the two groups.

This is computed as

$$\frac{X_1 - X_2}{S_{X_1 - X_2}} = .02 = t_{142}$$

This value reveals no significance at .05 level when compared with the tabled t value. Therefore null hypothesis number 2 remains tenable.

A form was used to record time spent in each of the groups. The teachers in the experimental group could indicate on the form that they would spend more time on activities after the experiment was concluded. All persons with the exception of four within the experimental group

indicated they intended to pursue some of the suggested activities (quest) at a later time.

An item analysis indicated that the subjects in the experimental group spent more time on the Philosophy-Attitudes and Behavioral Objectives concepts than any others. This was also true of the time allotments emphasis in the series of lectures received by the control group.

Null hypothesis number 3: There is no significant difference in the attitude of the teachers who are in the experimental group toward learning packages after the experiment has been completed (as measured by a pre- and post-questionnaire) was rejected.

The ten items on the opinionnaire were weighted according to positive and negative responses. The adjusted values ranged from a positive 1 to a negative 5 (strongly agree to strongly disagree) with varying degrees in between these two extremes.

Table 5 reports the means and standard deviations of the pre- and post-attitude survey of the experimental group.

The test for homogeneity of variance was computed by comparing the ratio of the pre-test variance with the post-test variance with the table F value at 39 and 39 degrees of freedom. The results reveal no significant difference at .05 level between variances.

Table 5. Mean and standard deviations of pre- and post-attitude test scores of experimental group

	Mean	Standard deviation
Pre- n = 39	1.59	8.5
Post- n = 39	1.40	7.8

This is computed as

$$\frac{\sigma^2 \text{ pre-}}{\sigma^2 \text{ post-}} = F_{39, 39}$$

The pooled variance t test was used to check for differences in attitude between the two groups. This is a conservative test inasmuch as it assumes no correlation between pre- and post-tests. The computed t value for differences in attitude is 3.2. The tabled t_{78} is less than the computed t value. There is a highly significant difference at .05 level in attitudes of the experimental group between the pre- and post-tests. Consequently null hypothesis number 3 was rejected.

An item analysis of the responses to the opinionnaire indicates that only two persons who had been in the experimental group showed less enthusiasm toward learning packages at the conclusion of the experiment. A majority of the

others had a more positive response as they progressed through the experiment. A few retained about the same amount of enthusiasm. In general each question was responded to more favorably on the post-test than on the pre-test. Finally, only one person indicated he would rather have been in the control group than the experimental group.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this investigation was to determine if the use of learning packages could be established to be significantly more effective than a more conventional method of instruction. Analysis of covariance was used to analyze the data. The criterion variable was post-test scores for the treatments.

Two treatments were used in each of three Iowa State University classes. The subjects in each of the three classes were randomly assigned to the treatments. The treatments were: (1) an experimental treatment which used learning packages, and (2) a control treatment which used the conventional methods of instruction. Included in the conventional approach were lectures, transparency presentations and tape and slide presentations.

The three null hypotheses which were to be tested were: (1) There is no significant difference in the learning (as measured by post-tests after adjusting for pre-test differences) when using the conventional classroom methods or the learning package method of instruction, in orienting teachers to the New Design.

(2) There is no significant difference in the amount of time (as indicated by a record of time) required to

orient teachers to the New Design using the two modes.

(3) There is no significant difference in the attitude of the teachers who are in the experimental group toward learning packages after the experiment has been completed (as measured by a pre- and post-opinionnaire).

The experiment was designed in such a way that the 144 students in the three University classes were randomly divided into experimental and control groups. The control group was subjected to the conventional techniques of instruction by the regular instructor. The experimental group was taught the same concepts by using specially prepared learning packages. All of the students were pre- and post-tested to measure growth over time. All students kept a record of the amount of time spent on the New Design instruction. Also, the experimental group was surveyed at the beginning and again at the end of the experiment to measure variance in attitude toward learning packages.

A multifactor analysis of variance with repeated measurements on subjects and an analysis of covariance was used to treat the data. The factors consisted of groups, sex, and if the subjects were teaching in innovative schools. The repeated measures were pre- and post-tests. The criterion variable was the test scores. By the process of stepwise regression, sex and school types were identified as the variables along with treatment which had the most

influence on achievement.

The only significant F value emerging from the analysis of variance that was pertinent to the study, was in the two methods of instruction. The results indicated that the learning package method of instruction was significantly more effective than the conventional method. This was measured at the .10 level. The other factors and their interactions did not significantly affect the subjects in this experiment.

An analysis of covariance was computed using the pre-test scores as the covariate and classifying post-test scores according to the treatment groups. The test scores differences were found to be highly significant.

Actual time spent on the New Design concept during the experiment was recorded by each subject. A separate t-test was used to test the data. There was no significant difference in the amount of time each group spent in study during the experiment. All persons in the experimental group were surveyed to determine their opinions of learning packages. This was done at the beginning of the experiment and again at the end.

The attitude toward package learning was surveyed by opinionnaire. The attitude data were analyzed using pooled variance. The analysis revealed a highly significant improvement of opinion toward learning packages as a means

of instruction. It should be pointed out that this significance was statistical; however, in actual classification the change was from "agree" to "strongly agree".

Limitations

This study was limited to practicing teachers who had chosen to enroll in a class which would acquaint them with the concept of the New Design. Typically, teachers who enroll in these classes are interested in improving their effectiveness in the classroom.

The study examined two methods of instruction; they were learning packages and conventional instruction.

The content of the subject chosen for this experiment focused on concepts of the New Design. The experiment consumed approximately one-half of the entire course; consequently discussion about methods of instruction for this course must be restricted to only the New Design phase of the course. Because of time limitations, there was no retention test given. A second post-test, given some months later, would have improved the study by attempting to answer the question, "do the learning advantages associated with the experimental treatment persist over time."

Every effort was made not to add unmeasurable factors to the study. Because of this, the participants were not given immediate reinforcement to their solution of the problems. It was feared that if someone were available to

give this reinforcement or to answer their questions, an additional teacher-variable would be introduced that might contaminate the study. Therefore, the subjects in the experimental group progressed through the experiment without being aware of whether they were actually grasping the desired concepts except for occasional self-tests which were a part of the learning packages.

It was important to insure that the subjects were properly oriented to the role they were to assume. Immediately after administering the pre-test to all participants, the individuals were assigned to either the control or experimental group. This was followed by a 30-minute orientation session for the experimental group. During this time the pre-test to measure attitude was also given. There should probably have been more time devoted to this orientation for the experimental group.

Another limitation was the quality of the learning packages themselves. If the results of an investigation are to be useful in the implementation of its findings or are to serve as a benchmark for further research, the study must be easily adaptable to these uses. It is uncertain whether the learning packages used in this study were typical learning packages.

No attempt was made to minimize the "Hawthorne Effect". The experimental group was informed of its role. The control

group did nothing unusual except take the pre- and post-tests and keep a record of time.

Conclusions

As stated previously, the problem of this study was to answer four questions and test three hypotheses. The first question was: Can learning packages be effectively used to orient teachers to the New Design? The results of this study reveal that the experimental group which used the learning packages learned significantly more than the control group which was exposed to the conventional method. From this it can be concluded that the use of learning packages for teaching these concepts is an effective method of instruction.

The second question was: What is the quality of the learning packages which were developed specifically for this study? It is difficult to make a judgment about this; however, observations relating to their quality were made by participants in the experimental group, various school administrators and other professors. In practically every instance, favorable comments as to the quality of the learning packages were made. It is concluded that the learning packages were at least adequately written for their intended purpose.

Question number three was: Is there an economy of time effected through the use of these materials? The

analysis reveals that there is no economy of time when observed on a group basis; however, for many individuals there was an economy of time because they were not expected to perform within a conventional structure. The variance of time spent was much greater for the experimental group than that of the control group. In using learning packages, the experimental group could progress at their own rate. They could also work on the packages when and where it was convenient, not just at class time in a classroom. Usually this took place in their homes during a time which was advantageous for them. It is noteworthy that it took no more time for the experimental group than the control group.

The fourth question was: How does the experience of using the learning packages affect the attitude of the subjects? From the initiation of the study, the experimental group was enthusiastic about using learning packages. This was evidenced by the pre-test on attitude as well as the observable enthusiasm of the participants. The experience of using the learning packages did not reduce their opinion of them. As measured by the post-attitude-test, their opinions were even more favorable at the conclusion of the experiment.

Null hypothesis number 1, which said there was no significant difference in learning between the two instructional methods, was rejected. It was found that the

learning package method of instruction was significantly better than the conventional method of instruction at the .01 level. Within the limitations previously set forth, it can be stated that the participants learned significantly more under the learning package method of instruction.

Three factors of the study were considered, along with their interactions. The sex of the participant did not affect the participant's achievement, and neither did the type of school in which the participant was employed. Consequently, it appears that the method of instruction (the third factor) was the significant factor to which can be attributed the difference in the learning of the two groups.

Discussion

Boundaries were established for this study so that outside influences could be controlled as much as possible. If the participants had been given immediate reinforcement, and had an instructor been available to answer their questions, then there is a distinct possibility that the experimental group would have scored even higher.

The learning package method is a more individualized approach which allows the student to progress at his own rate and select his own time and location for learning. This is in contrast to the structured class where students are commonly treated as a group and much of their time is

spent in the classroom while the instructor lectures.

If learning packages are to be effective, they must be well written, only then are students enthusiastic about using them. They need to be "personalized" (written especially for the individual). Normally, students are receptive to trying new approaches to learning. One might speculate that even better results could be obtained if packages and conventional instruction were combined in a large group- small group-independent study configuration.

Recommendations

The following recommendations are made relative to the conclusions of this study comparing two methods of instruction.

1. The learning package method of instruction should be utilized to teach the concepts of the New Design.

2. An attempt should be made to provide the students in this course with access to a learning center. The learning center should contain tapes, films, books, recordings, pamphlets, etc. relating to the New Design.

3. A more thorough orientation of the learning package concept (perhaps drill with a sample package) should be given the student when initiating an individual into this endeavor.

4. Should this study be duplicated or future classes taught in this manner, a method of immediate reinforcement

should be made available to the student. An instructor should be present or in immediate contact to answer any questions that might arise.

5. In later studies, a more sophisticated questionnaire should be devised to measure attitude or opinion toward the learning package approach. The questionnaire should also be administered to the control group as well as the experimental group.

6. Where the learning package approach is used in regular classes, a student evaluation procedure should be established whereby the students will be able to evaluate the process. This procedure might be in the form of a checklist.

7. Teachers need to become familiar with how to write quality learning packages. They should be provided with the time to write them and the materials to supplement the learning packages.

8. Every effort should be made to check and improve the validity of the tests used in the experiment.

9. In general, learning packages should be used for learning during the students' independent study time.

Recommendations for Further Research

1. This experiment could be replicated to validate the findings. A retention test should be administered to the students who are involved in future studies. This will

provide a much more valid measure of mastery of concepts. There should be a follow-up of the students in the study to see if they are putting into practice the concepts which they learned.

2. In teaching the concepts of the New Design, additional learning packages should be written. With the addition of learning packages on accountability, in-service education, reporting to parents, continuous progress, scheduling of students, preparing materials, diagnosis for needs, etc., the entire course could be taught with the learning package method.

3. Future experimentation with learning packages should include subjects of different abilities and ages. It should also include different types of concepts and skills to be learned.

4. Research should be initiated which compares learning packages similar to those used in this study with packages which are used extensively with tapes, recordings, and other supporting media.

5. There is a need to compare conventional instruction with a treatment which utilized a combination of both packages and the conventional.

6. The differences in locally prepared learning packages and commercial packages should be studied.

7. The effect of readability and legibility of

learning package should be researched. This should include, among other approaches, packages with a "personalized" touch.

8. This study revealed that the subjects within the experimental group had a greater variance of time spent learning the concepts than did the control group. This suggests that a student is more apt to work at his own rate of speed when using learning packages. This finding merits further investigation.

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APPENDIX

Innovative Schools Surveyed

COLORADO

Cherry Creek East Jr.,
Englewood
Cherry Creek Senior,
Englewood

HAWAII

Hawaii Preparatory Acad.,
Kamuela
Kailua High, Kailua

IDAHO

Skyline High, Idaho Falls

KENTUCKY

Woodford Co. High, Versailles

ILLINOIS

Evanston Twp. High, Evanston
Homewood Flossmoor High,
Flossmoor
Freeport Senior, Freeport
Freeport Junior, Freeport
Sandburg Middle, Freeport
McHenry High, McHenry
Leyden High, Northlake
Ridgewood High, Norridge

LOUISIANA

Baker High, Baker

IOWA

Adair-Casey High, Adair
Albia Middle, Albia

Bettendorf Middle, Bettendorf
Bondurant-Farrar High,
Bondurant

Prairie Junior, Cedar Rapids
Washington High, Cherokee
Clarinda High, Clarinda
Assumption High, Davenport
Dike High, Dike
Eagle Grove Middle, Eagle

Grove

Glidden-Ralston High,
Glidden

Prairie Senior, Gowrie
South Hamilton High, Jewell
Keokuk Junior, Keokuk
Mason City High, Mason City
Oak Park Academy, Nevada
Southeast Polk High,

Runnells

St. Ansgar Comm., St.
Ansgar

Starmont High, Strawberry
Point

Urbandale Senior, Urbandale
West Branch High, West
Branch

MICHIGAN

Marine City High, Marine
City
St. Clair High, St. Clair
Troy High, Troy
Mott High, Warren
Ogemaw High, West Branch

MINNESOTA

Ols on Junior, Bloomington
Oak Grove Junior,
Bloomington
Canby High, Canby
Centennial Junior, Circle
Pines
Central High, Crookston

MINNESOTA cont.

Cloquet Public, Cloquet
Cook County High, Grand
Marais

Hopkins High, Hopkins
Marshall High, Marshall
De LaSalle Senior,
Minneapolis

South High, Minneapolis
Central Junior,
Montevideo

Highland Park Junior,
St. Paul

Cathedral High, St.
Cloud

Stillwater Senior,
Stillwater

Two Harbors High, Two
Harbors

White Bear Lake High,
White Bear Lake

MISSOURI

Clayton High, Clayton
Paseo High, Kansas City
Moberly Senior, Moberly

NEBRASKA

Alliance Senior, Alliance
Hastings High, Hastings
Hawthorne Elementary,
Hastings

Hastings Senior, Hastings
Alcott Elementary,
Hastings

Hastings Junior, Hastings
Lincoln Elementary,
Hastings

Longfellow Elementary,
Hastings

Morton Elementary,
Hastings

Burke High, Omaha
Cathedral High, Omaha
South High, Omaha

Westside High, Omaha
Ryan High, Omaha

OKLAHOMA

Norman Senior, Norman

OREGON

Willamette High, Eugene
Jackson High, Portland
Marshall High, Portland
Fremont Junior, Portland
Parkrose Heights Junior,
Portland
Reedsport Union High,
Reedsport
Tillamook High, Tillamook
Woodburn High, Woodburn

SOUTH DAKOTA

Huron Junior, Huron

TEXAS

University Junior, Waco

UTAH

Roy High, Roy
East High, Salt Lake City

WASHINGTON

Morgan Junior, Ellensburg
Truman Junior, Tacoma

WISCONSIN

Delaven-Darien High,
Delaven

WISCONSIN cont.

Washington High, Germantown
Southwest High, Green Bay
Madison High, Madison
West High, Madison
Marshfield Junior,
Marshfield
Wisconsin Heights High,
Mazomaine
Horlick High, Racine
Random Lake High, Random
Lake
Shawano High, Shawano

Survey of Innovative High Schools
Iowa State University February 3, 1970

Dear Sir:

Your school is recognized as one which has made some exciting changes. We professors are trying hard to change teacher preparation to match the changes you have made in teaching and learning.

One way to determine what the needs are, is to examine how you orient new teachers to the teaching/learning activities of your new program.

If you and other schools of the "New Design" will take a few minutes to identify your needs, perhaps Iowa State University can develop appropriate pre-service in-service materials.

Thank you.

Richard Manatt
Associate Professor,
Educational Administration
230 Curtiss Hall
Iowa State University
Ames, Iowa 50010

Please complete the questionnaire and return in the enclosed envelope.

Please check the "yes" blank if the activity is practiced in your school, the "no" if it is not. If the answer is "yes", indicate in the appropriate blank how much you emphasize that particular activity in your new teachers' orientation program.

Yes	No	Much	Some	Little	
_____	_____	_____	_____	_____	1. Differentiated Staff
_____	_____	_____	_____	_____	2. Team Teaching
_____	_____	_____	_____	_____	3. Auxiliary Personnel
_____	_____	_____	_____	_____	4. Variable Schedule
_____	_____	_____	_____	_____	5. Large Group Instruction
_____	_____	_____	_____	_____	6. Small Group Instruction

Yes	No	Much	Some	Little	
_____	_____	_____	_____	_____	7. Open Labs
_____	_____	_____	_____	_____	8. Unscheduled Time For Students
_____	_____	_____	_____	_____	9. Continuous Progress
_____	_____	_____	_____	_____	10. Behavioral Objectives
_____	_____	_____	_____	_____	11. Pre-post Testing
_____	_____	_____	_____	_____	12. Independent Study
_____	_____	_____	_____	_____	13. Subject Area Resource Centers
_____	_____	_____	_____	_____	14. Nongradedness
_____	_____	_____	_____	_____	15. Learning Packages
_____	_____	_____	_____	_____	16. Interdisciplinary Approach
_____	_____	_____	_____	_____	17. Progress Reporting
_____	_____	_____	_____	_____	18. Instructional Media
_____	_____	_____	_____	_____	19. Philosophy/Attitudes
_____	_____	_____	_____	_____	20. Other (specify

Your High School enrollment _____

Number of Certified personnel _____

Grades included in your school _____

When was your New Design program adopted _____

Name _____

Time Utilization for New Design Packages#

How much time did you spend on these packages:

1. Philosophy/Attitudes	___*	Quest	___	Total Package	___
2. Behavioral Objectives	___	Quest	___	Total Package	___
3. Small Group Instruction	___	Quest	___	Total Package	___
4. Large Group Instruction	___	Quest	___	Total Package	___
5. Independent Study	___	Quest	___	Total Package	___
6. Team Teaching	___	Quest	___	Total Package	___
7. Auxiliary Personnel	___	Quest	___	Total Package	___
8. Learning Packages	___	Quest	___	Total Package	___
Grand Total (include quest)					___

#Record in hours and fraction of hours.

*Do not include quest activities in this column.

Do you plan to spend more time at a later date on some of the quest activities? (yes or no) _____

Record of Time*

Name _____

Control Group

How much time did you spend in class as well as preparing for class?

Week

1st _____

2nd _____

3rd _____

4th _____

Grand Total _____

*Record to nearest one-half hour.

What Is Your Attitude Toward Learning Packages?

- | | | (Circle a no.) | | | | |
|-----|--|----------------|---|----------|---|---|
| | | agree | | disagree | | |
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | I am familiar with learning packages. | | | | | |
| 2. | Learning packages should be of benefit to me. | 1 | 2 | 3 | 4 | 5 |
| 3. | I need to become more familiar with learning packages. | 1 | 2 | 3 | 4 | 5 |
| 4. | I think that I can become acquainted with the concepts of the "New Design" by using learning packages. | 1 | 2 | 3 | 4 | 5 |
| 5. | I think this whole experiment with the learning packages is a bunch of foolishness. | 1 | 2 | 3 | 4 | 5 |
| 6. | When I hear the words learning packages, I have a feeling of dislike. | 1 | 2 | 3 | 4 | 5 |
| 7. | Learning packages can be exciting. | 1 | 2 | 3 | 4 | 5 |
| 8. | I wish I was not in this group to use learning packages. | 1 | 2 | 3 | 4 | 5 |
| 9. | A learning package is a gimmick which will soon be forgotten in American education. | 1 | 2 | 3 | 4 | 5 |
| 10. | I would rather be in this experimental group which will use the learning packages. | 1 | 2 | 3 | 4 | 5 |

NEW DESIGNExam A

(Choose the answer which is more nearly correct)

True or False

1. A computer generated flexible schedule is advisable in the large high school.
2. Only a little time can be devoted to chance because most efforts have to be devoted to just keeping the schools operating.
3. The time allotments for a learning activity must be appropriate to its purpose.
4. The major responsibility for evaluation of students goes to guidance, not teachers.
5. The "situation" is essential in stating objectives.
6. It is not practical to write objectives for some subjects.
7. The following is a well stated objective: "Students will be able to read, write and use scientific measures."
8. The following is a well stated objective: "Explain an omnibus word by identifying three such words and giving an example of each."
9. The standard within an objective must be clearly stated.
10. The following is a well stated objective: "After completing the unit on dressmaking the student will alter the hem on a dress."
11. The roles of the intern and first year teacher must be clearly differentiated as members of a team.
12. Student teachers roles are confined to working with SGI.
13. A strong personality, a forceful, imaginative teacher will probably perform better as an individual than as a team member.
14. Ordinarily a secondary school team will be given responsibility for one subject for a group of students.

15. Team teaching is a cooperative venture and it's more fun.
16. Team teaching is a more economical way to utilize the teaching staff.
17. A teaching team has a minimum of three members.
18. J. Lloyd Trump was an advocate of team teaching.
19. Role-playing can be effectively achieved in LGI.
20. The main criteria for selecting a large group area is to have a space large enough to seat the class.
21. LGI is teacher-centered.
22. Any teacher can become a good LG presenter.
23. LGI makes it possible for the master teacher to become exposed to the masses of students.
24. Small group instruction is probably the most effective phase of New Design instruction.
25. SGI can be used with heterogenous ability groups.
26. It is expensive to furnish a SGI area.
27. Each student should become actively involved in SGI.
28. Both LGI and SGI give the student the opportunity to verbally express himself.
29. SGI is likely to be more effective in groups of eight or less.
30. A flexible modular schedule is essential for effective SGI.
31. Where there are subject matter resource centers, it is not uncommon to have a decentralized library.
32. A learning package is an excellent means of learning a concept during IS.
33. A student might have as little as 15 percent or as much as 70 percent IS time.

34. One of the keys to a successful IS program is the facilities which are available.
35. Teachers should have the power to release students from their scheduled class.
36. "Free time" is a term which should be used to identify the unscheduled time of students.
37. There is a trend toward having intern programs for inexperienced teachers.
38. One of the main reasons for having teacher aides is to release teachers more to work with individual students.
39. There are some tasks which can be done better by a non-professional than by a teacher.
40. A fear which teachers have had is that an aide will do educational harm to a child.
41. Teachers have no difficulty in knowing how to use aides.
42. Volunteer aide programs have not proven very successful.
43. A learning package is a lesson plan.
44. A learning package can depend on many activities which are not included in the package.
45. Learning packages are used more effectively in a subject-centered curricula.
46. A flexible modular schedule is essential to the success of a learning package.
47. A post-test is a basic ingredient of a learning package.
48. In a LP, a concept is a single learnable idea, skill, attitude.
49. The pre-test of a LP must be written before anything else is done.

Multiple Choice

50. Which is not a means of evaluating the New Design?
1. A survey of letter grades (A,B,C).
 2. Pre- and post-testing.
 3. Attitude studies.
 4. Dropout and absenteeism studies.
51. Why was a commercial operator (Dorsett) contracted to teach reading and math to the Texarkana Arkansas public schools?
1. Dorsett was able to provide outstanding equipment.
 2. As a result of the teacher shortage, teachers were not available to teach the skills.
 3. Federal funds were available for this experiment.
 4. The traditional approach had not been successful.
52. Why do students like the New Design schools?
1. They feel that the program is tailored especially for them.
 2. Their subjects are less difficult.
 3. They are not required to take as many subjects.
 4. They are not as responsible for their own learning.
53. How does a New Design elementary school differ from a conventional school?
1. It has a nongraded or continuous progress program.
 2. It has a departmental approach.
 3. Students have more physical freedom.
 4. More time is spent on skills.
54. Which is not an attempt at individualizing instruction?
1. CET
 2. PLAN
 3. SGI
 4. IPI
55. Which is not a characteristic of a computer made flexible schedule?
1. Some students will goof-off on their IS time.
 2. Some sections of nation have no such program.
 3. Some teachers will not change their approach.
 4. If everything clicks, it's beautiful.

56. Identify the role of the teacher in a New Design program.
1. The teacher will have less responsibility.
 2. Better staff utilization will require less work from the teacher.
 3. The teacher will have less time for planning.
 4. The teacher will have more professional responsibility.
57. Which is not a criterion necessary to become a good writer of behavioral objectives?
1. See the need.
 2. Become knowledgeable on how to write them.
 3. Practice--write, write, write.
 4. Flexible modular schedule.
58. Which of the following terms identifies the "situation within an objective?"
1. Presented with.
 2. Reviewed.
 3. Compared.
 4. All of the above.
59. Which of the following criterion is essential for well stated objectives?
1. Standard.
 2. Performance.
 3. Learner.
 4. All of the above.
60. It is more difficult to write objectives in:
1. The cognitive domain.
 2. The skill areas.
 3. The affective domain.
 4. All of the above.
61. What is the greatest problem in implementing a team teaching approach?
1. Acquiring planning time within the school day.
 2. School being too small.
 3. Having a traditional student schedule.
 4. There are not two people teaching the same subject in some schools.

62. What are common blunders in teaming?
1. Turn teaching.
 2. Being scared of peer supervision.
 3. Being assigned too few students.
 4. All of the above.
63. In requesting time for LGI, SGI, IS, teaching teams:
1. Have difficulty thinking outside the realm of their past experience.
 2. Usually do not schedule enough time for LGI.
 3. Usually schedule students to too much SGI time.
 4. Are confined to the limitations of the schedule as determined by administration.
64. Which is a responsibility of the senior teacher?
1. Team leadership.
 2. Assign staff.
 3. Leadership in curriculum design.
 4. All of the above.
65. What is the greatest problem of an ongoing team teaching experience?
1. Individual teachers who are not members of a team can work better with individual students.
 2. The incompatibility of the members of the team.
 3. SGI does not lend itself to team teaching.
 4. Teachers prefer to work individually.
66. Which is not an advantage of team teaching?
1. Conserves teacher time.
 2. Makes optimum use of teacher's talent.
 3. Fewer teachers are needed to staff a program.
 4. Makes elementary school teaching more attractive.
67. Why do teachers spend more time on preparing for large group instruction than the other modes?
1. Usually the learning of large numbers of students is at stake.
 2. Preparation time for LGI is set aside.
 3. Usually a team mate is observing the presentation.
 4. All of the above.

68. Which activity does not lend itself to LGI?
1. Giving a test.
 2. Viewing a film.
 3. Giving a lecture.
 4. Discussing a topic.
69. Which is not an accurate statement about LGI?
1. Classes need to be scheduled.
 2. Takes much preparation time.
 3. Usually a large number of students.
 4. Meets more frequently than other modes.
70. What can be said about the LGI mode in the New Design program.
1. Most important mode of instruction.
 2. An important mode of instruction.
 3. One of two modes of instruction.
 4. Essential for laboratory work.
71. Which is the best estimate of how long a LGI should be?
1. Seventy minutes.
 2. Ten minutes.
 3. Thirty minutes.
 4. Fifty minutes.
72. Small group instruction gives students and teacher an opportunity to:
1. Plan a unit.
 2. Dispense information.
 3. Interpret information.
 4. All of the above.
73. Which is the primary requirement of SGI?
1. Teacher must have a positive attitude toward SGI.
 2. Teacher must realize that the material must be covered.
 3. The subject for which the teacher is responsible must be learned.
 4. All of the above.

74. Which of the following cannot be said about SGI?
1. Teacher may need to be in the background.
 2. Students can help plan SGI.
 3. The teacher should use gimmicks if necessary.
 4. There should not be a moment's silence.
75. Which is not a role of the student in SGI?
1. The student is a participator.
 2. The student should respect opinions of others.
 3. The student should not hitchhike off the ideas of others.
 4. The student should answer questions.
76. In developing an independent study orientation program for the parent, which statement is true?
1. A well planned orientation program is essential for parents.
 2. The student is the best ambassador for the program.
 3. Parents relate their own education to their child's.
 4. All of the above.
77. Which is not a true statement about an open lab?
1. Students use during independent study.
 2. In some cases, open labs will exist in the same room with a scheduled class.
 3. Limited to the practical arts and natural sciences.
 4. It may or may not be under the supervision of a teacher.
78. Check the essential criteria which is needed for a successful IS program.
1. IS orientation program for students.
 2. A spacious learning center.
 3. A student lounge.
 4. All of the above.
79. Which of the following is not one of the fears which teachers have about IS?
1. Evaluating the student's IS performance.
 2. Students won't have enough to keep them busy.
 3. Lack of supervision--legal liability.
 4. Students will not use their time wisely.

80. How much of a student's time should be devoted to independent study?
1. Depends on student.
 2. Depends on teacher.
 3. Depends on subject.
 4. Depends on whether there is a modular schedule.
81. Where can students spend their IS time?
1. Outside the school building.
 2. In a resource center.
 3. In a small group.
 4. All of the above.
82. What is the main purpose in having teacher aides?
1. Decrease teacher-pupil ratio.
 2. Provides employment for needy.
 3. Give teacher opportunity to use time wisely.
 4. A key to implementation of a modular schedule.
83. An aide may be:
1. An adult.
 2. A student.
 3. -A volunteer.
 4. All of the above.
84. What kind of aide duties do students perform?
1. Supervision.
 2. Preparing filmstrip.
 3. Tutoring.
 4. Both 2 and 3 above.
85. What does a resource center aide do?
1. Student supervision.
 2. Branch librarians.
 3. Audio-visual assistant.
 4. All of the above.
86. Which is not a professional task of the teacher?
1. Supervising students who are working independently.
 2. Diagnosing the needs of the student.
 3. Prescribing instructional activities.
 4. All of the above.

87. Which of the following is a basic component of a learning package?
1. A major concept.
 2. Behavioral objectives.
 3. A pre-test.
 4. All of the above.
88. Which of the following titles seem to be too long for the length of a LP?
1. History of Socialism.
 2. Principles of Flight.
 3. Introduction to the slide rule.
 4. Drug abuse.
89. The pre-test can take the form of:
1. Checklists.
 2. Performance measures.
 3. Essay questions.
 4. All of the above.
90. A learning package is:
1. A programmed text.
 2. A curriculum guide.
 3. A workbook.
 4. None of the above.
121. What is your sex?
1. Male
 2. Female
122. How many years have you been in the teaching profession? (Include administration etc.)
1. 0-5
 2. 6-10
 3. 11-20
 4. 20 or more
123. What is your major responsibility?
1. Teacher
 2. Counselor
 3. Administrator
 4. Other

124. Do you consider your school innovative?

1. Yes
2. No
3. Uncertain

125. At which level do you work?

1. Elementary
2. Middle or Junior High
3. Senior High

NEW DESIGNExam B

(Choose the answer which is more nearly correct)

True or False

1. A flexible modular schedule will assure an individualized, exciting school.
2. There has been no major widespread change in methodology in the schools during modern times.
3. The public is uninformed about educational innovations.
4. Youth rebellion is not related to the shortcomings of the school.
5. It is easy to state objectives in behavioral terms in all areas.
6. Learning must be measured in terms of the student's change in behavior.
7. Almost any verb can be used to properly state objectives in behavioral terms.
8. The following is a well stated objective: "Given a list of products, the student will be able to write the name of the basic industry from which the product was produced accurately."
9. The following is a well stated objective: "Create a checklist that includes at least four items that will help us analyze propaganda."
10. The following is a well stated objective: "Upon the completion of Unit I in Spanish, the learner should be able to recognize the Spanish terms."
11. Team teaching is essential to a flexible modular schedule.
12. A teaching team should have a voice in determining how its IS time will be used.

13. The size of the group should determine the type of learning activity.
14. An elementary school team is often given a group of students and then expected to provide all basic subject instruction for them.
15. The American educational system has introduced the teaming approach to business and industry.
16. Eventually, probably all teachers will be a member of a team.
17. Team teaching has not proven itself yet.
18. Team teaching is a handy tool to use in the LGI, SGI, IS approach.
19. A mini course can be used to give the student the opportunity to study something of interest which is not offered in a regular course.
20. Team teaching is essential to a New Design program.
21. Large group instruction is used to motivate students.
22. When implementing a New Design, most schools set aside more LGI areas than is needed.
23. Students will spend less time in LGI than they will in other modes of instruction.
24. It likely will take two or three hours preparation for every hour of LG presentation.
25. LGI is for seat work.
26. Small group instruction is primarily characterized by a certain number of students.
27. It has been just in the past decade that SGI has come into use.
28. SGI sections must be administratively scheduled.
29. Small group instruction is a teacher centered activity.
30. A teacher can only supervise one small group at a time.
31. An ideal SGI area is comfortable and attractive.

32. A teacher's independent study or unscheduled time should all be reserved for planning.
33. Day-to-day assignments are more effective than long range assignments.
34. Students should have an opportunity to take a break just as adults do.
35. Teachers find it relatively easy to adapt to having students have a large portion of their time unscheduled.
36. In spite of administrative fears, all students will use their IS time wisely.
37. Quest programs make it possible for students to pursue their own interests in depth.
38. The study carrel can be used for small group discussion.
39. Community resource persons to assist the teacher have not proved very successful in most cases.
40. No specialized training is required for an aides position.
41. The non-professional can never replace all of the teachers.
42. There should always be an understanding that the aides are not a part of the regular staff.
43. A workshop for aides should complete all of the needed orientation.
44. A school system which employs aides is more expensive to operate.
45. A learning package can be self-instructional.
46. A learning package is a gimmick.
47. It's important that all learning packages have certain basic components.
48. Quest activities need not be included in a LP.
49. All learning in the school takes place with the individual student using L Packages.

50. L Packages determine the curriculum.

Multiple Choice

51. Follow-up studies of the New Design have shown that:

1. Parents prefer the new program.
2. Students are absent from school more.
3. Students rate LGI as their favorite activity.
4. Teachers prefer the New Design to the conventional.

52. Which is a less accurate statement pertaining to change in the public schools?

1. More money must be spent on education.
2. Teacher's attitudes must change.
3. Curriculum must change.
4. The role of the student must change.

53. It has been observed that kids like school when they start kindergarten but each year they are in school they have less enthusiasm for it. Why do you suppose this is true?

1. Educational programs are not relevant.
2. Parents de-emphasize school in the upper grades.
3. Taxpayers are not supporting their local schools.
4. School enrollments are growing too rapidly.

54. In implementing the New Design by adopting a flexible modular schedule what would not be a teachers change-over task?

1. Determine time needed for LGI, SGI, IS.
2. Build discussion and activities into SGI to fit LGI.
3. Write well stipulated lesson plans.
4. Plan and implement Quest and Learning packages for IS time.

55. Which is not an objective of flexible modular scheduling?

1. To provide more opportunities for individualized instruction.
2. To provide teachers with the opportunity to have more planning time.
3. To provide more opportunities for better staff utilization.
4. To teach students to become more responsible for their learning.

56. Who coined the term "New Design"?
1. Trump
 2. Conant
 3. Rickover
 4. Bush and Allen
57. "New Design" programs are best characterized by:
1. A flexible modular schedule.
 2. An individualized approach.
 3. The utilization of a differentiated teaching staff.
 4. Large and small group instruction.
58. Why should objectives be measurable?
1. To determine when the goal is reached.
 2. To get the necessary material covered.
 3. To determine if the teacher is effective.
 4. All of the above.
59. Which of the following terms best identifies behavior of an objective?
1. Explain
 2. List
 3. Understand
 4. Appreciate
60. Where in education were the first behavioral objectives written?
1. In sex education.
 2. In humanities courses.
 3. In vocational and correspondence courses.
 4. In physical and biological sciences.
61. The following is a valid reason why teachers do not write behavioral objectives.
1. They don't have time to write them.
 2. Teaching is an art, not a science.
 3. They don't know how to write them.
 4. All of the above.
62. Teams of teachers providing a continuous progress program can:
1. Compensate for lacking teacher expertise.
 2. Save the school district money.

3. Have more time to work with groups rather than individuals.
 4. Give more support to administrative responsibilities.
63. What are the characteristics of the position of staff teacher?
1. Makes up the bulk of the staff.
 2. Accepts role of team leader.
 3. Will not have acquired the Master's Degree.
 4. Solely responsible for large group instruction.
64. Which is not an instructional mode for a team of teachers?
1. LGI
 2. RC
 3. SGI
 4. IS
65. All of the professional members of a team are exposed to:
1. Evaluation
 2. Diagnosis
 3. Prescription
 4. All of the above
66. Which of the following is not a criteria for determining team size?
1. Districts staffing ratio.
 2. The ability of the students.
 3. Whether or not two subjects are combined.
 4. Available facilities.
67. Which of the following is not commonly used in large group instruction?
1. Opaque projector, overhead
 2. PA system
 3. Head phones
 4. Film projector (strip and movie)
68. LGI gives the teacher the opportunity to be a:
1. Performer
 2. Listener
 3. Friend of the students
 4. Conversationalists

69. The best LGI teachers are:
1. Exciting, enthusiastic
 2. Well organized
 3. A good speaker
 4. All of the above
70. Pertaining to checking attendance in LGI, what can be said?
1. Someone older than the presenter should take attendance.
 2. Attendance should not be taken at all.
 3. A teammate must take attendance.
 4. The presenter should take attendance.
71. Large group instruction is best recognized by:
1. A large group of students.
 2. Teacher-centered activity.
 3. Student-centered activity.
 4. An informal setting.
72. What is the role of the teacher in small group instruction?
1. The teacher is the presenter of material.
 2. The teacher is the "fountain of knowledge".
 3. The teacher is an "organizer of learning".
 4. The teacher is the leader of the group.
73. The number of SGI meetings per week will be determined by:
1. Subject taught or topic discussion.
 2. Number in the group.
 3. Ability of students.
 4. None of the above.
74. What kind of facility is needed for SGI?
1. Movable furniture is a must.
 2. Tables are needed.
 3. With carpeting, perhaps no furniture is needed.
 4. All of the above.
75. Which is not a technique a teacher is to use in guiding SGI?
1. Have students raise hand before speaking.
 2. Be a good listener.

3. Sit inconspicuously with students.
 4. Attempt to involve all students.
76. Which of the following criteria is conducive to effective SGI?
1. Proper attitude of teacher.
 2. Fifteen students or less.
 3. High school age students.
 4. All of the above.
77. What kind of different settings should be available for independent study?
1. Video tape recorder.
 2. Colorful painted walls.
 3. Study carrels.
 4. A large study hall.
78. Which of the following would not be found in the Social Studies resource center?
1. Newspapers, magazines.
 2. Calculator.
 3. Film projector.
 4. Social studies teachers.
79. In developing an IS program:
1. Day-to-day assignments should be used.
 2. Skills should be de-emphasized.
 3. Facts should be stressed.
 4. Concepts should be stressed.
80. What is the purpose in having different places for students to go on IS?
1. So students may behave differently.
 2. Facilities in most schools dictate this.
 3. Students differ in the kind of environment in which they perform best.
 4. Both 1 and 3 above.
81. What is the purpose in an honors pass system?
1. Teachers have access to students.
 2. An incentive to use IS wisely.
 3. A means of supervising low ability students.
 4. All of the above.

82. Which of the following is not a qualification of a teacher's aide?
1. College education.
 2. Compassion for children.
 3. Common sense.
 4. Ability to relate to youth.
83. Which function is an aide unable to perform?
1. Correct objective tests.
 2. Lead SGI.
 3. Set up films.
 4. Prepare bulletin board displays.
84. In which area would one find an amity aide?
1. Spanish
 2. Art
 3. Homemaking
 4. All of the above
85. What does an instructional materials aide do?
1. Sell lunch tickets.
 2. Departmental secretary.
 3. Make transparencies.
 4. Student supervision.
86. Which of the following tasks can an instructional aide perform?
1. Record grades.
 2. Take attendance.
 3. Check objective tests.
 4. All of the above.
87. What is the difference between a learning package and lesson plans?
1. A learning package is a guide for students.
 2. A lesson plan is a guide for the teacher.
 3. A learning package is a complete array of learning activities.
 4. All of the above.
88. What are the features of a learning package?
1. It's a set of teaching-learning materials.
 2. It focuses on a single concept.

3. It's designed for independent use.
4. All of the above.

89. Which is not true pertaining to the length of a LP?

1. Covers one single major concept.
2. Should not take more than a few weeks to complete.
3. Should be long enough to cover the course.
4. Should not be over 15 lessons in length.

90. The greatest advantage of a learning package is:

1. A student will have work to do on his IS time.
2. It will free the teacher to use his time more professionally.
3. Provides the teacher with a better diagnosis of the student.
4. A student may progress at his own rate.