To the Graduate Council:

I am submitting herewith a dissertation written by Pamela Moss Munz entitled "The Effects of Two Instructional Methods on Driver Education Students Studying Child Passenger Safety: A Comparative Treatments, Pretest, Posttest Control Group Experiment." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Curriculum and Instruction.

Russell L. French,
Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

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Graduate Studies and Research

THE EFFECTS OF TWO INSTRUCTIONAL METHODS ON DRIVER EDUCATION STUDENTS STUDYING CHILD PASSENGER SAFETY: A COMPARATIVE TREATMENTS, PRETEST, POSTTEST CONTROL GROUP EXPERIMENT

A Dissertation

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ABSTRACT

The intent of this study was to determine the impact of learning packet instruction and lecture instruction on cognitive change, attitude change and knowledge retention in students studying child passenger safety. In addition, the study looked at sex and rural-suburban characteristics of students exposed to the instructional methods.

A comparative treatments, pretest, posttest control group design was used to compare the two treatments. A pretest, posttest and a follow-up posttest were used for evaluation of the 165 subjects. Two sites were used for the experiment, Carter High School in Knoxville, Tennessee, and Pleasant Ridge High School in Chattanooga, Tennessee. Ten driver education classes in all received the two instructional methods. Five classes used the learning packet instruction, and five classes received the lecture instruction.

The students were tested with an objective, multiple choice test for cognitive change and again three weeks later for knowledge retention. A Likert-type scale was used to assess attitude change three weeks after the treatment. The t-test of significance was used to analyze the impact of the independent variables, learning packet instruction

and lecture instruction, on the dependent variables, cognitive change, attitude change and knowledge retention.

The primary findings from the comparisons of the two instructional methods showed no significant differences in cognitive change for the two groups, learning packet students and lecture students. This was true also in the primary findings in knowledge retention. However, there did appear to be significant differences in attitude change with learning packet students showing greater attitude change than lecture students in a number of comparisons.

Secondary analyses, those related indirectly to the three main hypotheses, which made comparisons by geographical and sex characteristics, found a number of differences. For example, suburban female students scored higher in cognitive change than suburban males in each of the two treatments. In attitudinal change, suburban females showed greater improvement using learning packets than did the males; however, suburban males showed greater attitude improvement using lecture than did the females. Geographically, rural students scored higher in attitude change than did suburban students in the lecture instruction. And, in knowledge retention, while rural females retained more knowledge retention than males in both treatments, suburban females out-scored the males in knowledge retention in only one treatment--lecture instruction. Geographically, the rural students retained more knowledge

with the lecture instruction than did suburban students.

No cause and effect regarding instructional method and learner outcomes was established from this study. Inferences, however, were drawn from the comparisons of scores of the two instructional treatments and from the comparisons of geographical and sex characteristics. More definitive research is needed on the influence of learning packet instruction on the learner.

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CHAPTER I

STATEMENT OF PROBLEM

I. HISTORICAL PERSPECTIVE

Throughout much of the history of education, a persistent effort has been made to seek ways of meeting the individual needs of students in a school operation designed for the masses. As education expanded to include larger and larger segments of the population, efforts to individualize were overshadowed by concern for group instruction, group norms and grade levels (Blake and McPherson, 1972).

With the emphasis on group instruction, textbooks then became the basis for instruction. Material was geared to homogeneous groupings; standardized procedures were followed, and uniform absorption of knowledge was expected. Blake and McPherson (1972, p. 9), in their description of "textbook schools," stated:

> We have moved toward group instruction rather than in the direction of caring for the individual differences of children. It appears that in our country we have given up the idea of caring for the individual and are more concerned about structuring our classroom organization so that we can take care of pupils in groups. In a sense we have been trying to organize students so as to get rid of individual differences.

During the last 50 years, however, there seemed to be increasing concern for this lack of attention to individual

differences in the school setting. Funding agencies spent millions of dollars; teachers often attended workshops and inservice programs; students preparing to teach began attending classes on individualized instruction; and parents looked for schools organized to meet the individual needs of students. All of these attempted to deal with the problem of viewing the student individually (Musgrave, 1975).

In reference to the general problem of meeting individualized needs of students, Blake and McPherson (1972, p. 7) stated that:

> Despite the magnitude of this problem it is still largely unresolved. The consensus of those who have given serious attention to it seems to be that its solutions will require rather massive and long-range research effort.

Enthusiastic researchers and innovative educators continue their search for more findings that will help in building an organized body of knowledge on the teaching and learning processes. The current teaching process, however, which educators continue to use, is the age-old teacher centric process. This teacher-dominated classroom approach is, according to Musgrave (1975), practiced excessively. Research indicated that teachers today still dominate the classroom. Good and Brophy (1973) noted that teachers often were unaware that they monopolized the verbal communication channels with students. Studies of classroom settings by Hudgins and Ahlbrand in 1969 and Adams and Biddle in 1970

showed that teachers were the principal actors the majority of classroom time (Good and Brophy, 1973).

The teacher-dominated classroom is often characterized by the use of lecture-teaching. Bagford, Jones and Wallen (1976) suggested: "The lecture is the traditional method of teaching wherein the lecturer transmits information in an autocratic fashion to passive student listeners." The authors also commented that lecture is ". . . the oldest form of teaching and one of the most ineffective . . . ineffective because it is overused, abused, and misused" (Bagford, Jones and Wallen, 1976, pp. 63-64).

The lecture today is widely used in classroom teaching (Weaver and Cenci, 1960). In Current Strategies for Teachers: A Resource for Personalizing Instruction, the authors explained:

> In its modern version . . . the method has been abused. As has been said, the words of the teacher quite often do go into the notes of the student without passing through the minds of either. . . . Its use as a method for personalizing instruction in K-12 does depend on who uses it, on the nature of the experiences afforded students, and on the kinds of learning outcomes sought (Gilstrap and Martin, 1975).

During the last decade, particularly, there were concerted efforts to improve the educational process in the classroom. Many focused on the uses of individualized programs to effect these improvements. Duane (1973) described a number of such efforts:

(1) The joining of industry with education to provide technology for individualized instruction;

(2) The recogniton by many that children learn best with an instructional process that considers individual characteristics;

(3) The Elementary and Secondary Act of 1965, which provided support to districts for innovation and purchase of new materials;

(4) The preparation of a new breed of teachers intent on producing more challenging learning environments;

(5) The trend of parents to become concerned about school instructional programs; and

(6) The increasing interest of teachers in individualizing their programs.

Weisgerber (1971), in his discussion of individualization, identified at that time four major efforts to alter education so that individual differences will be considered. These included provision of differentiated assignments for students related to individual needs and interests; consideration of varying rates of learning; the use of a variety of methods, media and materials in relation to individual learning styles; and, variation in goals of educational programs resulting in a choice of courses and electives.

This third effort, utilization of a variety of methods, media and materials in relation to learning styles, attracted

considerable attention in recent years as educators explored ways of individualizing learning. One instructional approach which exemplified this concern with learning styles was the use of learning packets. A variety of names for learning packets evolved through the years. These include Learning Activity Packages (LAP) and UNIPACS, while others use the name of a particular place such as Hartford Individual Packets (HIPS). Goodlad, in his discussion of the different individualized programs, explained the difficulties in defining programs because of the variety of names and labels (Weisgerber, 1971).

Richard Jones, Jr., in his chapter on learning packages, reported that use of packets is growing rapidly (Jones, 1971). In their description of packets in Learning Packets: New Approach to Individualizing Instruction (1976), Ward and Williams called the concept a new and exciting technique. The packet approach, they explained, presents the objectives and specific skills to be mastered, activities to be completed, instructions for use, and three tests--a pretest, self-test items throughout the packet, and a posttest. Audio and visual materials are often included in a learning packet. Thus, in addition to being able to progress at his/her own learning pace, the multimedia content also provides the student a variety of materials.

During the decades of the sixties and seventies, learning packets were used increasingly in the classroom. Yet, little research was conducted on the effects of packets on the learning process. A number of articles such as "What Is a Learning Package?" "Can I Be Replaced by a Package?" "The Package and the Supervisor," and others examined the use of the packet approach. (A detailed discussion of this literature is presented in Chapter II.)

From the historical perspective, it is possible to see that a vast array of literature exists on individualized instruction and lecture presentation. No research, however, has looked at a comparison of the learning packet as a new instructional approach to that of lecture instruction. The rationale for this study focuses on such a comparison.

II. RATIONALE FOR THE STUDY

As early as 1819, John Mayer Rice began observing classroom instruction. In the years following Rice's research, numerous studies on discrimination learning, serial rote learning, problem solving, transfer of learning, developmental studies of learning and others were conducted (Travers, 1967).

Yet, Travers (1967, p. 5), in his work, Essentials of Learning, stated that these studies ". . . have not resulted

in anything resembling an organized body of knowledge. . . . The knowledge that such studies have yielded represents disconcerted pieces of information." Perhaps, the primary contribution of such studies has been the attention focused on the learning process and the realization that a multiplicity of factors affects pupil learning. Certainly, research which looks at learning conditions and student progress has contributed to efforts to improve education (Travers, 1967).

Looking at learning in general, and learning packets specifically, what then are the advantages and disadvantages of individualized instruction through the use of the packet concept? Is this method of instruction a more effective means of bringing about change in the cognitive and affective levels of learning than the widely used teacher-centric, lecture approach? This study is unique in that it addresses the problem of the effects of learning packets on knowledge, attitude, and knowledge retention through comparisons with the teacher-centric lecture method. The study permitted the measurement of cognitive change, attitude change and knowledge retention by using a specially designed packet. Through a comparative treatments, pretest, posttest control group design, it was possible to evaluate a number of aspects related to the use of learning packets and lecture presentation in the education process.

The problem which formed the basis for this study was whether learning packets are more effective than lecture instruction in bringing about change in learner outcomes. The study's intent was to examine closely the results of student responses in three areas of learning after being exposed to two methods of instruction.

The passage in 1977 of Tennessee's child passenger safety law (Appendix A) requiring the use of child restraint devices (safety seats) for children and infants under the age of four years provided a new topic for study in driver education. Using this opportunity for introducing new material, it was possible to develop a learning packet and a lecture lesson on child passenger safety. The materials were designed specifically for high school driver education classes. This study looked at the comparisons between students using learning packets and students receiving lecture instruction in three areas--cognitive change, attitude change and knowledge retention.

III. ASSUMPTIONS

As the rationale of the study was identified, it was also necessary to consider the assumptions which would underlie the research. Certain concepts were accepted from the start. These include:

(1) Learning packets represented one of a number of teaching methods which examplified individualized instruction.

(2) The learning packet and lecture lesson contained sufficient content to assure valid testing of knowledge and attitude toward child passenger safety.

(3) The child passenger safety pretest, posttest and attitude scale were valid instruments for measuring cognitive change, attitude change and knowledge retention.

(4) The comparisons possible with the comparative treatments, pretest, posttest control group design do not permit causal statements regarding the treatments and learner outcomes (Haskins, 1968).

(5) Confounding variables such as exposure to child passenger safety information outside the classroom and pretest sensitization in the treatments were constant for all students exposed to the instruction (Haskins, 1977).

IV. LIMITATIONS

In addition to the assumptions listed, there were also a number of limitations inherent to the study:

(1) The inability to use random samples of driver education classes was a severe limitation, although treatments were randomly assigned among the classes. No generalizations to a larger population other than the driver education classes receiving the treatments were possible.

(2) No cause-effect relationship was permitted since a nonexperimental research design was used.

(3) Practicality dictated the use of multiple choice-type testing for pretest and posttest measurement of cognitive change. A different form of measurement might be preferable for testing conceptual learning as well as fact retention.

(4) The learning packet and lecture presentation were designed for short-term use, a two-day class period in tenth grade driver education classes in Knoxville and Chattanooga, Tennessee.

(5) The learning packet and lecture presentation were designed specifically for use in the study. The study's intent was not to show that either method should or should not be used in teaching child passenger safety in driver education classes.

(6) The necessity of having an individual present the lecture to those classes receiving the lecture

treatment was a limitation since there was no way to account for subjective feelings and actions of the lecturer concerning the experiment or the subject matter.

(7) The content of the treatment, child passenger safety, was also recognized as a limitation. It is possible that this particular subject matter could be more appropriate for use with one instructional method than the other.

V. ORGANIZATION OF THE STUDY

The narrative describing this study has been organized into five chapters:

Chapter I - Statement of Problem. This chapter contains an historical perspective, rationale for the study, assumptions and limitations of the study.

Chapter II - Review of Literature. This chapter includes a review of selected literature on individualized instruction (with emphasis on learning packets) and the lecture, teacher-centric method of instruction.

Chapter III - Methods and Procedures. A detailed discussion of the research design, instrumentation and study are provided in this chapter.

Chapter IV - Results. The results and findings of the experiment are described in this chapter.

Chapter V - Summary, Conclusions and Discussion.

CHAPTER II

LITERATURE REVIEW

This study was concerned with the comparison of two widely used instructional methods, the individualized learning packet method and the teacher-centric, lecture approach, in teaching child passenger safety to high school driver education classes. Important to the research of this study was an examination of sources on instructional methods in general, individualized learning packets, teacher-centric, lecture teaching and comparisons of the two methods of instruction.

I. INSTRUCTIONAL METHODS

The subject of instructional methods has been a frequent topic of writing and discussion among curriculum analysts. Numerous volumes have addressed the issue of teaching methods. Educators have described and analyzed methods of instruction in a variety of ways. Different groupings, varying definitions and conflicting philosophies were prevalent when surveying the literature on teaching methods.

A number of writings suggested that teachers often are unaware of specific behaviors in the form of strategies or techniques. Philip Jackson, in Life in Classrooms, stressed the point that teachers are frequently so consumed

by the day-to-day demands above the instructing function that they simply are unable to describe the processes or plans they have for instructing. Three obstacles which have been identified may contribute to this lack of awareness. A main factor which poses difficulty for the teacher is that so much activity occurs so quickly in the classroom. Because of this, teachers may truly be unaware of various instructional methods that would enhance their classroom environment. A second factor that inhibits awareness and use of different methods is related to teacher-training programs. Often these programs do not provide teachers with a good foundation in specific teaching methods, nor do they train teachers in any systematic technique for conceptualizing their own instructional behavior. As a result, teachers sometimes operate in a vacuum--with little perception of optional methods of instruction available. A third obstacle to teacher awareness of teaching methods is the lack of a system for providing teachers with feedback regarding their instructional behavior once they enter the classroom. A National Education Association study, reported by Good and Brophy, showed that:

> . . . only 34 percent of secondary teachers in the United States are ever observed even once during the year for a period of five minutes or longer. The median number of observational visits in secondary schools is one and the median in elementary schools is two; and only half of these

> visits are followed by a conference. Unless they have a rare principal, teachers seldom receive direct, useful feedback about their teaching (Good and Brophy, 1973, p. 36).

Further research on the subject of supervisor feedback found that teachers changed their behavior in the opposite direction when receiving only supervisor information. However, feedback from students was found to have a positive effect on teacher behavior (Good and Brophy, 1973).

When grouping the different instructional strategies, various combinations were found. Kemp referred to three basic methods of teaching and learning: (1) the presentation method which includes traditional lecture, writing on the board, demonstrating and use of audiovisual materials; (2) independent study which involves independent work by students such as library activity, lab work, report writing; and (3) the interactive method which focuses on teacher-student exchange in the form of discussions, projects and reports (Kemp, 1971).

In Strategies in Education Explained, the authors elaborated on the confusing use of terminology when discussing the teaching process. Words such as "techniques," "tactics," and "methods" only serve to complicate the issue. Instead, they maintained, their preference for describing the process used by teachers in the instructional aspect of their efforts is to utilize the term, "strategy." They

continued in their overview of strategies to point out that at least four valid reasons can be given for teachers being aware of a variety of strategies. These included the fact that different pupils learn in different ways at different times; subject matter may sometimes be best covered by a specific strategy or a combination of strategies; diverse objectives in teaching may warrant diverse approaches; and various environmental characteristics such as facilities, money, and time may also determine the strategies to be used. The authors' listing included (Bagford, Jones and Wallen, 1976): (1) behavioral modification; (2) case study; (3) community resources; (4) contracting; (5) demonstration; (6) discovery; (7) discussion; (8) drill; (9) field study; (10) independent study; (11) individualized learning; (12) learning packets; (13) lecture; (14) observation; (15) problem solving; (16) programmed learning; (17) project; (18) questioning; (19) role playing; (20) simulation; (21) Socratic; (22) student research; (23) student tutorial; and (24) team teaching.

Other authors likewise chose to use the term, strategy, in discussing the process of instruction. Gilstrap and Martin, writing in Current Strategies for Teachers, explain their criterion for defining strategy. It included recurrent patterns of teacher behavior, applicability to more than one subject matter, characteristic of more than one

teacher and relevancy to learning. The strategies described, according to the writers, were representative of current educational thought and were representative of models being used by the American teacher. The strategies listed were (Gilstrap and Martin, 1975): (1) lecture; (2) discussion; (3) drill and practice; (4) independent study; (5) group investigation; (6) laboratory approach; (7) do-look-learn; (8) discovery; (9) the learning center; (10) simulation; (11) behavior modification; and (12) performance-based learning activity package.

In summarizing the literature on general instructional processes utilized by teachers, a number of commonalities were noted (Good and Brophy, 1975):

- Classrooms are busy, complex places.
- Studies indicated that teachers, to some degree, were not cognizant of their teaching behavior and processes in the classroom.
- Much of the teacher behavior and instructional processes in the classroom had not changed in more than half a century. Studies showed that in 84 percent of the classrooms, teachers were the principal actors and dominated the classroom's communication channels.
- Numerous terms including methods, techniques, strategies, and processes were often used synonymously.

- No one instructinal method was designated as the best method; however, a combination of methods or the use of a particular method, depending on the learning situation, was frequently suggested.
- Little research existed that compared instructional methods in terms of cognitive and affective outcomes.

It was necessary to examine first the area of general instructional processes before looking specifically at learning packets and lecture instruction. In doing so, it was possible to perceive the processes in a broader context.

II. INDIVIDUALIZED LEARNING PACKETS

When surveying the literature on individualized learning packets as an instructional method in the classroom, it was essential that the general topic of individualized instruction also be reviewed. A vast amount of literature existed on individualization in the classroom. However, a number of thoughts were synthesized from the writings.

Individualized instruction in its broadest meaning involves basically fitting the instructional procedures and materials to meet the individual needs and characteristics of students. A basic premise which underlies the various forms of individualized instruction is the agreement that students do not learn the same body of content at the same pace or in the same way (Jeter, 1980).

In decades before the 1960s, the standard organizational pattern for most of the schools was a self-contained, age-graded classroom. Then, in the 1960s, patterns began to change. Emphasis shifted to ideas relating to the active learner, differing ability levels, programmed materials, self-pacing and other individual-oriented concepts. Teachers on a small scale had already begun developing strategies for individualized instruction in their self-contained settings. Many schools moved towards ability groupings and individualized learning (Jeter, 1980).

During the 1960s, the works of John Carroll and Benjamin Bloom were influential in the move to modify group instruction. The idea of mastery learning was supported as efforts took place to develop, design and test various systems of individualized instruction. Much of this thinking evolved from earlier work done by Hilda Taba, John Goodlad and others (Weisgerber, 1971; Bloom, 1968; Jeter, 1980).

The pendulum of educational change brought, however, still another mood in the 1970s. Studies were devised for the purpose of examining teacher behavior and student learning. From these data came concern for "direct instruction" and thus basic skills. Barak Rosenshine in 1979 described this shift as one to teacher-centric instruction, large group instruction and academic goal-oriented classrooms (Brophy, 1979; Brophy and Evertson, 1976; Rosenshine, 1979).

Understandably, with this concern for basic skills came a deflation in preoccupation with individual differences. Many educators maintained, though, that the two were not incompatible. Robert Travers, in An Introduction to Educational Research, made reference to there being ". . . almost universal acceptance of the idea that individual differences among pupils should be taken into account in planning educational programs" (Travers, 1969, p. 56). He pointed out, however, that no clear-cut answers to individualized instruction had emerged. Travers concluded by suggesting that only one category of individualized programs of instruction had been studied in depth--that of adjusting the speed whereby all students study the same content in one type of program (Travers, 1969).

Several writings provided a good description of the current status of thought on individualized instruction. Cronbach and Snow talked of the new, systematic research on individual differences. They identified three key elements in future studies--aptitude, representing the human condition; environment, representing the instructional condition; and interaction of the two, representing learning. The two thrusts in educational research which gave direction in understanding the area of individualized instruction were research in aptitude-treatment interaction and research in education production factors (Cronbach and Snow, 1977).

Harriet Talmage in "Instructional Design for Individualization," described the problem as one of responding to diversity. Because, she stated, Americans are heterogeneous in their educational approaches, we have defined individualized instruction in diverse ways. Our quest should be the development of a conceptual schema which will enable us to sort out the network of concepts related to individualization. She further explained that individualized instruction has at its core concern for the individual. And, the complexities of the individual account for the many varied facets to which instruction can respond. For the future, Talmage reflected:

> All instructional programs are bound by the constraints of the school organization and budget, thus limiting the ways we can respond imaginatively to other traits, or to more deviant characteristics within a given trait. To search for a perfect individualized program fitted to the needs of each person is a fantasy that diverts our attention from ways we can realistically respond to individual differences (Talmage, 1980, p. 21).

As the literature indicated, much writing has been done on instructional methods in general and individualized instruction specifically. Talmage aptly described the status of individualized programs when she spoke of the vast number and diversity of individualized approaches which currently exist. In the survey of literature, this study examined further one of these approaches, the learning

packet. As noted in Chapter I, learning packets were of special interest during the 1960s and 1970s, and consequently, many of the writings represent views and descriptions prevalent during this period.

In, perhaps, the most in-depth source on learning packets, the authors, Ward and Williams were quick to explain at that time that learning packets were known by a variety of names. These included such titles as LAPS (Learning Activity Packages); HIPS (Hartford Individual Packets, after the city in which they are used); and PBLAP (Performance-Based Learning Activity Package, an effort to individualize competency-based instruction); and others. However, all of the packets possessed certain common characteristics. These packets contained an explanation of what was to be studied and the specific skills to be achieved; a multimedia approach; enrichment activities; and a series of tests--preassessment, self-testing and postassessment (Ward and Williams, 1976; Gilstrap and Martin, 1975). Patricia Ward in Learning Packets: New Approach to Individualizing Instruction wrote:

> Thus a Learning Packet is a structured approach to individualization, leading the participant from the general idea to mastery of designated goals which in turn reinforce the general idea (Ward and Williams, 1976, p. 18).

Gerald Ubben, in his article on learning packets, explained the learning packet as a individualized management system. Because of its self-instructional nature, the

packet allows the teacher time to work with individual students. If the packet has multiple resources and activities and if these are diverse in nature including such things as reading, viewing, doing and listening, the teacher is able to assist students as they progress at their own pace (Ubben, 1970).

With the learning packet approach, the teacher is considered to be a resource person. A well designed packet includes a series of sequential learning activities. All students work to achieve a desired outcome which is stated at the start of the packet. Bagford's work on learning packets suggested the following components for a learning packet (Bagford, Jones and Wallen, 1976).

- Teacher directions
- Student instructions
- Pretest
- Major and sub-concepts
- Bebavioral objectives
- Assorted strategies and content
- Students' self-assessment
- Posttest
- Research activities
- Independent study

Given a description of learning packets, it was necessary to look then at what the learning packet accomplishes in the classroom. Consider first what it does for the student. Ward and Williams provided a detailed discussion of some important factors. The student can progress

at his/her own rate of learning. Those who finish swiftly can do so without waiting for others in the class. Those who require assistance can be helped through additional activities or by conferences with the instructor. In this way the instructor acts as a facilitator with students reaching their maximum potential at their own self-pacing. In addition to self-pacing, by providing at least four multimedia options--written, visual, listening and manipulatory devices, it is possible to provide students with varying methods and media for learning. A third accomplishment afforded the student was the development of information retrieval skills. The learning packet encourages the finding of information and testing of one's self as opposed to committing facts to memorization. Also, the learning packet enables the student to make decisions as he/she selects activities and masters the content. For example, the student can select when to test himself/herself throughout the process. Self-discipline is fostered through the use of learning packets as well. The student checked his/her own work, managed the time involved and made changes when necessary. A last factor discussed by Ward and Williams was that of instructor interaction. This they referred to as another "plus" because the student begins to view the teacher as a helper or facilitator and experiences an increased willingness to seek assistance in a positive way. And, with students managing their own work, the teacher can have more

frequent contact with all students and thus recognize problem areas and accomplishments more readily (Ward and Williams, 1976).

In addition to explaining what packets can accomplish for students and teachers, the literature also provided good insight into the advantages and disadvantages in utilizing learning packets. Several excellent sources provided what appeared to be a good description and synthesis of both positive and negative aspects of learning packets. The advantages included (Ward and Williams, 1976; Bagford, Jones and Wallen, 1976):

- Learning is well planned with learning tasks taking place in a logical, sequential order.
- Teachers are in the role of facilitating rather than directing.
- Materials are multimedia in approach and thus accommodate a variety of styles of learning.
- Concepts are stated in behavioral or measurable terms.
- Learning packets can be developed for use in any subject area.
- The instructor has increased contact on a one-to-one basis with all students.
- The learning packet fosters self-pacing, increased student decision-making, increased self-discipline and allows for individual needs.

- Students can work independently on different tasks at the same time.
- Failure is greatly, if not totally, reduced or eliminated.

As with any instructional method, learning packets have disadvantages as well. Bagford and Musgrave presented a number of negative features regarding the use of learning packets. These were (Bagford, Jones and Wallen, 1976; Musgrave, 1975):

- Teachers may use learning packets incorrectly or use the approach as the only instructional method--which can nullify the appropriate utilization of packets.
- Packets are time consuming to develop.
- A number of materials and resources are necessary for development of a good learning packet.
- Certain students may not have the maturity to work independently.
- Packets can be misused as a testing device rather than a learning unit.

Several added comments on disadvantages of learning packets were noted in additional sources. It was suggested that in some instances teachers may feel threatened by the advent of learning packets. A major philosophical concept which teachers using packets must support is the change of

teacher role from directing and being teacher-centric to that of facilitator and helper. Too, teachers sometimes rush into new approaches without carefully developing an implementation plan. In either instance, the end result of using packets can be negative. Teachers feeling insecure or rushing about experimenting with different forms of packets can cause widespread disillusionment with learning packets (Unruh, 1970; Tunks, 1973).

In summary, the literature which existed on individualized instruction and learning packets specifically consisted of a vast amount of writings. Although many, many sources have been written on individualized instruction, only a small number were devoted to the subject of learning packets. Those written on packets seemed to consist primarily of several in-depth works, a number of chapters on the topic from broader subject works, and various short articles. Numerous sources addressed the issue of learning packets along with other instructional methods. There appeared to be less concern with philosophical and judgmental comments and more attention to descriptions of learning packets as one of many approaches designed to meet the student's individual needs.

In addition to surveying the literature on individualized instruction and learning packets, it was possible also to look closely at the sources on lecture instruction.

Doing so permitted a more in-depth evaluation of the two instructional approaches. Further discussions on the use of lecture is provided in Section III.

III. TEACHER-CENTRIC, LECTURE INSTRUCTION

When studying the literature on instructional methods, most references to teacher-centric, lecture instruction were found in the context of discussions on traditional teaching, history of methods, and teaching in times past. Several specific sources, however, provided insight into the method through a more factual, objective treatment of the topic as one of many instructional modes having both good and bad features. This study looked at both treatments in the literature.

Very often the discussion of the teacher-centric, lecture method focused more on the method's more negative qualities. Musgrave in his writing on instructional strategies referred to the teacher-centric method as the most predominant method used in schools today--a method whereby the teacher is the central focal point. This, he said, included lectures, teacher demonstrations and recitations. Although the author explained that there were times when the teacher-centric approach was the most suitable method, it is nonetheless practiced excessively. Often the teacher becomes the star and dominates the teaching-learning

situation with students being passive learners. This abuse, according to Musgrave, was what has led to the more negative opinions on teacher-centric methods (Musgrave, 1975).

In Ohmer Milton's Alternatives to the Traditional, he reflected on the misperceptions that students and instructors have long supported. In reference to higher education, he commented:

> Both sets of participants take part in learning as though it were something imparted by the teacher to the learner. It is as though the teacher is supposed to "learn" the student. I believe that, in the thinking of many, this transmittal of learning from one person to another is mainly through spoken words. For hundreds of years a student and teacher absolutely had to be in the same place at the same time because the only way to dispense information was by mouth to nearby ears; the notion that teaching is talking is a historic carry-over from which higher education is only beginning to rumble about sundering itself (Milton, 1972, p. 6).

Referring to studies on university instructional methods, Milton commented that one study in 1962 showed university professors ranking lecture as the most used and most favored instructional method. A similar study in 1962 revealed little difference in the number of hours spent "listening" between freshmen and seniors at a medium-sized university. This study looked at all subject areas from the arts and sciences to engineering (Milton, 1972).

Reflections on traditional education were presented in a similar fashion by Philip Hosford who wrote of the

educational thought that many teachers hold--that by providing students with a broad range of information to assimilate, they will be prepared to be better thinkers. Sadly, the author reported, some teachers' thinking never goes beyond that concept. Elaborating further, Hosford cited recent criticisms of the teacher-centric, traditional methods:

> It's not what you're taught that does the harm but how you're taught. Our schools teach you by pushing you around, by stealing your will and your sense of power, by making timid square apathetic slaves out of you--authority addicts (Hosford, 1973, p. 6).

Historically, the teacher-centric, lecture method has been accepted as the prevailing method of instruction in public schools. This age-old approach has been taken for granted over the centuries. However, to many, the time will come when these traditional activities will have to be justified (Gage and Unruh, 1967).

The debate over the use of lecturing as a predominant method in secondary schools has long been argued. Particularly, this method has been debated in opposition to the discovery method. Some educators, on a more positive note, argued that while lectures have been used excessively, in some instances, they provide the student with information that would take hours to collect. One writer suggested the question should be not whether to lecture, but when to

lecture. Guidelines for lecturing as a positive instructional method included:

- Useful when information is inaccessible
- Useful when information is conflicting
- Useful when a teacher's personal experiences are unique
- Useful when time is a key element and sources are not readily available
- Useful when variety is needed
- Useful when greater understanding seems to be possible.

In writing the guidelines, the author pointed out that no method is all good or all bad. A variety of methods is ideal with the teacher-centric, lecture method being one of many approaches used in the classroom. Understandably, however, many writers expressed dismay that the method of the teacher talking to 30 or 40 students in a long and dull lecture is still a common occurrence in schools today (Gage and Unruh, 1967; Hoover, 1968).

Lecture is described as the traditional method of teaching whereby the speaker transmits information to passive listeners. The term, lecture, is derived from the Latin word, lego, meaning read. Thus, centuries ago before the advent of the printing press, groups would sit while being read to by the teacher. As time passed, books

became readily available, but teachers continued the same method of instruction. Gilstrap commented on the lecture method and referred to Ausubel's statement that "'the weaknesses attributed to the method of verbal instruction do not inhere in the method itself'" (Gilstrap, 1975, p. 7). A number of writers noted that even though the lecture method has been abused and used excessively, it, nonetheless, serves a good purpose when used correctly (Bagford, Jones and Wallen, 1976).

Bagford and Gilstrap provided a listing of the advantages and disadvantages of lecture instruction. These are:

- When time is a key consideration, the lecture is economical.
- Teachers can use lectures to relate unique experiences.
- Large numbers of students can be reached at one time.
- If the lecturer is stimulating, students can absorb content readily.
- The lecture can be useful in introducing new content.
- Students can develop good listening skills through lecture.
- Lecture can reinforce students' learning from other sources.

Gilstrap summed up the positive uses of the lecture method by explaining ". . . its use as a method for personalizing in K-12 does depend on who uses it, on the nature of the experiences afforded students, and on the kinds of learning outcomes sought" (Gilstrap, 1975, p. 7).

The literature revealed, perhaps, a more negative assessment of the lecture method than other instructional methods. However, Gilstrap and Bagford presented a factual discussion of both pros and cons of using the lecture technique in the classroom. In listing disadvantages, they included (Bagford, Jones and Wallen, 1976):

- Lectures have a tendency to be lengthy and boring.
- Students who are poor listeners fare poorly with the lecture method.
- Learners assume a passive role with the lecturer having no feedback as to impact on the learner.
- Student learning pace is not a consideration. Only the speaker's pace is considered.
- Teachers tend to be accepted as the final authority when using lecture.
- Higher levels of cognitive learning are not accomplished with the lecture method since students do not become actively involved.
- Affective learning is rarely accomplished through lecture.
- Retention of facts can become an end in itself.

The predominant treatment of the teacher-centric, lecture method seemed to be discussion of the method in terms of the broad concept of traditional teaching. This was frequently in the form of articles or chapters in books. Gilstrap and Bagford provided an objective, in-depth description of lecture instruction. A common thought which seemed to prevail from the literature on lecture instruction is that regardless of the controversy over this method, it remains today the most commonly used teaching technique in American secondary and post-secondary schools.

After examining the two instructional methods separately, sources were also studied which provided comparisons of the two methods.

IV. COMPARISONS OF INDIVIDUALIZED LEARNING PACKETS AND TEACHER-CENTRIC, LECTURE INSTRUCTION

Explanation of the literature on comparative studies of the two methods included comments on the writings concerned with evaluation of methods in general, various studies of specific methods, and references to the current status of research on instructional methods.

Numerous sources expressed a common thread of thought--that research failed to provide any conclusive evidence that any one instructional method is superior over others. More specifically, Good and Brophy asserted

that there is no proof of the superiority of either method, lecturing or the discovery approach. Several writers insisted that the conclusions of past research suggest that no one method is superior, and thus the answer lies in utilization of multiple instructional methods (Gilstrap, 1975; Allen and Seifman, 1971; Good and Brophy, 1973).

Two major reviews looked also at the research in general on the relationship between teacher behavior and learner outcomes. Both works proposed that perhaps teacher methods are not necessarily directly related to student growth. And, they maintained, the existing research could be inferred to support the idea that little correlation is found between teacher behavior and student achievement (Dunkin and Biddle, 1973; Rosenshine and Furst, 1971).

A number of studies have been conducted for the purpose of comparing individualized instruction with traditional teaching (lecturing, use of same materials and same pacing for all students and group-oriented instruction). No study was found which looked specifically at the comparison of lecture and learning packets. However, the studies which examined individualized and traditional methods did provide insight into the two particular instructional approaches.

In 1976, Miller analyzed 145 studies on individualized instruction in math programs. Of these, 88 evaluated

cognitive achievement and 33 looked at attitude change. In the area of achievement, results were: 42 studies showed no difference in the two methods; 32 supported the individualized method; and 14 favored the traditional approach. For attitudinal results, 25 studies showed no difference in the approaches; 7 favored the individualized method; and one confirmed the traditional approach (Miller, 1976).

In another study, Royce and Shank reviewed 21 studies in science in 1975. These studies compared individualization with group-paced instruction. The results on cognitive outcomes showed no differences between the two. In a similar study, Marchese concluded that the individualized approach experienced at least the same outcome in mastery of subject matter, but in the individualized group, attitudes of students were more positive; students rated their own progress and student participation was greatly increased (Royce and Shank, 1975; Marchese, 1977).

A third study designed to evaluate the Keller Personalized System of Instruction provided conclusions on achievement scores. Results indicated that of the 61 studies comparing the lecture method and the Keller plan, the majority scored higher with the Keller plan; three studies favored the lecture method, and one showed no difference in the two methods (Katzenmeyer and Ingison, 1980).

Conclusions from an evaluation of various individualized programs, called the Instructional Dimensions Study, suggested that method of instruction appears to have little impact. In this study involving four hundred classrooms from the first and third grades, little evidence was found that individualized instruction was better than other instructional methods in reading and math. The study concluded, however, that more definitive measurement was needed on the effectiveness of individualized instruction (Katzenmeyer and Ingison, 1980).

The studies reviewed here are felt to be representative of studies conducted which compared the two methods, lecture and individualized instruction. All of the literature on research and findings related to teaching methods were in agreement that the need existed for more in-depth study and definitive research on traditional and individualized methods of teaching. Gage and Unruh state, "Few if any striking results have been reported" (Gage and Unruh, 1967). The authors elaborated further that no evidence had been found that showed any one instructional method yielding greater results than another. Reviews of research by Dunkin and Biddle, Rosenshine and Furst also called for more explicit research on teacher behavior and learner outcomes. Others pled for searches and explanations concerning what goes on in classrooms. Overall, writers seemed

to concur that research to date on comparisons of instructional approaches was greatly lacking and provided little data to support positive conclusions on any specific teaching method (Gage and Unruh, 1967; Dunkin and Biddle, 1973; Rosenthal and Furst, 1971).

V. SUMMARY

In summarizing the literature on the two methods of instruction, individualized learning packets and the teacher-centric lecture approach, a number of conclusions were evident:

- Teachers are often not cognizant, for a variety of reasons, of the various instructional methods that can be used in teaching.
- In the listings which describe instructional process, the selections and groupings varied.
- A vast amount of literature existed on teaching methods, traditional teaching and individualized instruction in general; few sources dealt specifically with learning packets, and none compared specifically the differences in learner outcomes of the two approaches.
- Literature on individualized instruction suggested that a variety of programs fall into this category, but all had one commonality--concern for meeting

the individual needs of students rather than preoccupation with group or mass teaching.

- Learning packets are relatively new as a method of individualized instruction. As with other methods, sources examine the positive and negative aspects of their use.
- Much of the writing on teacher-centric, lecture instruction was presented in the context of the broader topic of traditional teaching or alternative approaches to teaching. More sources seemed to view the method in a negative light; some, however, noted its appropriate uses in the classroom.
- The majority of comparison studies indicated that no instructional method has been proved superior over others.
- A number of sources called for use of multiple instructional strategies in the classroom.
- Certain selected studies which compared lecture and individualized instruction maintained that achievement outcomes were higher for the individualized group; a few studies showed that little or no difference in achievement occurred between the two methods.

- Analysis of the literature overall showed a need for more specific data on the impact of instructional methods on learning outcomes.

It seemed apparent from reviewing the literature that additional in-depth research was needed on learning packets. Certainly, additional studies which compare the two instructional methods would provide a greater understanding of their use in the classroom. By looking at the differences in learner outcomes, cognitive and attitudinal, it would be possible to assume more definitive conclusions on the impact of learning packets and teacher-centric, lecture instruction in high school classes.

The literature survey provided the groundwork for designing an experiment that would permit a closer look at the two instructional methods. This study was concerned with the effects of the two methods on learner outcomes. The research focused on three aspects of learning: cognitive change, knowledge retention, and affective change. Chapter III describes the methods and procedures utilized in implementing the experiment.

CHAPTER III

METHODS AND PROCEDURES

As the literature review indicated, confusion existed as to which teaching methods were the most effective. Alfred North Whitehead, scholar and educator, suggested that contemporary times reflect a shift from concern with the group norm to emphasis on the student's interests, needs and capabilities (Weisgerber, 1971). Yet, the teacher-centric, lecture method still prevailed as the dominant teaching approach used (Musgrave, 1975).

The literature on instructional methods also revealed that questions concerned with the effectiveness of specific teaching methods in comparison to one another were still unanswered. No research existed that dealt with the effectiveness of individualized learning packets in comparison to the teacher-centric, lecture method. For example, during the time that learning packets were new and praised as an innovative teaching method, did they differ from lecture in the cognitive, attitude and knowledge retention gains brought about in students? More specifically, in teaching child passenger safety to driver education students, is one method more effective than the other? The purpose of this

study was to analyze the results of student evaluations in three areas--cognitive change, attitude change and knowledge retention after being exposed to two instructional methods of teaching.

This chapter is concerned with a number of concepts important to the study. These include research questions, hypotheses, definitions of terms, methodology, the experiment, and the statistical analysis.

I. RESEARCH QUESTIONS

The primary research questions which formed the basis for this study were:

1. Is there a difference in student cognitive change when comparing use of an individualized learning packet with a teacher-centric, lecture presentation which focuses on child passenger safety in driver education classes?
2. Is there a difference in student attitude change when comparing use of an individualized learning packet with a teacher-centric, lecture presentation which focuses on child passenger safety in driver education classes?
3. Is there a difference in student retention of knowledge when comparing use of an individualized learning packet with a teacher-centric, lecture

presentation which focuses on child passenger safety in driver education classes?

II. HYPOTHESES

The hypotheses for this study were derived from the theoretical framework and research on the subject. The hypotheses included:

H_1: Students who study child passenger safety using an individualized learning packet will exhibit significantly greater cognitive change when compared with students who study child passenger safety using the teacher-centric, lecture instructional approach.

H_2: Students who study child passenger safety using an individualized learning packet will exhibit significantly greater attitude change when compared with students who study child passenger using the teacher-centric, lecture instructional approach.

H_3: Students who study child passenger safety using an individualized learning packet will retain significantly more information over a three-week period than students who study child passenger safety using the teacher-centric, lecture instructional method.

III. DEFINITION OF TERMS

General Definitions

General definitions used in this study were:

Child Passenger Safety. Child Passenger Safety is a recent concept in highway safety. In 1978, Tennessee became the first and only state to legislate the protection of children while riding in a moving vehicle. The concept involves proper securing of small children in a specially designed child restraint seat to protect them from injury or death in an accident. Research indicated that using a child restraint seat will ". . . reduce the chances of death by over 90 percent and serious injuries by almost 80 percent" ("A Matter of Love," 1979).

Driver Education. Classes used in this study were high school driver education classes. Students ranged from sophomore to senior levels. Subject matter typically studied in these classes included pedestrain safety, seat-belt usage, traffic signals and other driver safety topics. All classes involved had previously used the same textbook for classroom instruction.

Lecture Presentation. Musgrave defined a lecture lesson as a one-way presentation of concepts, facts and material. The term is often associated with a teacher-centric method of instruction. Students are not encouraged

to discuss the content; rather the teacher is the active participant while the student assumes the role of passive listener and learner (Musgrave, 1975). For purposes of this research, the lecture method was an independent variable.

Individualized Instruction. The term, individualized instruction, includes a variety of instructional approaches. Blake and McPherson wrote about the method as one in which the learning program is designed to enable each student to progress at his/her own learning pace under the supervision of a teacher. The authors explained that in most instances, special materials are utilized in an individualized instructional approach (Blake and McPherson, 1973).

Individualized Learning Packet. The philosophy underlying the principle of learning packets is based on the thinking that each student is unique in the learning process and should be provided the opportunity to progress at an individual rate of learning. Packets provide the student with a means for retrieving information rather than memorizing facts, for progressing while using his/her own best learning style, for assuming more responsibility and decision-making in the learning process and for achieving success by working with the material until learning outcomes have been achieved. In this study, individualized learning packets was one of the independent variables.

Operational Terms

Cognitive Change and Knowledge Retention. Two of the dependent variables in this study are cognitive change and knowledge retention. According to Robert Hammond in "Evaluation at the Local Level," cognitive activity involves " . . . recall, comprehension and application of knowledge and the utilization of intellectual skills of analysis, synthesis, and evaluation" (Hammond, 1973, p. 165). He explained that testing of this area usually consists of objective, short-answer exams designed to evaluate knowledge of facts. In this study, evaluation of cognitive change and knowledge retention (to what extent the cognitive change remained over a three-week period) was accomplished through use of a multiple choice, short-answer test. The test consisted of multiple choice questions on the subject of child passenger safety. A more detailed account of the test is provided in the section on tests and scales. A copy of the test is found in Appendix B.

Attitude Change. Attitude change is a dependent variable. Hammond defined affective behavior ". . . as the interest, attitudes, values, appreciations, and adjustments of the individual . . . the willingness of the student to identify himself with a given subject" (Hammond, 1973, pp. 166-67). Attitude factors toward child passenger safety were measured in this study with an attitude scale consisting of items with a five-point scale ranging from Strongly

Disagree to Strongly Agree. Three categories, legal aspects, advertising, and parental responsibility, formed the basis for attitude items. More information on the testing of attitudes is found in the section on tests and scales. The attitude scale is found in Appendix C. The effects of attitude change were studied over a three-week period.

Child Passenger Safety Learning Packet. As the independent variable mentioned in the discussion above on learning packets, this specific set of materials was designed in a format similar to that described by Ward in her in-depth book on learning packets. The Child Passenger Safety Learning Packet contained: a pretest and a posttest; a written, cartoon-illustrated booklet, "Let's Take a Look at Child Passenger Safety"; specific activities and self-testing questions; a cassette tape, "A Day in the Life of Debbie and Bill"; a 16 mm film, "Don't Risk Your Child's Life," and a child passenger safety seat with a life-size doll (See Figure 1 and Appendix D).

Basic concepts and information on child passenger safety were included in the packet with the material geared to Tennessee's unique law and its impact on child passenger safety. Activities contained basic facts and statistics in child passenger safety; information on Tennessee's law; and specific information about child restraint seats. The packet included stated objectives, instructions for self

	CHILD PASSENGER SAFETY LEARNING PACKET
Written Material	1. Booklet containing instructions for using the packet, stated objectives, child passenger safety narratives, self-testing questions 2. Brochure, "Protecting the Child Passenger" 3. Tests, Pre and Post
Visual Material	1. 16 mm Film, "Don't Risk Your Child's Life"
Audio Material	1. Cassette Tape, "A Day in the Life of Debbie and Bill"
Hands-On Material	1. Child Passenger Safety Seat (GM Infant Carrier) 2. Life-size Doll

FIGURE 1

LEARNING PACKET COMPONENTS

use, testing activities, audio and visual materials and hands-on activities.

Child Passenger Safety Lecture Presentation. This presentation is also the independent variable discussed earlier in learning packets. The definition set forth by Gilstrap and Martin described the presentation. It was treated as ". . . a method of teaching by which the teacher gives an oral presentation of facts or principles . . . communication of knowledge through verbal exposition" (Gilstrap and Martin, 1975, p. 8). For purposes here, the lecture was designed to follow the same conceptual and factual content as the learning packet. The identical facts and statistics on child passenger safety that were presented in the learning packet were included in the lecture. The material was purposely presented in the same chronological order as the packet. Refer to Figure 1.

IV. METHODOLOGY

Research Design

The research design used for this study was a comparative treatments, pretest, posttest control group design. Huck, Cormier and Bounds, in their work on research designs, defined the design as a variation of the pretest, posttest control group design. In the comparative treatments variation, the authors explained, "There is no control group

as it is typically defined, but this design allows the researcher to compare the differential effects of both forms of the experimental treatment" (Huck, Cormier and Bounds, 1974, p. 245). Pretest sensitization is recognized as a confounding factor throughout the classes. The inability to have random samples also limited the design's intent. However, the treatments were randomly selected for the classes involved. This design was considered the best possible choice because it permitted the comparing of the two groups, packet users and lecture receivers, through analysis of pretesting and posttesting outcomes. Figure 2 illustrates the research design (Haskins, 1977).

Objective Test and Scale

For purposes of determining cognitive change--knowledge of facts and content, a multiple choice, objective test was constructed. Glaser explained achievement measurement as ". . . the determination of the characteristics of student performance with respect to specified standard" (Glaser, 1963, p. 374). In this study, the test used was a criterion-referenced measure. This concept looks at knowledge gain from no proficiency at all to perfect performance with an absolute standard being predetermined. This type of testing permits measurement of students without reference to the performance of other students (Glaser, 1963).

	t1	t2	t3	t4	t5
P1	M1,2	T1(fx)	M1,2	--	M1,2
P2	M1,2	T2(fx)	M1,2	--	M1,2
P3	M1,2	T1(fx)	M1,2	--	M1,2
P4	M1,2	T2(fx)	M1,2	--	M1,2

Notation

P1	Students in two driver education classes, Pleasant Ridge High School, Chattanooga, Tennessee (non-randomized population)
P2	Students in three driver education classes, Pleasant Ridge High School, Chattanooga, Tennessee (non-randomized population)
P3	Students in three driver education classes, Carter High School, Knoxville, Tennessee (non-randomized population)
P4	Students in two driver education classes, Carter High School, Knoxville, Tennessee (non-randomized population)
t0	Time prior to t1
t1	Time of pretest
t2	Time of treatment (learning packets and lecture)
t3	Time of posttest
t4	Lapsed time of three weeks from pretest to follow-up posttest
t5	Time of follow-up posttest
T1(fx)	Learning Packet Instruction with teacher assistance (forced exposure, treatments randomized)
T2(fx)	Lecture Presentation (forced exposure, treatments randomized)
M1	Objective, multiple choice test measuring achievement outcome
M2	Attitude scale measuring attitudinal change

FIGURE 2

COMPARATIVE TREATMENTS, PRETEST, POSTTEST
CONTROL GROUP DESIGN

The test consisted of 25 multiple choice items with five answer choices ranging from a-e. The test was developed with questions addressed to the same areas identified for development of the learning packet and lecture content. A pretest has been conducted with high school driver education classes prior to the experiment to assure validity and reliability; in addition, a driver education teacher committee also reviewed the test and made suggestions for improvement. Necessary revisions were made (Appendix B).

In the experiment, students were instructed not to write their names on the tests. Instead, students' birthdates were used to match pretest and posttest results.

The scale designed for testing attitude change consisted of a Likert-type format. The Likert is well known for its measurement of intensity of attitude expression. Individuals taking the test are placed on a continuum from high to low based on their scores. The score is calculated by weighting the response for each statement.

Prior to the experiment, the test had been developed and pretested with one class of students for analysis and revisions. The scale contained 12 attitude statements with four statements on each of three areas--legal aspects, advertising and parental responsibility. Analyses were made, and several statements were revised.

For the experiment, the scale was stapled behind the multiple choice test. Each of the 12 statements permitted the student to select from five choices of answers, ranging from strongly agree to strongly disagree (Appendix C).

Subjects

The subjects for the experiment consisted of driver education students in two high schools. One school was a rural, county school near Knoxville, Tennessee; the other was a large, suburban school in Chattanooga, Tennessee. The number of subjects in all totalled 165. Most of the students were sophomores and were taking classes in driver education because they were nearing the age for a driver's license. The subjects were not aware that an experiment was taking place. They were told that grades would be given on the child passenger safety unit as with other driver education lessons.

In Knoxville, there were 85 students in the classes. Of these, 46 received the learning packet instruction, and 39 experienced the lecture presentation. Chattanooga's population consisted of 80 subjects with 32 receiving the learning packet instruction and 48 having the lecture method. In the combined populations, 78 received the learning packet instruction, and 87 received the lecture

teaching. Although students were not randomly assigned to the classes, the two treatments were randomly administered to the 10 classes--5 in Knoxville and 5 in Chattanooga. Of the 85 subjects in the Knoxville classes, 40 were male and 45 were female. The Chattanooga students consisted of 36 males and 44 females. Tables 1 and 2 provide profiles of the subjects and treatment groups.

The subjects received the treatment in their usual classrooms as part of their normal studies. In both instances, the experiment was conducted as students were nearing completion of the sophomore school year. Students enrolled in the driver education classes had voluntarily selected to take the driver education course. In Tennessee, driver education is not a mandatory class.

Treatments

Design of packet and lecture. The two methods, packet and lecture, covered basic concepts in child passenger safety. Content areas that were considered to be important for students to learn were identified at the start and included in both treatments. These content areas included: general facts about child passenger safety; understanding of Tennessee's law; specific information on child passenger safety seats; knowledge of advertising and its use in promoting safety; and awareness of public and parental support for safety measures.

TABLE 1

PROFILE OF TREATMENT GROUPS BY SITE

Treatment Groups Packet, Lecture	Sex of Subjects Sex	No.		Totals
Knoxville- Learning Packets	Males	25		
	Females	21		
	Totals	46		
Knoxville- Lecture	Males	15		
	Females	24		
	Totals	39		
			Total Knoxville	85
Chattanooga- Learning Packets	Males	16		
	Females	16		
	Totals	32		
Chattanooga- Lecture	Males	20		
	Females	28		
	Totals	48		
			Total Chattanooga	80
			Total Subjects	165

TABLE 2

PROFILE OF TREATMENT GROUPS, SITES COMBINED

Treatment Groups Packet, Lecture	Sex of Subjects Sex	No.	Totals
Learning Packets	Males	41	
	Females	37	
	Totals	78	78
Lecture	Males	35	
	Females	52	
	Totals	87	87
	Total Subjects		165

The format of the learning packet was designed purposely to be interesting and easy to use. The booklet was cartoon-illustrated, and the overall content was simplistic. Similarly, the lecture was prepared in a logical, easy-to-understand format. The same facts, content and terminology were used in both treatments.

Preparation for instruction. In preparation for the instruction, several conditions were necessary for successful administration of the treatments: the instructor would need background and experience in using the two instructional methods; equipment and materials needed to be readily available; and the content of the instruction would need to be reviewed by a driver education committee prior to being used in the classes.

The person conducting the study administered the treatments in all classes. She was experienced in high school teaching, was familiar with child passenger safety and felt comfortable with both instructional approaches. Arrangements were made to have necessary equipment and materials including a tape player, a film projector, tables for displays and a lectern. Prior to the experiment, a committee of driver education instructors from the Nashville Metro School System reviewed the content of the treatments. No revisions were suggested.

V. EXPERIMENT

Students received instruction on child passenger safety at Pleasant Ridge High School in Chattanooga on May 15, 16, 1979, and at Carter High School in Knoxville on May 21, 22. The driver education classes were told that a visiting teacher would be instructing them on a new unit in highway safety--child passenger safety. In Knoxville, first, second and fourth period classes received the learning packet instruction; third and fifth periods were exposed to the lecture treatment. In Chattanooga, first and fifth period classes used the learning packets; third, sixth and seventh periods experienced the lecture presentation.

Both treatment groups were administered the pretest at the start. Following the pretest, instruction on child passenger safety was given, with one treatment group in each site using learning packets and the other treatment group receiving lecture instruction. In the individualized instruction treatment, students used the learning packets. As part of the treatment, the students also listened to a cassette tape, viewed a 16 mm film, and took part in hands-on activities with the doll and safety seat. Teacher involvement was minimal, and as students finished the learning packet work (which varied among students), they were permitted to work on other things in class.

In the lecture treatment, students experienced only one-way, teacher-dominated lecture. No audio aids, visual supplements, or hands-on activities were used. Both treatments covered identical content on child passenger safety.

After being exposed to the treatments, all students were posttested. Students were never made aware of their scores on the pretests. Thus, they were uncertain as to which ones they had answered correctly or incorrectly. Three weeks after the initial treatment, a follow-up posttest was administered. The purpose of this measurement was to evaluate retention of knowledge and attitude change over a three-week period. Matched scores were used for analyses of findings. These scores included only students who had received all three tests--the pretest, posttest and follow-up posttest. All three measuring instruments were identical for the evaluation of the cognitive achievement, attitude change, and knowledge retention resulting from the two treatments.

VI. STATISTICAL ANALYSIS

In this study, the dependent variables for the three hypotheses were cognitive change, attitude change, and degree of knowledge retention. The two independent variables for all three hypotheses were the two treatments, learning packet instruction and lecture teaching. For

analysis of data, the t-test of significance, multiple regression and analysis of variance were used. The SPSS: Statistical Package for the Social Sciences computer program was utilized for the analysis (Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975). The level of significance employed in the analysis of data was the .10 alpha level.

By using the t-test of significance, it was possible to look at any differences between the outcomes of the two treatments. The t-test of significance enables the researcher to determine the differences between effects by comparing the means of two groups. T-tests are most frequently used with small sample groups. Champion explained that the mean is ". . . that measure of central tendency which is the average value of all values in a distribution of scores" (Champion, 1970, p. 39).

As part of the analysis, it was also necessary to look at other factors such as sex and rural/suburban differences in relation to the two treatments. These comparisons are described as findings relating indirectly to the hypotheses. In a secondary analysis, the scores were examined from all groups as well as within a specific group. Figure 3 illustrates all of the various combinations used for analysis of findings.

Chapter IV describes in detail the findings and results of the statistical analyses.

COMPARISONS FOR ANALYSES (COGNITIVE, ATTITUDE, KNOWLEDGE RETENTION)		
Geographical Populations	1.	All learning packet users vs. all lecture receivers
	2.	All male learning packet users vs. all male lecture receivers
	3.	All female learning packet users vs. all female lecture receivers
Geographical Populations Compared	1.	Rural learning packet users vs. suburban learning packet users
	2.	Rural lecture receivers vs. suburban lecture receivers
Comparisons within a Geographical Population Knoxville	1.	Learning packet users vs. lecture receivers
	2.	Male learning packet users vs. female learning packet users
	3.	Male lecture receivers vs. female lecture receivers
	4.	Male learning packet users vs. male lecture receivers
	5.	Female learning packet users vs. female lecture receivers
Comparisons within a Geographical Population Chattanooga	1.	Learning packet users vs. lecture receivers
	2.	Male learning packet users vs. female learning packet users
	3.	Male lecture receivers vs. female lecture receivers
	4.	Male learning packet users vs. male lecture receivers
	5.	Female learning packet users vs. female lecture receivers

FIGURE 3

GROUP COMBINATION COMPARISONS

CHAPTER IV

RESULTS

In analyzing Hypotheses 1, 2, and 3, the *t*-test of significance was used to analyze the data. The two independent variables were the two treatments, learning packets and the lecture approach. The dependent variables were cognitive change, attitude change and retention of knowledge. Discussions of the findings are presented in three sections: Primary Findings, Secondary Findings and Summary. The primary findings describe the results of comparisons which relate directly to the hypotheses, those findings concerned specifically with comparisons of the two methods to each other (these will also include some geographic and sex comparisons). The secondary findings focus on comparisons which relate indirectly to the hypotheses, those findings concerned only with geographical and sex characteristics *within* each instructional method. Thus, explanations of primary findings refer directly back to the three hypotheses, while comments on the secondary findings do not.

I. PRIMARY FINDINGS

Primary Findings--Cognitive Change

Both geographical populations combined. When comparing all learning packet users with all students receiving lecture

instruction in Knoxville and Chattanooga combined, the mean for the learning packet group was 48.06, and the mean for the group receiving lecture was 48.33. As Table 3, Appendix E, illustrates, the t-value of -0.23 had an associated probability of 0.82. This was not significant at the .10 level. These data do not support Hypothesis 1 that students who study child passenger safety using an individualized learning packet will show greater cognitive change than those receiving the teacher-centric, lecture approach.

When comparing the two instructional methods from both geographical sites combined by sex, additional findings were noted. The mean for males using the learning packets was 46.83 and for males receiving the lecture was 46.54. The t-value of 0.17 with an associated probability of 0.87 is shown in Table 4, Appendix E. This was not significant at the .10 level. Similarly, no significant difference was found between female learning packet users and females receiving lecture instruction. Female packet users had a mean of 49.41, and female lecture receivers had a mean of 49.54 with a t-value of -0.09 and an associated probability of 0.93. These findings are also illustrated in Table 4, Appendix E. They, too, failed to support Hypothesis 1.

Comparisons within a geographical population--Knoxville. The data also permitted observations on achievement

outcomes within the rural population. The mean for rural learning packet users was 48.43; the mean for rural lecture instruction was 48.79 with a t-value of -0.22 and an associated probability of 0.83. This was not significant at the .10 level, and did not support Hypothesis 1 (Table 5, Appendix E).

When males using the learning packets were compared with males receiving the lecture presentation within the rural population, no differences in achievement outcomes were observed. The mean for rural males using the learning packets was 48.08, and the mean for rural males receiving the lecture was 48.87. The t-value was observed at -0.33 with an associated probability of 0.75. Similar findings were indicated when comparing rural female learning packet users with rural females receiving the lecture. The mean for rural females exposed to the learning packet method was 48.86 and for rural females receiving the lecture was 48.75 with a t-value of 0.05 and an associated probability of 0.96. Table 6, Appendix E, shows the comparisons between methods within the same sex of the rural group. These findings did not support Hypothesis 1, that packet users will have higher scores on cognitive testing than lecture receivers.

Comparisons within a geographical population--Chattanooga. In addition to the findings on the Knoxville, rural

population, data were also analyzed from the Chattanooga, suburban treatment groups. Comparisons of suburban learning packet users with suburban lecture receivers showed that the mean for the learning packet users was 47.52 and for the lecture receivers was 47.96. The t-value was observed at 0.26 with an associated probability of 0.80. This was not significant at the .10 level and failed to support Hypothesis 1. Table 7, Appendix E, displays the data.

When comparing instructional methods within the same sex in the suburban population, no significant differences were observed. In the analysis, comparisons of suburban males showed male learning packet users having a mean of 44.73, and suburban male lecture receivers having a mean of 44.80. The t-value obtained was -0.03 with an associated probability of 0.98. Comparisons of suburban females indicated similar results. The mean for suburban females using the packets was 50.13, and for females receiving the lecture was 50.21. The t-value for these data was -0.04 with an associated probability of 0.97. Neither of the findings when comparing suburban males with males and suburban females with females showed any significant differences at the .10 level. Table 8, Appendix E, shows both findings. Both of the comparisons within the same sex failed to support Hypothesis 1.

Primary Findings--Attitude Change

Both geographical populations combined. Comparisons of all students combined by instructional method showed the mean for learning packet users on the attitudinal scale as being 45.28 and for lecture receivers as 41.28. The t-value was observed at 4.29 with an associated probability of 0.015. The differences between learning packet users and lecture receivers in attitude change was significant at the .10 level. The differences occurred with the two geographical populations combined. The findings supported Hypothesis 2 that students studying child passenger safety with learning packets will show a greater attitude change than students who study child passenger safety with the lecture method. Table 9, Appendix E, shows the results.

Comparisons of both geographical sites combined also provided observations on instructional methods by sex. When comparing all male learning packet users with all male students receiving the lecture, the mean for packet users was 43.87 and for lecture receivers was 43.50. The t-value was observed at 0.25 with an associated probability of 0.80. This was not significant at the .10 level. The same finding did not hold true, however, for females. When comparing female learning packet users with female lecture receivers, a significant difference was noted. The female packet users

showed a mean of 46.76, and the female lecture receivers showed a mean of 40.03 with an observed *t*-value of 2.81. The associated probability was 0.006, and thus, was significant at the .10 level. This finding of differences in female subject group supported Hypothesis 2. The results indicated that females using learning packets showed a greater attitude change than those receiving lecture. Hypothesis 2 maintained that packet users would exhibit greater affective change. Table 10, Appendix E, lists the results by instructional method and sex.

Comparisons within a geographical population--Knoxville. In evaluating attitude change, it was possible, as with analysis of cognitive achievement, to observe within a geographical population. When comparing attitude change between learning packet users and lecture receivers in rural treatment groups, the mean for packet users was 45.87 and for lecture receivers was 44.58. The *t*-value was observed at 0.94 with an associated probability of 0.35. This was not significant at the .10 level (Table 11, Appendix E). When comparing the two methods within a rural population in terms of attitude change, the findings failed to support Hypothesis 2.

When comparing rural male students using the learning packets with rural males receiving the lecture presentation,

the mean for the packet users was 45.67. The rural males receiving the lecture showed a mean of 44.07 with a t-value of 0.79 and an associated probability of 0.44. This was not significant at the .10 level. The same findings characterized the female treatment groups. The mean for the rural females using learning packets was 45.10, and the mean for rural females receiving the lecture was 44.88. The t-value observed was 0.65 with an associated probability of 0.52. Both comparisons within the male and female treatment groups resulted in findings which failed to support Hypothesis 2, that students using learning packets would exhibit a greater change in attitude. Table 12, Appendix E, shows the comparisons within groups for the same sex.

Comparisons within a geographical population--Chattanooga. Findings related to attitude change were also analyzed from comparisons of treatment groups within a suburban group of Chattanooga students. When looking at suburban learning packet users in comparison to suburban students receiving the lecture presentation, a significant difference was noted. The mean for packet users was 44.42 and for lecture receivers was 35.83. The t-value was observed at 2.85 with an associated probability of 0.006. This was significant at the .10 level. This comparison

of attitude change between suburban students using learning packets and suburban students receiving lecture instruction supported Hypothesis 2, that packet users would exhibit a greater attitude change than lecture students. Table 12, Appendix E, shows the differences.

Findings of comparisons of instructional method within the same sex are presented in Table 14, Appendix E. No significant difference between the male subject groups was noted; however, there was a significant difference in the female groups. When comparing suburban males using the learning packets with suburban males receiving the lecture instruction, the mean for the packet users was 41.00 and for the lecture students was 42.50. The t-value was observed at -0.70 with an associated probability of 0.49. This was not significant at the .10 level. Within the female, suburban groups, packet users showed a mean of 47.63 and lecture receivers showed a mean of 32.27. The t-value was observed at 3.30 with an associated probability of 0.003, which was significant at the .10 level. Thus, the findings on suburban males failed to support Hypothesis 2; however, the findings on suburban females showed packet users scoring significantly higher than lecture receivers, which supported Hypothesis 2.

Primary Findings--Knowledge Retention

Both geographical populations combined. As with cognitive achievement and attitude change, knowledge retention was also examined. This is Hypothesis 3 which suggests that learning packet users will retain more knowledge over a three-week period than students receiving the lecture instruction. When comparing knowledge retention of the two groups, packet users and lecture receivers, the mean for packet users was 20.59, and the mean for lecture receivers was 20.38. The t-value was observed at 0.35 with an associated probability of 0.73. This was not significant at the .10 level, and the finding did not support Hypothesis 3. Table 15, Appendix E, illustrates the comparison of the two groups.

Comparisons of knowledge retention were also made by sex with both geographic populations combined. When comparing the knowledge retention of male learning packet users with male lecture receivers, the mean for packet students was 19.46, and the mean for lecture students was 19.23. The t-value observed was 0.22 with an associated probability of 0.83. Similar findings were observed for the female treatment groups. The mean for female packet users was 21.84, and for female lecture students was 21.15. The t-value was noted as 1.13 with an associated probability

of 0.26. Neither of these findings were significant at the .10 level, and both comparisons failed to support Hypothesis 3 (Table 16, Appendix E).

Comparisons within a geographical population--Knoxville. In addition to analyses of geographical populations combined, it was also possible to evaluate knowledge retention within a geographical population. When comparing the knowledge retention between packet users and lecture receivers in the rural treatment groups, the mean for packet students was 21.09, and the mean for lecture students was 21.74. The *t*-value was observed at -0.74 with an associated probability of 0.46. This was not significant at the .10 level. The finding failed to support Hypothesis 3, that packet users would exhibit greater knowledge retention than lecture students. Table 17, Appendix E, illustrates the comparisons.

Additional observations were made with the rural students in knowledge retention. When comparing the rural male packet users with rural male lecture receivers, the mean for packet users was 19.52, while the mean for lecture students was 20.53. The *t*-value was observed at -0.60 with an associated probability of 0.55. This was not significant at the .10 level. Similar findings were noted when comparing rural females using the two instructional methods. The rural female packet users had a mean of 22.95, and the

rural female lecture students had a mean of 22.50. The t-value was noted at 0.71 with an associated probability of 0.48. In both comparisons, the findings failed to support Hypothesis 3, which maintained that packet users would have greater knowledge retention. Table 18, Appendix E, shows the results.

Comparisons within a geographical population--Chattanooga. Analyses were also made for knowledge retention within the suburban treatment groups. When comparing suburban learning packet users with suburban lecture receivers, the mean for packet users was 19.88, and the mean for lecture students was 19.27. The t-value was observed at 0.74 with an associated probability of 0.47. This was not significant at the .10 level. In the comparison of packets and lecture within the suburban population, Hypothesis 3 was not supported (Table 19, Appendix E).

Results of comparisons of instructional methods within the same sex in suburban treatment groups are illustrated in Table 20, Appendix E. When looking at knowledge retention for these groups, no significant differences were observed with either instructional method. Comparison of suburban male learning packet users with suburban male lecture receivers showed the packet users having a mean of 19.38, and the lecture group having a mean of 18.25. The t-value

was observed at 0.81 with an associated probability of 0.42, which was not significant at the .10 level. Similarly, when comparing suburban female learning packet users with suburban female lecture receivers, the packet users had a mean of 20.38, and the lecture receivers had a mean of 20.00. The t-value was noted at 0.40 with an associated probability of 0.69. Neither of the comparisons of instructional method within the same sex showed significant differences at the .10 level. Thus, in both instances, the findings did not support Hypothesis 3, that knowledge retention would be greater for students using learning packets when compared to students receiving lecture instruction. Table 20, Appendix E, shows the findings.

II. SECONDARY FINDINGS

The secondary findings described in this section are only indirectly related to the three main hypotheses. These findings are not concerned with comparison of the two instructional methods. They look, instead, at comparisons of the treatment groups by geographical placement of population and sex. Consequently, they neither supported nor failed to support the hypotheses.

Secondary Findings--Cognitive Change

Geographical populations compared. When looking at each instructional method singularly in terms of rural vs.

suburban comparisons, no significant differences were found. For example, with learning packet users, the rural mean for cognitive outcomes was 48.43, and for suburban students was 47.52. Table 21, Appendix E, shows the *t*-value of 0.53 and the associated probability of 0.60. Similar findings were noted with the lecture method. The mean for rural lecture students was 48.79, while the mean for suburban lecture students was 47.96. In this instance, the *t*-value was observed at 0.51 with an associated probability of 0.61. No significant difference was found between rural and suburban students in achievement outcome with either method.

Comparisons within a geographical population--Knoxville. It was possible to compare male vs. female within a geographical population and within each method of instruction. When looking at learning packet users, rural males had a mean score of 48.08, while rural females had a mean of 48.86. The *t*-value was observed at -0.37 with an associated probability of 0.71. The same finding was noted with lecture instruction; here, rural males had a mean of 48.87, and rural females had a mean of 48.75 with a *t*-value of 0.04 and an associated probability of 0.97. No significant differences occurred between the sexes in response to either instructional method. Table 22, Appendix E, shows

the findings on cognitive achievement outcomes within a rural site by instructional method and sex.

Comparisons within a geographical population--Chattanooga. As with the Knoxville students, it was possible to look at each instructional method singularly by sex within the suburban Chattanooga treatment groups. When comparing male learning packet users with female learning packet users within the suburban group, a significant difference was found. The mean for suburban male packet users was 44.73, while the mean for suburban female packet users was 50.13. The t-value was -2.08 with an associated probability of 0.05. The difference in the means indicated that suburban females showed greater cognitive achievement than males when using learning packets (Table 23, Appendix E). Similar findings were noted when comparing suburban lecture receivers by sex. The mean for suburban male lecture receivers was 44.80, and the mean for suburban female lecture receivers was 50.21. The t-value was observed at -2.90 with an associated probability of 0.006. As with the packet users, females scored significantly higher in cognitive change than males when receiving the lecture instruction. Table 23, Appendix E, illustrates this finding also.

Secondary Findings--Attitude Change

Geographical populations compared. As with the cognitive achievement comparisons, the analysis also permitted

a comparison of rural/suburban populations in attitude change. Rural students using learning packets showed a mean of 45.87, and suburban students showed a mean of 44.42. The t-value was observed at 1.00 with an associated probability of 0.32. No significant difference was evident. Comparisons of the same two groups in lecture instruction found, however, different results. The mean for rural students receiving lecture was 44.58, and the mean for suburban students receiving lecture was 35.83 with a t-value observed at 3.13 and an associated probability of 0.003. This difference in attitude change between the two populations was significant at the .10 level. Thus, there appeared to be no difference in rural/suburban students when using the learning packets, but there was a significant difference between the two when receiving the lecture instruction with rural students showing greater attitude improvement than suburban students. Table 24, Appendix E, indicates the results.

Comparisons within a geographical population--Knoxville. Additional analyses of attitude change were made within the rural population. Looking at each instructional method by sex, rural males using learning packets showed a mean of 45.67; the rural female packet users' mean was 46.10. The t-value was observed at -0.26 with an associated probability of 0.80. No significant difference in

attitude change occurred between rural males and females using the learning packets (Table 25, Appendix E). Similar findings held true for males and females receiving the lecture method. Rural males had a mean of 44.07, and rural females had a mean of 44.88 with a t-value of -0.37 and an associated probability of 0.72. No differences were noted, then, between males and females in the rural population with either instructional method. Table 25, Appendix E, illustrates both findings.

Comparisons within a geographical population--Chattanooga. Analyses within the suburban populations also indicated a number of findings. Comparisons of suburban males and females using the learning packets showed a mean of 41.00 for males and 47.63 for females. The t-value was observed at -3.20 with an associated probability of 0.003. The females scored significantly higher than males with the learning packets. Significant differences were noted when comparing suburban males and females in the lecture instruction, also. The mean for suburban male lecture receivers was 42.50, while the female mean was 32.27 with a t-value of 2.19 and an associated probability of 0.04. This difference was also significant; however, unlike the learning packet comparisons, in the lecture instruction, suburban males scored significantly higher than suburban females in attitude change (See Table 26, Appendix E).

Secondary Findings--Knowledge Retention

Geographical populations compared. It was possible to compare knowledge retention in the two geographical populations. For example, rural learning packet users had a mean of 21.09, and suburban learning packet users had a mean of 19.88. The t-value was observed at 1.22 with an associated probability of 0.23. This comparison showed no significant difference at the .10 level between the two groups. In comparing rural/suburban students in the lecture instruction, the rural mean was 21.74, while the suburban mean was 19.27 with a t-value observed at 3.90 and an associated probability of 0.00. This difference was significant. Thus, in the learning packet method, no differences were noted, but in the lecture instruction, rural students scored significantly higher than suburban students. Table 27, Appendix E, lists the results of both comparisons.

Comparisons within a geographical population--Knoxville. Again, it was possible to analyze knowledge retention by sex within a geographical population. Findings within the rural group showed rural male packet users having a mean of 19.52, and rural female packet users having a mean of 22.95. The t-value was observed at -2.53 with an associated probability of 0.02. This indicated a significant difference between the males and females, with females

having greater retention of knowledge than males over the three-week period. Comparisons between males and females in the lecture instruction showed the same results. Rural male students exposed to the lecture had a mean of 20.53, and rural females had a mean of 22.50. The t-value was observed at -2.20 with an associated probability of 0.03. Again, as with the learning packet comparisons, rural females exhibited a greater retention of knowledge than rural males in lecture instruction. Table 28, Appendix E, depicts both findings.

Comparisons within a geographical population--Chattanooga. Additional findings were noted when making comparisons within the suburban group. Comparing of suburban male learning packet users with suburban female learning packet users found the male mean to be 19.38, and the female mean to be 20.38. A t-value of -0.72 with an associated probability of 0.48 indicated there was no significant difference at the .10 level. This did not hold true when comparing the males and females in the lecture instruction. The mean for suburban males receiving the lecture was 18.25, while the mean for suburban females receiving the lecture was 20.00. The t-value was observed at -2.02 and the associated probability was 0.05. This was a significant difference, with suburban females scoring significantly higher than suburban males in knowledge retention

when using the lecture method. Findings are listed in Table 29, Appendix E.

III. SUMMARY

In this study, two instructional methods were examined as driver education students studied child passenger safety, the learning packet method and the lecture approach. To make the comparisons, three areas of learning outcomes were observed: cognitive change; attitude change; and knowledge retention. In addition to comparisons of instructional methods (primary findings), it was also possible to make comparisons between males and females and rural and suburban populations (secondary findings). The secondary findings were not related directly to the three hypotheses since they were not concerned with comparisons of the two instructional methods; however, they provided additional thoughts on geographical and sex characteristics in relation to each of the methods.

The t-test of significance was used throughout the study. This statistical technique was felt to be sufficient for showing comparisons of the groups to each other in various combinations by examining group means. It should be noted that no definite cause and effect relationship can be established between any instructional method and learning outcomes. This study simply provided

comparisons of group means based on students' test scores after exposure to the two methods of instruction. Likewise, no absolute statements can be made regarding male vs. female or rural vs. suburban students in the treatments. Neither can generalizations be made to other populations. It is possible only to infer what appears to be a correlation between group means and instructional methods.

There were originally 165 students in the experiment. The number of subjects used for comparisons varied because the testing was administered at three different times. Scores were calculated for the groups by matching students' scores as much as possible from the three tests--pretest, first posttest, and second posttest. Because of the second posttest was issued three weeks after treatment in order to test attitude change and knowledge retention, the number of cases had diminished. Calculations were made on those scores available.

The findings are summarized as follows:

- Hypothesis 1--that students using learning packets would show greater cognitive change than students receiving the lecture.

(Primary Findings)

With all students combined, the findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.

- With all male students combined, the findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With all female students combined, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With rural (Knoxville, Carter High) students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With rural male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With rural female students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With suburban (Chattanooga, Pleasant Ridge High) students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.
- With suburban male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 1.

(Secondary Findings)

- Findings failed to show any difference between

rural and suburban students using the learning packet method.

- Findings failed to show any difference between rural and suburban students using the lecture method.
- Findings failed to show any difference between rural male students and rural female students using the learning packet method.
- Findings failed to show any difference between rural male students and rural female students using the lecture method.
- Findings did show that suburban female students scored higher than suburban male students when using the learning packet method.
- Findings did show that suburban female students scored higher than suburban male students when using the lecture method.

- Hypothesis 2--that students using learning packets would show greater attitude change than students receiving the lecture method.

(Primary Findings)

- With all students combined, findings did show that learning packet students exhibited a greater change in attitude than students using the lecture method and thus supported Hypothesis 2.

- With all male students combined, the findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 2.
- With all female students combined, the findings did show that female learning packet students exhibited a greater change in attitude than female lecture receivers and thus supported Hypothesis 2.
- With rural (Knoxville, Carter High) students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 2.
- With rural male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 2.
- With rural female students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 2.
- With suburban (Chattanooga, Pleasant Ridge High) students, findings did show that learning packet students exhibited a greater change in attitude than students using the lecture method and thus supported Hypothesis 2.
- With suburban male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 2.

- With suburban female students, findings did show that female learning packet students exhibited a greater change in attitude than suburban female students using the lecture method and thus supported Hypothesis 2.

(Secondary Findings)

- Findings failed to show any difference between rural and suburban students using the learning packet method.
- Findings did show that rural students using the lecture method exhibited a greater change in attitude than suburban students.
- Findings failed to show any difference between rural male students and rural female students using the learning packet method.
- Findings failed to show any difference between rural male students and rural female students using the lecture method.
- Findings did show that suburban females using the learning packet method exhibited a greater change in attitude than suburban males.
- Findings did show that suburban males using the lecture exhibited a greater change in attitude than suburban females.

- Hypothesis 3--that students using learning packets would show greater knowledge retention than students receiving the lecture method.

  (Primary Findings)

  - With all students combined, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
  - With all male students combined, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
  - With all female students combined, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
  - With rural (Knoxville, Carter High) students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
  - With rural male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
  - With rural female students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.

- With suburban (Chattanooga, Pleasant Ridge High) students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
- With suburban male students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.
- With suburban female students, findings failed to show any difference in the results of the two methods and thus did not support Hypothesis 3.

(Secondary Findings)

- Findings failed to show any difference between rural and suburban students using the learning packet method.
- Findings did show that rural students using the lecture method had a greater retention of knowledge than suburban students.
- Findings did show that rural female students using the learning packets had a greater retention of knowledge than rural male students.
- Findings did show that rural female students using the lecture method had a greater retention of knowledge than rural male students.

- Findings failed to show any difference between suburban female students and suburban male students using the learning packet method.
- Findings did show that suburban female students using the lecture method had a greater retention of knowledge than suburban male students.

In summary, the findings indicated:

1. Data failed to support Hypothesis 1, that learning packet students would show a significantly greater cognitive change than lecture instruction students.
2. Data supported partially, Hypothesis 2, that learning packet students would show a significantly more positive attitude change than lecture instruction students. Out of nine comparisons, four found the learning packet groups showing a significantly more positive attitude change than the lecture groups.
3. Data failed to support Hypothesis 3, that learning packet students would show a significantly greater cognitive change than lecture instruction students.

The secondary findings, as explained earlier, did not compare the two instructional methods, and, thus, did not relate directly to the hypotheses. Eighteen comparisons

of rural/suburban and male/female students were made. In nine of these comparisons, a significant difference occurred between the two groups being compared. A number of these differences occurred when female students exhibited greater changes than their male counterparts.

The significance of these findings are described in Chapter V, "Summary, Conclusions and Discussion."

CHAPTER V

SUMMARY, CONCLUSIONS, AND DISCUSSION

I. SUMMARY

The purpose of this study was to examine the difference in impact on the learner when using two instructional methods, learning packets and lecture presentation. To do this, it was necessary to look closely at the testing outcomes in terms of cognitive change, attitude change and knowledge retention. In addition to these areas, the study also compared students by sex and geographical school population for the two instructional methods.

A comparative treatments, pretest, posttest control group design was used for the experiment. A total of 165 high school driver education students were the subjects for the comparative treatments. Both treatments were administered in two sites: a rural county school outside Knoxville, and a large suburban school in Chattanooga. Although it was not feasible to assign students randomly, the treatments were randomly administered to the five classes in Knoxville, and five in Chattanooga. Three classes in Knoxville and two classes in Chattanooga received the learning packet instruction; while two classes in Knoxville and

three classes in Chattanooga received the lecture presentation.

A multiple choice, objective test and a Likert-type scale were used to measure cognitive achievement, attitude change and knowledge retention of the subjects. Subjects were pretested prior to the instruction and posttested at the conclusion of the treatments. The multiple choice test covered basic concepts and specific facts taught under both instructional treatments. The attitudinal scale evaluated three major areas of the subject matter. The t-test of significance was used for analysis of the data. The level of significance selected for the statistical analysis was the .10 alpha level.

Major analyses from the experiment indicated the following primary findings:

1. Findings failed to show significant differences between the two instructional treatments in cognitive change; thus, the data from the nine comparisons failed to support Hypothesis 1.
2. Findings did show significant differences between the two treatments in attitude change. Of the nine comparisons, four learning packet groups showed a significantly greater attitude change than their lecture counterparts, and five showed no difference; thus, the data from the nine comparisons partially supported Hypothesis 2.

3. Findings failed to show significant differences between the two instructional treatments in knowledge retention; thus, the data from the nine comparisons failed to support Hypothesis 3.

In the secondary analyses, 18 comparisons were made by geographical characteristics (rural vs suburban) and sex characteristics (male vs. female). Nine comparisons were made of each. The findings were varied, with half of the 18 comparisons showing a significant difference between the two groups being analyzed. As noted in Chapter IV, a number of these differences involved female students out-scoring significantly the male students. These findings did not relate directly to the three hypotheses, and thus, did not support or fail to support them.

II. CONCLUSIONS

This study provided a look at data resulting from the examination of the impact of two instructional methods on cognitive change, attitude change and knowledge retention. A number of conclusions were evident from the findings:

1. In creating cognitive change, it was evident that neither instructional method was superior over the other. Learner cognitive outcomes

were not contingent on teacher behavior. This agrees with earlier studies by Good and Brophy; Dunkin and Biddle; and Rosenshine and Furst. Similarly, studies by Miller, Royce and Shank and Marchese compared lecture instruction and individualized instruction and found no correlation between instructional method and cognitive change.

2. In creating attitude change, the instructional method did affect some of the attitude outcomes significantly with learning packet instruction having a more favorable impact than lecture presentation. This conclusion contradicts that of Miller in which 25 studies showed no impact on attitude outcomes when comparing an individualized program with a traditional approach. However, it supports the study by Marchese that showed individualized instruction students having a more positive attitude towards the subject matter than traditional instruction students.
3. In knowledge retention, as with cognitive change, neither instructional method was superior over the other. Thus, learner knowledge retention was not contingent on any particular method of teaching.

4. For sex and geographical inferences, the findings were too diverse to suggest any overall conclusions. However, female students were, at times, more positively impacted than the male students. For the most part, the secondary findings were varied, depending on the specific comparison.

III. DISCUSSION

For educators seeking to affect areas of cognitive change, attitude change and knowledge retention in students, this study suggests a number of thoughts. Studies by Gage and Unruh, 1967; Dunkin and Biddle, 1973; and Rosenshine and Furst, 1971; called for more explicit research on teacher behavior and learning outcomes. This study contributes to that research.

Certain restrictions in the study resulted in complications, some of which could, perhaps, be rectified in future studies.

1. Although the study looked at individualized teaching, the overall approach in examining the instructional treatments was a normative one. For example, in the analyses, group means were the basis for comparing one method to another. What happened to the individual student? How

did each student progress? These questions were never considered, since it was necessary to analyze scores by groups. Unfortunately, this is typically done in research studies intent on analyzing learner outcomes in student populations.

2. The two days allotted for exposure to the treatments may not have provided sufficient time to evaluate teacher instruction in depth. Perhaps attention should be given to giving longer treatment times.

3. No causality could be established in this study. If similar experiments could have students randomly assigned on a large scale, the data would be more conclusive. However, this is almost impossible when using standard public high school classes.

4. As already stated, the study used a normative approach in examining the question of individualized instruction. This normative approach applies also to the testing instruments used. In addition to multiple choice testing, additional activities such as interviews, paragraph writing, panel discussions and essay writing would enhance the testing of concepts and facts.

5. Although the study looked at rural and suburban environmental factors, as well as sex characteristics, additional research could provide more in-depth thought in these areas. The secondary findings of this study represented interesting comparisons, but more thorough studies are needed to determine the relationship of various groups to instructional method and learner outcomes.

As late as 1980, Katzenmeyer and Ingison called for more research on the effectiveness of individualized instruction (Katzenmeyer and Ingison, 1980). Although the study indicated that neither instructional method was superior to the other in the areas of cognitive change and knowledge retention, it is noteworthy that for attitude change, learning packet instruction brought a significantly more positive attitude towards child passenger safety in a number of comparisons.

It is hoped that this study contributes, if only in a limited way, to the understanding of instructional method and its impact on student learner outcomes. At least, for future endeavors, this study presents some of the problems, as well as the positive aspects, encountered when analyzing the impact of two instructional treatments on learner outcomes.

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APPENDICES

APPENDIX A

CHILD PASSENGER SAFETY LAW

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Section 59-930, is amended by inserting after the first paragraph of such section and before the second paragraph, the following additional paragraph:

(b) Every parent or legal guardian of a child under the age of four (4) years residing in this state shall be responsible, when transporting his child in a motor vehicle owned by that parent or guardian operated on the roadways, streets or highways of this state, for providing for the protection of his child and properly using a child passenger restraint system meeting federal motor vehicle safety standards, or assuring that such child is held in the arms of an older person riding as a passenger in the motor vehicle. Provided that the term "motor vehicle" as used in this paragraph shall not apply to recreational vehicles of the truck or van type. Provided further that the term "motor vehicle" as used in this paragraph shall not apply to trucks having a tonnage rating of one ton or more. Provided that in no event shall failure to wear a child passenger restraint system be considered as contributory negligence, nor shall such failure to wear said child passenger restraint system be admissable as evidence in the trial of any civil action.

SECTION 2. Tennessee Code Annotated, Section 59-930, is further amended by designating the first paragraph of the section to be subsection (a) and by deleting the period at the end of the last paragraph of the section and adding the following:

of subsection (a) of this section and not less than two dollars ($2.00) nor more than ten dollars ($10.00) for each violation of subsection (b) of this section.

SECTION 3. This Act shall take effect on January 1, 1978, the public welfare requiring it.

PASSED: April 13, 1977

Ned R. Mcwherter
SPEAKER OF THE HOUSE OF REPRESENTATIVES

John S. Wilder
SPEAKER OF THE SENATE

APPROVED this 27th day of April 19 77

Ray Blanton
GOVERNOR

APPENDIX B

MULTIPLE CHOICE PRETEST, POSTTEST

CHILD PASSENGER SAFETY TEST

MULTIPLE CHOICE PRETEST, POSTTEST

CHILD PASSENGER SAFETY TEST

Answer the questions carefully. Each question is worth four points each. You may write on this form. Circle the letter by the correct answer. Take your time and answer carefully.

1. Tennessee's Child Passenger Safety law took effect in (a) 1975 (b) 1976 (c) 1977 (d) 1978 (e) none of these answers are correct.

2. This law requires parents or guardians to use a child restraint device with children who
   (a) are between the ages of four and five years of age
   (b) are between the ages of five and eight years of age
   (c) are newborns only
   (d) are under the age of four years
   (e) all of the above answers are correct

3. The automobile accident
   (a) is the second leading killer and crippler of small children
   (b) is tied with polio for being the major killer and crippler of small children
   (c) is the third leading killer and crippler of small children
   (d) is not a leading killer and crippler of small children
   (e) none of these answers is correct

4. Most automobile accidents involving small children occur
   (a) more than 100 miles from home and at a speed of less than 50 miles an hour
   (b) less than 10 miles from home at a speed of more than 60 miles an hour
   (c) more than 50 miles from home and at a speed of less than 20 miles an hour
   (d) less than 30 miles from home and at a speed of less than 30 miles an hour
   (e) both a and d are correct

5. The Child Passenger Protection law is unique because
   (a) Tennessee was only the second state to have such a law

(b) it was important in helping to secure passage of a seat belt law
(c) Tennessee was the first state to pass such a law before three other states passed similar laws
(d) Tennessee was the first and is the only state to have such a law
(e) the legislature was able to override an executive veto

6. A person convicted under the law
(a) cannot be fined
(b) can be fined 50 dollars
(c) can be fined 2 to 10 dollars
(d) can be imprisoned
(e) none of these answers is correct

7. There are how many basic types of child restraint devices?
(a) two
(b) three
(c) four
(d) five
(e) none of these answers is correct

8. At 20 mph, a 15-pound infant is thrown at a force of how many pounds?
(a) 100 pounds
(b) 150 pounds
(c) 200 pounds
(d) 300 pounds
(e) 500 pounds

9. Allowing the child to be held by an older passenger in the vehicle
(a) is not permitted under the law
(b) is not mentioned in the law
(c) is permitted under the law
(d) is permitted under the law only if the passenger is wearing a seat belt
(e) none of these answers is correct

10. An infant is too large for an infant carrier when it
(a) exceeds 10 pounds
(b) is large enough to crawl
(c) exceeds 20 pounds
(d) becomes four weeks of age
(e) exceeds 15 pounds

11. One of the primary reasons that a child under the age of four years cannot use a seat belt is that
    (a) the child could not tolerate sitting still for a period of time
    (b) the force of a seat belt could cause internal injury to the child's delicate abdomen
    (c) most parents do not use seat belts themselves
    (d) the child would scream and cry if forced to use a seat belt
    (e) all of the above answers are correct.

12. The type of child restraint that is "C" shaped is
    (a) the harness
    (b) the infant carrier
    (c) the shield device
    (d) the traditional child restraint car seat
    (e) none of these answers is correct

13. The top tether strap present on some child restraints
    (a) connects from the top of the child seat to the rear seat belt or to a special bolt in the back of the car
    (b) connects from the side of the child seat to the seat belt
    (c) does not connect to anything inside the car
    (d) connects from the bottom side of the child seat to a special bolt installed on the seat belt
    (e) both a and b are correct

14. The type of child restraint called a harness
    (a) is for use with children under eight months of age
    (b) is for use with infants under 15 pounds
    (c) is not a legal child restraint device
    (d) is not for use in compact cars
    (e) is for use with children over 20 pounds.

15. The child restraint device which faces rearward is
    (a) the infant carrier
    (b) the shield device
    (c) the traditional child restraint car seat
    (d) the harness
    (e) none of these devices face rearward

16. The safest child restraint device is
    (a) the infant carrier
    (b) the traditional child restraint car seat
    (c) the shield device
    (d) the harness
    (e) none of these answers is correct

17. When buying a child restraint device
    (a) a person should buy one with a label which says the device is comfortable.
    (b) a person should buy one with a label which says the device can be used for children of all ages
    (c) a person does not need to look for a label
    (d) a person should buy one which has a label explaining Tennessee's child passenger safety law
    (e) a person should buy one with a label which says the device has met the federal safety standards

18. One group which actively supported passage of a child passenger protection law was
    (a) automobile manufacturers
    (b) child restraint device manufacturers
    (c) pediatricians
    (d) law enforcement officials
    (e) none of these answers is correct

19. The law applies to
    (a) parents or legal guardians who are residents of Tennessee with children under the age of four years
    (b) both out-of-state and Tennessee residents with children under the age of four years
    (c) parents or legal guardians who are residents of Tennessee with children under the age of five years
    (d) any adult with a child under the age of five years who is driving a vehicle
    (e) both c and d are correct

20. The primary reason that a person should not hold the baby in his/her lap is that
    (a) the baby can fall off the lap into the floor of the car
    (b) the baby can be thrown from the car in an accident
    (c) the baby can jump around and injure itself
    (d) the baby can be crushed by the weight of the person holding it
    (e) both b and d are correct

21. The parents' responsibility for a baby's safety in a moving vehicle first begins
    (a) when the baby can sit alone
    (b) when the baby reaches the age of three weeks
    (c) when the baby leaves the hospital for its first ride
    (d) when the baby can walk
    (e) when the parents feel the baby is ready for a child restraint device

22. The law was passed in
    (a) 1975
    (b) 1976
    (c) 1977
    (d) 1978
    (e) none of these answers is correct

23. The infant carrier is held in place in the vehicle
    (a) by a top tether strap
    (b) by a specially installed strap
    (c) by a seat belt
    (d) by a specially designed support base
    (e) all of the answers are correct

24. The child restraint device which requires no special straps inside is
    (a) the infant carrier
    (b) the shield device
    (c) the traditional child restraint car seat
    (d) the devices requiring a top tether strap
    (e) all of the answers are correct

25. The primary problem that occurs with seats that have a top tether is
    (a) people often connect this strap to the wrong bolt
    (b) people confuse this strap with the seat belt
    (c) people try to have this strap removed
    (d) people do not bother to use this strap
    (e) none of these answers is correct

APPENDIX C

PRETEST, POSTTEST ATTITUDE SCALE

HOW YOU FEEL ABOUT CHILD PASSENGER SAFETY

PRETEST, POSTTEST ATTITUDE SCALE

HOW YOU FEEL ABOUT CHILD PASSENGER SAFETY

Listed below are statements about child passenger safety. Read each statement and check the block beside the statement which is most like your opinion.

	Strongly Disagree 5	Disagree 4	Undecided 3	Agree 2	Strongly Agree 1
1. There is nothing wrong with permitting a child under the age of four to ride "loose" in a moving vehicle.					
2. A child passenger safety law is important in helping to protect vehicles.					
3. Parents should always take time to see that the child is in a passenger safety seat.					
4. Television, radio, newspapers, billboards and other publicity provide good information to people about child passenger safety.					
5. In case of an accident, a small child will be safet in a child passenger seat than riding "loose."					
6. People who do not use a child passenger safety restraint should always be punished according to the law.					

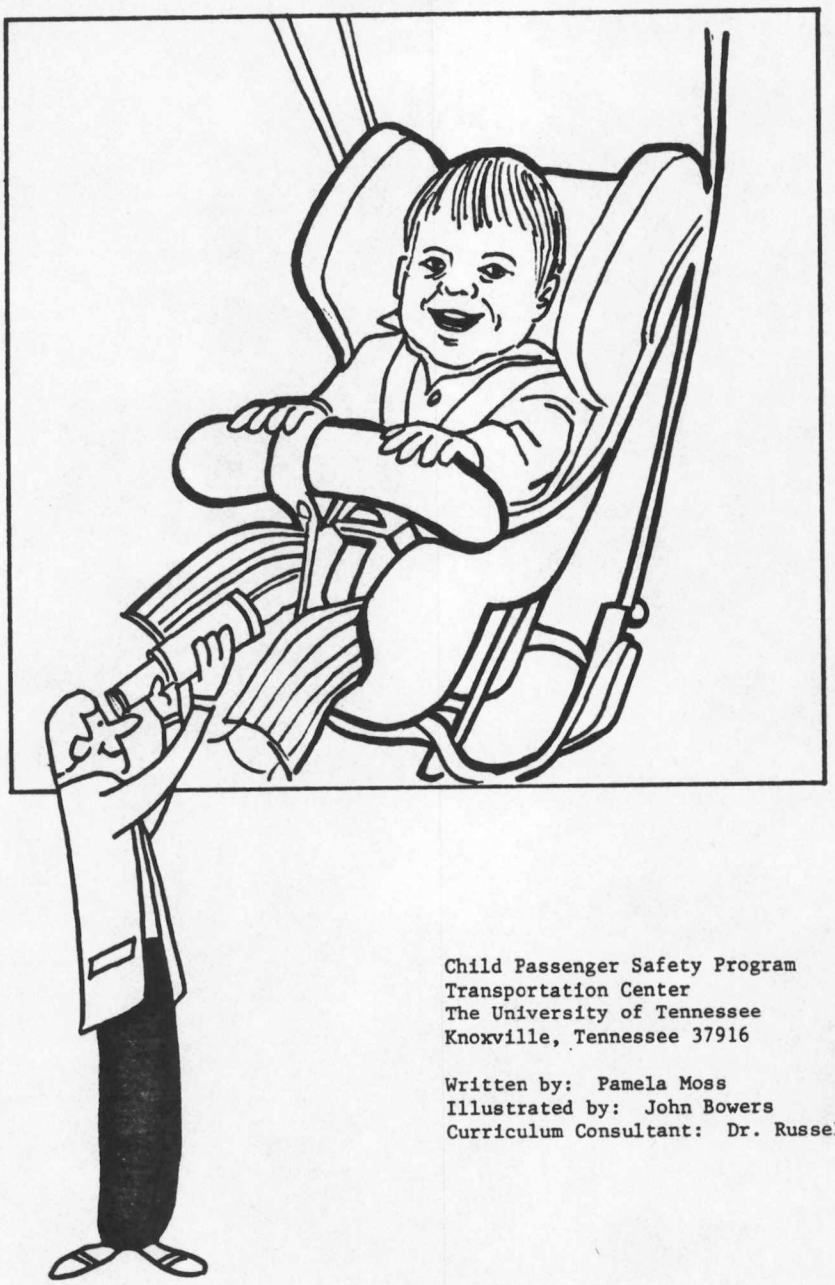
	Strongly Disagree 5	Disagree 4	Undecided 3	Agree 2	Strongly Agree 1
7. Parents who use a child passenger safety seat have the responsibility for telling other parents about the safety seat.					
8. Safety officials should help people learn about the child passenger safety law through advertisements.					
9. Children under the age of four do not need to use a safety seat every time they ride in a moving vehicle.					
10. All states should have a child passenger safety law.					
11. When transporting a child under the age of four in their vehicle, neighbors, friends and relatives have the responsibility for using a child passenger safety seat.					
12. People can learn about child passenger safety through more news coverage.					

APPENDIX D

LEARNING PACKET

TRANSPORTATION CENTER

THE UNIVERSITY OF TENNESSEE



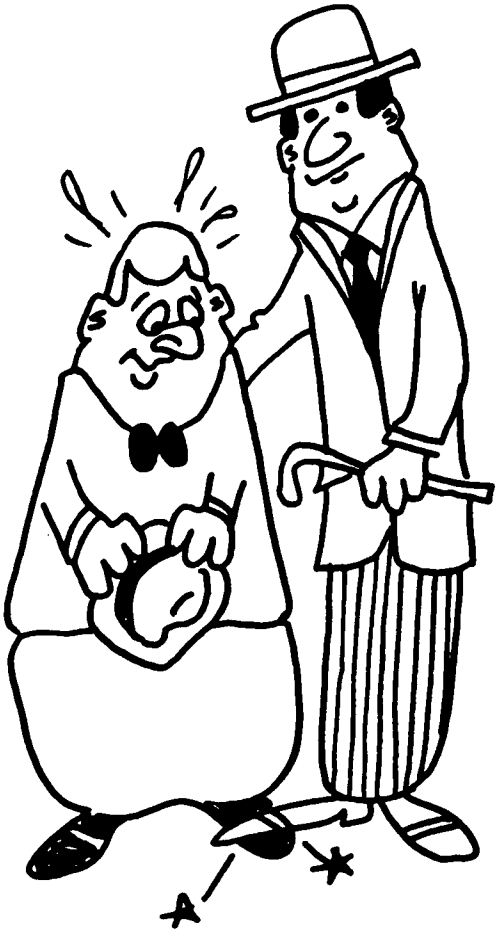
Child Passenger Safety Program
Transportation Center
The University of Tennessee
Knoxville, Tennessee 37916

Written by: Pamela Moss
Illustrated by: John Bowers
Curriculum Consultant: Dr. Russell French

HI-

Today you are going to learn something new about your state. We will be your escort for a trip through this learning packet. Follow our directions, and you'll find some interesting things.

You are going to study this packet to learn about Tennessee's child passenger protection law. This packet will teach you about the law and how to protect young children while they are passengers in a moving vehicle. Watch for us throughout the packet.



TURN THE PAGE AND READ MORE ABOUT THE PACKET.

WHAT THE PACKET CONTAINS

You will use this packet individually. The materials are designed so that you can work at your own pace. Be sure to follow directions throughout the booklet. Your teacher will provide you with certain items that go with the packet.

Materials in the packet include:

1. A Pre-Packet Test
2. Written activities
3. A cassette tape
4. A child restraint device
5. A film
6. A Post-Packet Test

TURN THE PAGE AND READ THE OBJECTIVES OF THE PACKET.

OBJECTIVES

After using this packet you should:

1. Understand Tennessee's child restraint law (what it says, who is affected by it and why it is important).

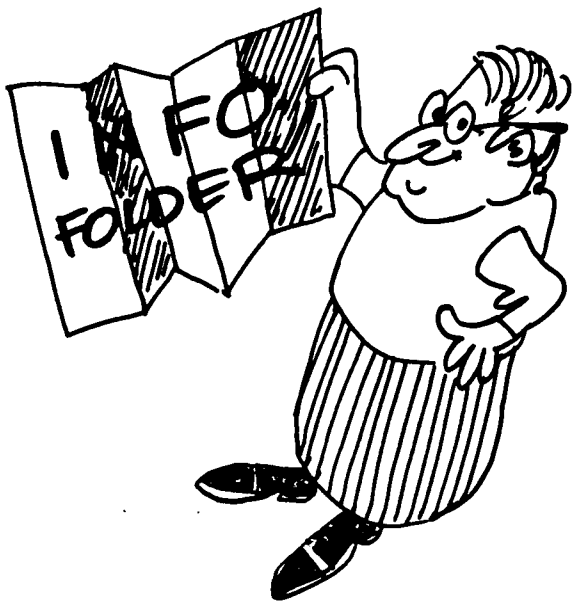
2. Be able to identify the four basic types of child restraint devices.

3. Be aware of what child passenger protection involves (safety measures, accident statistics, the small child's special anatomy).

4. Know specific information about when and where to buy a child restraint device, problems in choosing one and how to use a child restraint device correctly.

5. Understand how advertising can help promote safety measures.

6. Become aware of the general public's interest in the law, and child restraint usage in your own community.



GO NEXT TO THE INSTRUCTIONS FOR USING THE PACKET.

INSTRUCTIONS for USING the PACKET

1. First you need to take the Pre-Packet Test which your teacher will provide. (Write your answers on the test form.)

2. Don't worry if you miss some of the questions. After you finish the Pre-Packet Test, you are ready to begin the packet.

3. Read all directions carefully as you go through the packet.

4. Your teacher will have a 16mm film and a cassette tape which are part of the packet.

5. You will need: paper and pencil.

6. After completing all of the packet activities, your teacher will provide a Post-Packet Test to see if you have accomplished the objectives listed on page 3. (Write your answers on the test form.)

7. Do not write in this booklet. Use notebook paper for all your written work. You may want to keep a special notebook on child passenger safety for your own information.

GO NOW TO YOUR TEACHER FOR THE PRE-PACKET TEST. REMEMBER, WRITE YOUR ANSWERS ON THE FORM. BE SURE TO READ THE DIRECTIONS CAREFULLY.

ACTIVITY ONE

Now that you have completed the Pre-Packet Test, let's begin Activity One. Read carefully the material below about the law. Study the words listed, and then start your reading. When you finish this activity, answer the questions at the end of the section. Be sure to write your answers on notebook paper. Do not write in the booklet.

Words to Know:

- pediatrician (pediatrics)
  specialist in a branch of medicine dealing with the development and care of infants and children
- legislator
  a member of a legislative assembly (lawmaking body)
- passenger
  a person traveling in a vehicle, but having no part in its operation

Some Facts about Child Passenger Safety

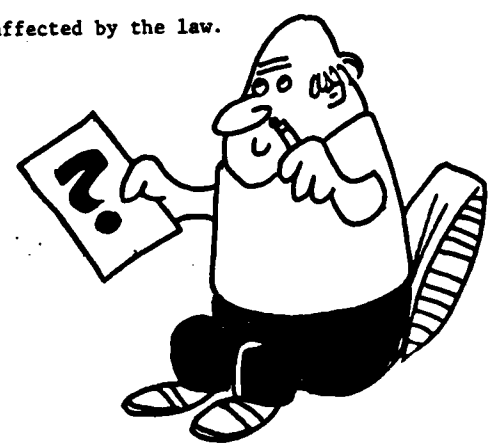
Most parents know about childhood diseases. But many are not aware of the largest killer and crippler of children--the automobile accident. Each year, thousands of children die in automobile accidents. Thousands more are crippled or injured seriously. Most of these accidents occur less than 30 miles from home, and in most of these accidents, the automobile is traveling less than 30 miles an hour. Many children would have been saved if they had been sitting in a proper child safety seat.

In Tennessee, legislators and pediatricians became very concerned about these senseless deaths and injuries. So, in 1977, the Tennessee Legislature passed the Child Passenger Protection law. This historic law took effect January 1, 1978. Tennessee is the first and only state to have such a law. A number of other states are looking at Tennessee's new law and the Child Passenger Safety Program. They, too, are concerned about the needless deaths and injuries suffered by children in automobile accidents.

Before we go any further, let's look at the following questions. If you wish, have a friend ask the questions and write your answers on notebook paper.

Questions

1. What is the leading cause of death and injury to small children?
2. Where do most automobile accidents happen?
3. How fast is the automobile traveling when these accidents happen?
4. What did Tennessee do to prevent the deaths and injuries to small children?
5. When did the new law go into effect?
6. List some people you know who are affected by the law.



CHECK YOUR ANSWERS AND GO TO ACTIVITY TWO.

ACTIVITY TWO

For this activity, your teacher will provide a cassette tape. You will hear a soap opera story about a day in the life of Debbie and Bill. From their conversation you will learn more about the law and the use of child restraint devices. Pay close attention as you listen to the tape. Come back to the booklet and answer the questions below. Remember, do not write in this booklet.

Words to Know:

- obstetrician
  a person who specializes in the branch of medicine concerned with the care and treatment of women during pregnancy, childbirth and the period immediately following
- misdemeanor
  any minor offense, with a penalty usually being a fine or imprisonment for a short time

Questions

1. According to Uncle Jack, in addition to the parents, who is one of the most important people in a new baby's life?
2. What group was especially concerned that such a bill be passed?
3. Whom does the law affect?

Questions (continued)

4. What is so unique about this law?

5. Why is it unsafe to hold an infant in your lap while riding in an automobile?

6. Name several places where you can buy a child restraint device.

7. What is the penalty for violating the law?

8. When does the parents' responsibility for their baby's safety in a moving vehicle begin?

HOW DID YOU DO? IF NECESSARY, LISTEN TO THE TAPE AGAIN. IF YOU WERE ABLE TO ANSWER THE QUESTIONS, GO TO ACTIVITY THREE.

ACTIVITY THREE

Now that you have learned about the law and child restraint devices, let's learn some specific things about child restraint devices. Study the words first, and then read the material below. Answer the questions at the end.

Words to Know:

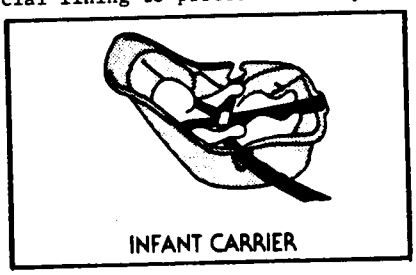
- hurl
  to throw with force or violence
- install
  to fix in a position for use
- torso
  the trunk of the human body

Child Restraint Devices

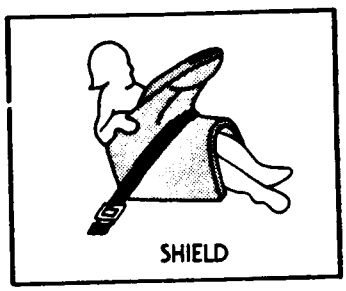
Most parents do not realize that holding an infant or child in their arms while riding in an automobile does not give the protection needed in case of a crash. In an accident, the child can be hurled from the adult's arms. Or the force of a crash can cause the adult to crush the child. Although adults can use seat belts, a small child cannot.

There are several reasons why a child under the age of four should sit in a special device called a child restraint device. A child's abdomen is delicate, and the force of a seat belt during a crash can cause internal injury. Also, because of their short legs and relatively large head and upper torso, young children are likely to be thrown off balance easily. Often, too, small children are very active in the car. They can open car doors, stick their hands and arms out the windows or distract the driver.

There are four basic types of child restraint devices that can be used in a vehicle. All of these are safe under the law. The first type, the infant carrier, is for babies under 20 pounds who are too small to sit up by themselves. Some infant carriers can be turned around and used when the infant exceeds 20 pounds. Look at the drawing. The infant carrier faces backward. The carrier is held in place by a seat belt. It has a special lining to protect the baby.



INFANT CARRIER

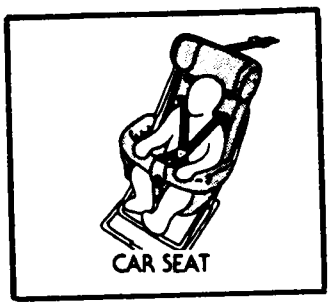


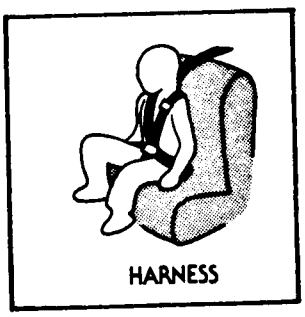
SHIELD

A second type of child restraint device is the shield device. This seat is for children over 20 pounds who can sit without support. Look at this drawing. The shield is "C" shaped and is held in the automobile by a seat belt. No special straps inside the seat are necessary.

The third type of restraint device is the traditional child restraint car seat. This also is for children over 20 pounds. This seat is secured to the vehicle with the seat belt. One type of traditional car seat has a top tether strap. This special strap connects from the top of the child seat to the rear seat belt or to a special bolt in the back of the car. This bolt is easily installed in the car. If a tether strap is required, this strap must be used. Traditional seats which do not have this tether strap simply use the seat belt, which is threaded through the back of the seat. The drawing

shows a traditional child restraint car seat with a tether strap. These traditional child restraint devices have straps within the seats themselves which fasten across the child.





The fourth type of device is called a harness. This is for children over 20 pounds. This device consists of a harness system which fastens around the child. A tether strap is then used to fasten the harness to the vehicle.

Questions

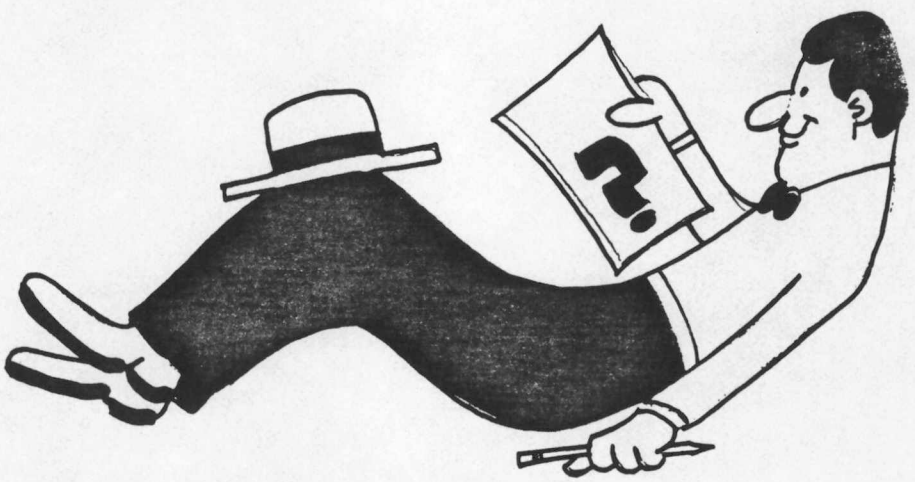
1. Give at least three reasons why a small child should be restrained in a child restraint device.
2. Name the four basic types of child restraint devices.
3. When should an infant carrier be used?
4. When is a baby too large for an infant carrier?
5. How is the infant carrier different in position from the other child restraint devices?

Questions (continued)

6. Which type of child restraint device is "C" shaped?

7. What is one major difference between the two types of traditional child restraint car seats?

8. What is especially important if a parent is using a device with a top tether strap?



COULD YOU ANSWER THE QUESTIONS? IF YOU ARE READY, GO TO ACTIVITY FOUR.

ACTIVITY FOUR

Now your teacher will show you a real child restraint device. Notice how the doll fits in this infant carrier. Look at the instructions with the device to understand how to use it. When you have looked carefully at the device, answer the questions below. Write your answers on notebook paper.

Questions

1. Which type of device did your class examine?
2. Which way should the device face?
3. Why is it dangerous to hold an infant in your lap while riding in an automobile?
4. When can an infant seat no longer be used?
5. Can you tell someone how to use this device?
6. Have any of your friends or family ever used a child restraint device? Which of the four types did they use?

GO TO ACTIVITY FIVE.

ACTIVITY FIVE

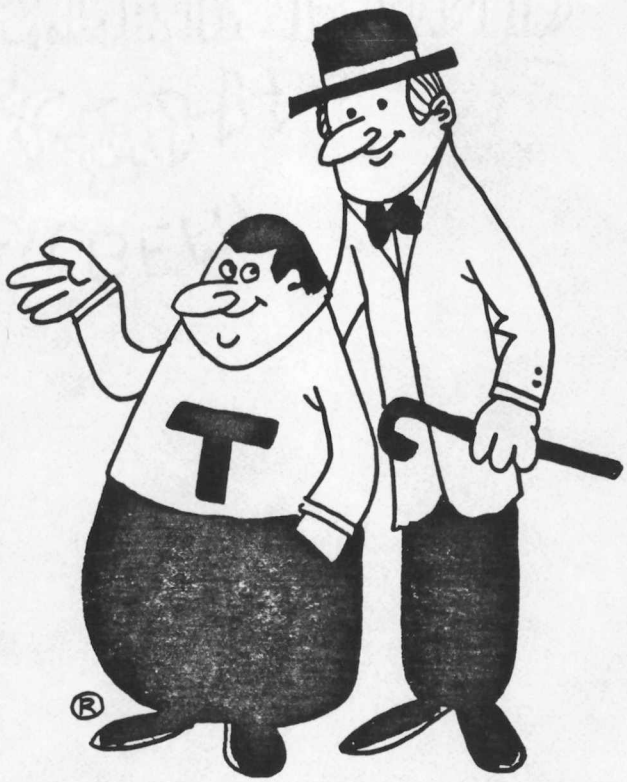
For this activity, your class will watch a movie entitled: "Car Safety: Don't Risk Your Child's Life." Check with your teacher for instructions. After the movie, answer the questions below on notebook paper.

Questions

1. What does the film tell us about a particular seat being the safest?
2. What types of devices do people often substitute for "real" car safety devices?
3. What can parents do on long trips for their children who have been riding in a child restraint device?
4. What is the primary problem that occurs with seats using a top tether?
5. Name two ways in which the top tether strap can be anchored.
6. The baby graduates to what type of seat after it reaches 20 pounds?

YOU ARE READY NOW FOR THE POST-PACKET TEST.

THE POST-PACKET TEST WILL HELP YOU SEE WHAT YOU HAVE LEARNED ABOUT CHILD PASSENGER SAFETY. YOUR TEACHER WILL GIVE YOU THE POST-PACKET TEST. YOU MAY WRITE YOUR ANSWERS ON THE FORM. CHECK WITH YOUR TEACHER FOR CORRECT ANSWERS.



AFTER YOU HAVE TURNED IN YOUR TEST, RETURN TO THE BOOKLET FOR YOUR LAST ACTIVITY.

ACTIVITY SIX

To conclude your study of child passenger safety, you will need to complete this last activity outside of class. During the next week, you will conduct your own survey of child restraint devices. Make a form similar to the one below on notebook paper. Copy the three questions on your paper also. Then, interview three or more people outside your class. Ask the three questions and total your answers.

	1st Interviewee	2nd Interviewee	3rd Interviewee
Question One: Did you know that Tennessee has a law which requires children under four to be protected while riding in a vehicle?			
Question Two: What is a child restraint device?			
Question Three: Have you seen anyone use a child restraint device?			

Questions

1. How many answered the first question with yes _____, no _____?
2. What types of answers did you find when you asked question two?

   _____

   _____
3. How many answered the third question with yes _____, no _____?

WHEN YOU HAVE FINISHED MAKING YOUR SURVEY FORM, RETURN THIS BOOKLET AND ANY OTHER CHILD PASSENGER SAFETY MATERIALS YOU HAVE USED TO YOUR TEACHER. COMPLETE YOUR SURVEY DURING THE NEXT WEEK.

We hope you learned something from this packet. Learning about passenger safety for little children is important. All of you know someone little-- a brother or sister, a niece or nephew, a friend's child, a toddler neighbor. Maybe you can help someone by teaching them what you've learned about child passenger safety.

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For More Information, Contact:

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Transportation Center
The University of Tennessee
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APPENDIX E

STATISTICAL TABLES

TABLE 3

COGNITIVE CHANGE: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Learning Packet Users	77	48.06	7.22			
				-0.23	160.49*	0.82
Lecture Receivers	87	48.33	7.41			

*Hereinafter a fraction occurs in degrees of freedom when separate variances were used.

TABLE 4

COGNITIVE CHANGE: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Male Learning Packet Users	40	46.83	7.59			
				0.17	72.92	0.87
Male Lecture Receivers	35	46.54	6.85			
Female Learning Packet Users	37	49.41	6.64			
				-0.09	83.29	0.93
Female Lecture Receivers	52	49.54	7.59			

TABLE 5

COGNITIVE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	46	48.43	6.95			
				-0.22	75.40	0.83
Rural Lecture Receivers	39	48.79	8.10			

TABLE 6

COGNITIVE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	25	48.08	8.42			
				-0.33	38	0.75
Rural Male Lecture Receivers	15	48.87	5.08			
Rural Female Learning Packet Users	21	48.86	4.82			
				0.05	43	0.96
Rural Female Lecture Receivers	24	48.75	9.63			

TABLE 7

COGNITIVE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Learning Packet Users	31	47.52	7.69			
				0.26	58.85	0.80
Suburban Lecture Receivers	48	47.96	6.86			

TABLE 8

COGNITIVE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Male Learning Packet Users	15	44.73	5.63			
				-0.03	33	0.98
Suburban Male Lecture Receivers	20	44.80	7.58			
Suburban Female Learning Packet Users	16	50.13	8.59			
				-0.04	42	0.97
Suburban Female Lecture Receivers	28	50.21	5.37			

TABLE 9

ATTITUDE CHANGE: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Learning Packet Users	76	45.28	5.98			
				2.49	86.27	0.015*
Lecture Receivers	61	41.28	11.35			

*Significant at the .10 level.

TABLE 10

ATTITUDE CHANGE: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Male Learning Packet Users	39	43.87	6.27			
				0.25	51.71	0.80
Male Lecture Receivers	22	43.50	5.06			
Female Learning Packet Users	37	46.76	5.34			
				2.81	74	0.006*
Female Lecture Receivers	39	40.03	13.59			

*Significant at the .10 level.

TABLE 11

ATTITUDE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	45	45.87	5.51			
				0.94	71.36	0.35
Rural Lecture Receivers	38	44.58	6.75			

TABLE 12

ATTITUDE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	24	45.67	6.08			
				0.79	27.77	0.44
Rural Male Lecture Receivers	14	44.07	5.97			
Rural Female Learning Packet Users	21	45.10	4.92			
				0.65	43	0.52
Rural Female Lecture Receivers	24	44.88	7.28			

TABLE 13

ATTITUDE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Learning Packet Users	31	44.42	6.59			
				2.85	52	0.006*
Suburban Lecture Receivers	23	35.83	14.99			

*Significant at the .10 level.

TABLE 14

ATTITUDE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Male Learning Packet Users	15	41.00	5.62			
				-0.70	21	0.49
Suburban Male Lecture Receivers	8	42.50	2.98			
Suburban Feminine Learning Packet Users	16	47.63	5.90			
				3.30	29	0.003*
Suburban Feminine Lecture Receivers	15	32.27	17.60			

*Significant at the .10 level.

TABLE 15

KNOWLEDGE RETENTION: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Learning Packet Users	78	20.59	4.51			
				0.35	163	0.73
Lecture Receivers	87	20.38	3.19			

TABLE 16

KNOWLEDGE RETENTION: BOTH SITES COMBINED BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	ds	Probability
Male Learning Packet Users	41	19.46	5.34			
				0.22	74	0.83
Male Lecture Receivers	35	19.23	3.67			
Female Learning Packet Users	37	21.84	2.96			
				1.13	70.96	0.26
Female Lecture Receivers	52	21.15	2.59			

TABLE 17

KNOWLEDGE RETENTION: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	46	21.09	4.86			
				-0.74	83	0.46
Rural Lecture Receivers	39	21.74	2.84			

TABLE 18

KNOWLEDGE RETENTION: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	25	19.52	5.88			
				-0.60	38	0.55
Rural Male Lecture Receivers	15	20.53	3.52			
Rural Female Learning Packet Users	21	22.95	2.20			
				0.71	41.33	0.48
Rural Female Lecture Receivers	24	22.50	2.06			

TABLE 19

KNOWLEDGE RETENTION: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Learning Packet Users	32	19.88	3.92			
				0.74	55.20	0.47
Suburban Lecture Receivers	48	19.27	3.05			

TABLE 20

KNOWLEDGE RETENTION: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD WITHIN THE SAME SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Male Learning Packet Users	16	19.38	4.54			
				0.81	27.97	0.42
Suburban Male Lecture Receivers	20	18.25	3.55			
Suburban Feminine Learning Packet Users	16	20.38	3.24			
				0.40	24.90	0.69
Suburban Feminine Lecture Receivers	28	20.00	2.45			

TABLE 21

COGNITIVE CHANGE: COMPARISONS OF SITES BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	46	48.43	6.95			
				0.53	59.98	0.60
Suburban Learning Packet Users	31	47.52	7.69			
Rural Lecture Receivers	39	48.79	8.10			
				0.51	74.68	0.61
Suburban Lecture Receivers	48	47.96	6.86			

TABLE 22

COGNITIVE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	25	48.08	8.42			
				-0.37	44	0.71
Rural Female Learning Packet Users	21	48.86	4.82			
Rural Male Lecture Receivers	15	48.87	5.08			
				0.04	37	0.97
Rural Female Lecture Receivers	24	48.75	9			

TABLE 23

COGNITIVE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Male Learning Packet Users	15	44.73	5.63			
				-2.08	26.03	0.05*
Suburban Female Learning Packet Users	16	50.13	8.59			
Suburban Male Lecture Receivers	20	44.80	7.58			
				-2.90	46	0.006*
Suburban Female Lecture Receivers	28	50.21	5.73			

*Significant at the .10 level.

TABLE 24

ATTITUDE CHANGE: COMPARISONS OF SITES BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	45	45.87	5.51			
				1.00	56.87	0.32
Suburban Learning Packet Users	31	44.42	6.59			
Rural Lecture Receivers	38	44.58	6.75			
				3.13	59	0.003*
Suburban Lecture Receivers	23	35.83	14.99			

*Significant at the .10 level.

TABLE 25

ATTITUDE CHANGE: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	24	45.67	6.08			
				-0.26	42.76	0.80
Rural Female Learning Packet Users	21	46.10	4.92			
Rural Male Lecture Receivers	14	44.07	5.97			
				-0.37	31.81	0.72
Rural Female Lecture Receivers	44.88	7.28				

TABLE 26

ATTITUDE CHANGE: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Suburban Male Learning Packet Users	15	41.00	5.62			
				-3.20	28.99	0.003*
Suburban Feminine Learning Packet Users	16	47.63	5.90			
Suburban Male Lecture Receivers	8	42.50	2.98			
				2.19	15.45	0.04*
Suburban Feminine Lecture Receivers	15	32.27	17.60			

*Significant at the .10 level.

TABLE 27

KNOWLEDGE RETENTION: COMPARISONS OF SITES BY INSTRUCTIONAL METHOD

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Learning Packet Users	46	21.09	4.86			
				1.22	74.26	0.23
Suburban Learning Packet Users	32	19.88	3.92			
Rural Lecture Receivers	39	21.74	2.84			
				3.90	83.36	0.00*
Suburban Lecture Receivers	48	19.27	3.05			

*Significant at the .10 level.

TABLE 28

KNOWLEDGE RETENTION: COMPARISONS WITHIN A RURAL SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	t-value	df	Probability
Rural Male Learning Packet Users	25	19.52	5.88			
				-2.53	44	0.02*
Rural Female Learning Packet Users	21	22.95	2.20			
Rural Male Lecture Receivers	15	20.53	3.52			
				-2.20	37	0.03*
Rural Female Lecture Receivers	24	22.50	2.06			

*Significant at the .10 level.

TABLE 29

KNOWLEDGE RETENTION: COMPARISONS WITHIN A SUBURBAN SITE BY INSTRUCTIONAL METHOD AND SEX

Instructional Method Independent Variable	Number of Cases	Mean	SD	tvalue	df	Probability
Suburban Male Learning Packet Users	16	19.38	4.54			
				-0.72	27.13	0.48
Suburban Feminine Learning Packet Users	16	20.38	3.24			
Suburban Male Lecture Receivers	20	18.25	3.55			
				-2.02	46	0.05*
Suburban Feminine Lecture Receivers	28	20.00	2.45			

*Significant at the .10 level.

VITA

During the last six years, Pamela Moss Munz has been active in the areas of traffic safety education. She presently directs the Tennessee Traffic Safety Education Program for the Governor's Highway Safety Office in Nashville, Tennessee. This program provides inservice education and staff development activities for elementary teachers, supervisors and principals in traffic safety.

In 1966, she graduated from Murray State University in Murray, Kentucky, with a Bachelor of Arts degree. She received a Master of Arts degree in history from Murray State University in 1969, and taught in the public schools in Tennessee at the secondary level from 1967-73. From 1973-79, she was employed by The University of Tennessee's College of Education, Media Center for the Deaf; College of Education, Research Coordinating Unit; Transportation Center; and the Office of the Vice Chancellor for Student Affairs.

She was a graduate assistant in the College of Education, Department of Curriculum and Instruction in 1979-80. During the past years, she has been a member of a number of professional organizations. These include Phi Alpha Theta (honorary society for students of history), Phi Kappa Phi (honorary society for scholastic achievement), National

Council for Teachers of English; and American Association for University Women.