THE UNIVERSITY OF ALBERTA

TEACHING TRAFFIC SAFETY TO THE ELEMENTARY SCHOOL CHILD: AN EXPLORATORY STUDY

by

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A THESIS

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ABSTRACT

The purpose of this study was to explore several techniques that would be effective in teaching traffic safety to elementary school children.

The sample consisted of eighty second grade students in one Alberta school. A pretest-posttest control group design was used. The instrument consisted of three tests, information, attitude, and skill. The pretest and posttest were administered to all eighty students. The eighty second grade students were evenly divided into four groups: three treatment and one control group. The three treatment groups were each subjected to three different treatment techniques.

Group-One received a live performance entertainment act, from a clown-magician who incorporated safety principles into his act. Group-Two were taught by a video tape of the above performance. Group-Three had a standard commercial safety film, which stressed the same safety principles as the foregoing techniques. The subjects in the treatment groups were administered the treatment in half hour periods. The control group, (Group-Four), received no treatment.

Although eighty second grade students were included in the study a statistical analysis was performed on only fifty-six of these subjects. Results indicated that following the treatment there was a statistical significance in the scores of the information

measure among the four groups. Further investigation indicated that the video tape treatment showed statistical superiority over the control group and live entertainment.

After the treatment period there was a significant sex difference on the attitude measure, with the boys having a higher mean score than the girls. With respect to the information and skill measures, there were no noticeable differences.

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STATEMENT OF THE PROBLEM

Introduction

Safety for all children should be a necessary component of the total educational program in the elementary school. The elementary schools, through a systematic organized program of safety, can provide many of the principles and concepts that are important for the safety of all school children.

When children first enter school they are looking to adults for patterns of conduct (Walker, 1954, p. 20). It is important for teachers to try and establish desirable patterns of safety behaviour for children to follow. Since most children from the ages of seven to nine are developing a strong desire for independence, it is important that we recognize their ability to take initiative and responsibility which can prove to be a very effective incentive in developing good safety habits (Walker, 1954, p. 20).

The Canadian Automobile Association (1969) has stated that more than one hundred thousand children are killed in accidents and countless more injured each year. The above study showed that our nation needs to develop new, or strengthen old, safety education programs designed to prevent this unnecessary loss of our most precious national resource. Thus reasons for teaching traffic safety to elementary school children may be found by reviewing reports on traffic mishaps among school children (Stack, 1960, p. 6). Elementary school

teachers must constantly test their methods and procedures for validity. Every possible method for teaching traffic safety at school should be utilized, particularly in the early grades (Zirbes, 1969, p. 4).

A. PURPOSE OF THE STUDY

This study originated as an attempt to evaluate several methods of teaching traffic safety to the elementary school child. To do this it was necessary to determine what effect such safety techniques as a live safety performance, a safety video tape, and a safety film would have on the skill, attitude, and cognizance of elementary school children towards traffic safety. Outcomes of the safety techniques mentioned above were considered in terms of pre and post test treatment changes in children.

Emphasis placed upon an early traffic safety approach may mean rejection or modification of existing procedures in teaching traffic safety, here and there, just wherever it seems to fit into the study curriculum. The author investigated data on traffic safety collected by three various techniques:

1. live performance - entertainment,
2. video tape, and
3. commercial safety film.

The effectiveness of these techniques in terms of their future applicability will warrant further study. Current literature has not dealt with the development of such techniques and their effectiveness.

Research in the field also indicated very few studies have been carried out in regard to teaching traffic safety to the elementary school child. In fact when reviewing the research material the writer was able to find only one study concerned with traffic safety for elementary school children (Sandels, 1970, p. 4).

B. DEFINITIONS OF TREATMENT CONDITIONS

Live Performance - Entertainment

Live performance is used to refer to the performing of a play or public exhibition. In this particular study a live performance act was used as a technique to teach grade two school children about traffic safety.

Video Tape

The term video tape shall be referred to as the replay of a taped program on traffic safety through a television monitor. It was used as a technique to teach grade two students about traffic safety.

Commercial Safety Film

The commercial safety film was used to refer to a film that was shown to grade two students. It involved making students more aware of traffic safety.

C. OVERVIEW OF THE PRESENT STUDY

Permission to carry out the study was granted and the selection of one elementary school was made by the Edmonton Public School

Board administrative officials. The sample consisted of eighty second-grade students.

By random selection, the grade two students were divided into four groups which were equal in terms of number. Each individual child in the four groups received an information, attitude, and skill test. Then one group was taught traffic safety by entertainment, one group by a video-tape of that entertainment, and one group was taught by a commercial safety film. The fourth group, which was the control group, received no treatment.

The treatment periods were each approximately thirty minutes long.

A second rating of pupils was made following the treatment process.

D. LIMITATIONS OF THE STUDY

The conclusions to be drawn from this study were made in the light of the following limitations:

The Sample

The sample for this study consisted of one class of 80 second-grade students at King Edward Public School. This was approved by the Edmonton Public School Board. No attempt was made to select the subjects according to their mental ability or to their classmates' opinions.

Since it was anticipated that the results of the study might reveal sex difference, the sample consisted of both sexes, but in order

to make the study realistic to a classroom situation the groups were not balanced for sex differences.

The Instrument

The tests for this particular study were designed by the author, therefore there was limited reliability and validity.

Test Administration and Data Collection

There may have been minor variations in the administration of the tests; this might be assumed because of the number of people involved. In each case, however, the tests were given each time by the same people, and to the same groups; and the results indicated general adherence to the printed instruction provided.

Student Absences

Student absences, which are usually a problem when testing, will have very slight effect on this study.

During the testing, only one student was away, and the name was submitted along with the completed tests. Since the incident of absenteeism was almost nil, it is assumed that the overall effect of this would be minimal.

CHAPTER II

REVIEW OF THE LITERATURE

A. SAFETY EDUCATION IN THE ELEMENTARY SCHOOL

Problems of Traffic Safety Education

> A critical emergency with the nation striving for self-preservation makes it possible, perhaps for the first time, to see the accident problem and the objectives of safety education in their full significance (Stack, 1946, p. 1).

A basic job of traffic education is to effect the countless changes and adjustments in human behaviour that will reduce accidents and facilitate the movement of orderly traffic. Traffic safety education should be concerned with:

1. Teaching children sound pedestrian practices,

2. Teaching young people how to ride bicycles safely

(Stack, 1946).

Strasser (1964) found safety permeated every level of education. He recommended that the program be initiated in lower grades and the foundation for successful safety education be later established in the junior and senior high schools. Florio (1956) expressed the same viewpoints in a slightly different manner. He reported that in order to reduce accident rates safety education must be given ample room even in already "over crowded" school curricula. According to Florio (1956) safety education must help us to adjust to our changing environment, to utilize effectively and safely the forces science has placed at our disposal, and thus to enjoy to the full, the

opportunities for a richer life than these forces represent. He, therefore, indicated that safety does not lie in devising more and more safety devices however important these may be, but in improving man's knowledge, skill, attitudes, and habits. A traffic officer can not be stationed at every intersection, but perhaps people can learn to abide by the law voluntarily if they can be made to understand that their own security and that of others, and ultimately the good of the society as a whole depends upon their doing so.

As Florio (1956) stated: "the good citizen chooses to wait at stop streets even when a policeman is not in the vicinity." Allan Homer (1961) stated that a person who knows about hazards, who has certain physical skills, and who has the attitudes which prompt him to handle a situation as safely as possible, is usually less apt to have an accident.

Safety Education is, of course, one means by which we may hope to develop the above traits in a majority of people. Stafford (1956) expressed the idea that education should engender in every child the desire and the ability to shield himself from potential danger in all circumstances, including those that are new to him and that involve hazards he has not previously encountered.

Traffic Safety in Elementary Schools

The problem of traffic safety is a serious one for all children. The elementary schools cannot over-look traffic safety education, because it is at school age that the majority of the children

use the streets and highways as bicyclists and pedestrians. Hence safety instruction must relate itself to the problems and experiences of children, if they are to develop safety habits, attitudes, and skills.

Strasser (1964) suggested that accidents account for over one-third of all deaths of preschool and school age children. He stated that the educational program of the elementary school must be planned to permit children to gain an understanding of safety that is consistent with their age and maturity.

Russell (1960) identified the role of the elementary school in safety by showing that, as a result of elementary education, children should be able to:

1. realize that accidents are not accidental but result from activities in home, school and elsewhere,

2. understand that accidents are caused by people and that they can be controlled if we know they are caused and if we are willing to help prevent them,

3. realize an individual's moral and social responsibility to prevent accidents to self and others, and

4. cooperate with others so these objectives may be achieved.

Russell continued by explaining that these aims must be built around the personal social needs of the children and must be taken into account in planning the program. Young boys and girls are easily tempted to be daring and venturesome. They respond to fatigue, anger, joy and similar emotions in ways that often lead to accident

involvement. Children must learn that while safety promotes happiness, carelessness breeds sorrow.

In reviewing the literature it was found that the majority of writers believed that safety education should be an integral part of elementary school classrooms. Every effort, therefore, should be made to develop complete integration of safety with all school programs of instruction (Strasser, 1964).

Pedestrian and cycling practices will differ from area to area, however, all programs will contain common elements. For example, each child should learn the safest route between his home and school, the safe places to play, and how to show courtesy in using sidewalks and streets. The child must learn what all traffic signs, signals, and markings mean.

The safe operation of a bicycle should certainly be stressed in nearly every elementary school. The elementary schools have the responsibility of supplementing home instruction in traffic safety as well as initiating instruction where necessary. Each child must be helped to face the variety of traffic situations that he will encounter.

Developing the Curriculum

Stack and Siebrecht (1946), when discussing safety, reported that an adequate safety curriculum for elementary schools must include many phases. The goals of such a program should be first, to provide pupils with pertinent information, attitudes, and skills that will lead them to practise safety in all situations. The second objective would be to unite for cooperative effort, all persons, agencies, and

communities, who are interested in the promotion of the program.

Specific objectives for the elementary school curriculum were summarized as follows in the 18th Yearbook, Safety Education (Stack, 1946, p. 231).

1. To help children recognize situations involving hazards.

2. To develop habits of conduct which will enable children to meet situations of daily life with as little danger as possible to themselves and others.

3. To develop habits of carefulness and obedience to safety rules at home, on the streets, in schools or at play.

4. To teach children to read, understand and obey safety rules and regulations.

5. To teach children safe conduct in the use of cars.

6. To develop wholesome attitudes concerning:

   (A) law and law enforcement officers,

   (B) the safety of themselves and others,

   (C) organize efforts to assure safety for all.

7. To give children actual experiences in desirable safety practices.

In order to develop the desirable behaviour patterns mentioned above, Florio and Stafford (1956) reported it is essential to identify the pertinent characteristics of the age group before planning the course of study. The necessary information can be acquired by:

1. examining the accident records of the school community,

2. conducting interviews or distributing questionnaires,

3. observing the safety practices of all age groups,

4. studying environmental factors, and

5. utilizing available aids, such as research studies, authoritative materials in the safety field and the opinion of experts.

Florio and Stafford (1956) continued by reporting that the selection of content for a safety education program should be based upon a careful analysis of the information gained by these methods and upon the pupils' interest, level of maturity, knowledge, readiness to learn and desire to improve, as indicated by tests and classroom discussions.

Present Curriculum

The present curriculum in Alberta concerning safety education for the elementary school seemed to have many different phases. In view of the Canadian Automobile Association report (1969) a more vigorous safety program should be sponsored at the elementary level (Accident Facts, 1941, p. 108).

In viewing the elementary curriculum on traffic safety, the program is combined with the elementary health program. The sequence grid suggested that traffic safety be taught in grades one, three, and five. At these particular grade levels traffic safety is blended in as a unit, taught by whatever method the teacher wished to use.

The author, when interviewing various teachers about traffic safety, found there seemed to exist a wide range of approaches. The traffic safety concept and importance was noted; it should be taught; it was taught; but the continually emphasized importance seemed to be

missing. Yet definiteness of instruction is essential (Stack, 1946).

Evaluation of Traffic Safety Programs

Safety education has clearly demonstrated its value by saving thousands of children from injury and death (Florio et al, 1956). In a world which is becoming increasingly more dangerous, children are learning to be safe. Florio and Stafford (1956) have stated that the death rates for children between the ages of five and fourteen have shown remarkable reduction since traffic safety education was introduced into school programs in 1922. The decreasing number of pedestrian accidents and the continuing low rate of bicycle accidents almost certainly reflect the school's effort to promote safety, particularly through the increasing use of traffic patrols (Florio et al, 1956). But some recent reports showed conclusively that there are still too many accidents involving children (Canadian Automobile Association, 1969).

As one author noted:

> For most of his wakening hours a child is the school's responsibility and the first responsibility is to keep that child safe. Of what good are reading, writing and arithmetic if the child is killed because he was not taught the simple facts of accident prevention (Stack, 1960, p. 30)?

B. THE CHILD PEDESTRIAN

Most child pedestrian-accident victims have been injured by committing one of the following traffic violations (Florio et al, 1956):

1. crossing the street against traffic signals,

2. crossing an intersection diagonally,

3. crossing between intersections,

4. walking into the street from between, or behind parked cars,

5. walking carelessly on the highway,

6. playing in the street, hitching on vehicles,

7. jaywalking.

Stack (1946) stated that the school child is primarily a pedestrian. He continued by saying the child's trips to and from school, his errands for his parents and others, and his play and adventure take him individually and in groups many miles on foot, daily, over streets and highways. Consequently, Stack emphasized that one of the responsibilities of the community including the school, is that of providing adequate protection for the pedestrian.

Sandels' (1970) research study indicated that, "Children are nothing but children. . . ." and are liable to traffic accidents. She pointed not with a finger of guilt, but with a finger of responsibility, to teachers, parents, nursery school teachers, driving schools, traffic organizations, police, town planners, lawyers, civil authorities and to all those concerned with children. Children cannot comprehend the traffic environment as an adult world. They cannot understand the traffic situation, where only rules and regulations set the pattern for behaviour.

An environment of "play" pervades all childhood situations and not until the age of eleven or twelve do children establish fixed and

elaborate rules in their games (Sandels, 1970). Due to the playful nature of an elementary school child, the writer is of the opinion that teaching traffic safety through entertainment could be an effective technique.

The writer's review of the research literature indicated that there was only one major study, on traffic safety, with children (Sandels, 1970). This study, "Young Children in Traffic," was based on research conducted from 1960 - 1967.

The conclusion reached, after the studies were completed, was that children experience traffic according to their age and degree of development, and "we adults, should always bear in mind that this is the utmost they are capable of," (Sandels, 1970, p. 5). As stated before, children are children, they are playful, they have a relatively short attention span, they are easily distracted and they are not always conscious of good safety practices.

C. CHILDRENS' LEARNING

According to Florio and Stafford (1956) the principle of primacy, refers to the learning experiences of early childhood, which are more likely to form the basis of unconscious motivations and habitual behaviour patterns than are the experiences of later life. It follows, therefore, that children should be instructed in safety at the earliest age possible. Florio and Stafford (1956) continued by stating that children can and should be trained in traffic safety in the lower grades.

> If a "pretend" intersection is set up in the school gymnasium, for example, first graders can be taught the meaning and importance of signs and signals, the necessity of considering the rights of others, and the various procedures that will prepare them to cross streets safely (Florio and Stafford, 1956, p. 25).

Walker (1954) stated that kindergarten and first grade children learn through dramatic play in which they relive traffic situations in the world about them. The teaching of traffic safety by entertainment could give children the opportunity to talk, enjoy, and relive their safety experiences.

The writer is of the opinion that the second grade is an important level to start focusing extra attention on traffic safety training.

> The children are becoming more aware of their neighbourhood and community at this level, and are making more independent trips (Walker, 1954, p. 22).

Also, in Alberta, there are no special patrols after grade one. Therefore, much attention should be given to children at this particular grade level, so that they may develop positive safety behaviours.

D. DIMENSIONS OF TRAFFIC SAFETY: AWARENESS

Why do people have accidents? Surely no normal person sets out deliberately to become a casualty. Although most people seem to know how best to handle a given situation, accidents occur regularly (Allen, 1961). Allen indicated that knowledge about safety, and skill in performance is not enough to prevent accidents. The mental attitude of a child is increasingly important. A person who knows about traffic

safety, who has certain physical skills, and who has the attitude which prompts him to handle a situation as safely as possible is usually less apt to have an accident. Unless children are motivated to develop and practice protective skills, unless they acquire the habit of conscientiously observing general as well as specific principles, they have not learned to live safely, even though they have been taught the rules of safety and have been given protective devices.

Florio and Stafford (1956) expressed the opinion that much can be done to create traffic safety awareness by helping students to arrive at self understanding and by giving them opportunities to express themselves in socially desirable ways and receive recognition for their achievement from other members of their groups. They believe it is particularly important that when developing a safety awareness, or that when teaching safety education, a group approach be used:

> for in an age when the approval of others is often essential to personal adjustment the individual should be made to feel that careful, orderly behavior is sanctioned, not ridiculed by his peers (Florio and Stafford, 1956, p. 16).

E. PREVENTING ACCIDENTS

> . . . This going above and beyond the call of duty is based on attitude, the proper attitude can mean the difference between life and death (Halsey, 1965, p. 38).

Strasser and Aaron (1964) stated that the basic causes of accidents have generally been divided into two basic categories:

1. unsafe behaviour, or as it is expressed at times, human failure,

2. unsafe environment.

They seem to feel that unsafe behaviour is the most frequent basic accident cause. Florio and Stafford (1956) have said that only about 15% of all accidents are caused by forces external to man, therefore, it can be concluded that most accidents occur because children fail to take the precautions necessary to protect themselves. Therefore, teaching traffic safety is one way of developing a positive attitude in young people, so that they will take the proper precautions to protect themselves (Florio and Stafford, 1956). Dzenowogis (1961) indicated that the stage is set for an accident when a child acquires a false belief concerning safe behaviour. He seems to be saying that accidents just don't happen, they are caused.

Yost (1958) stated:

> Accidents don't just happen . . . they are caused. Further, there is seldom a single cause of an accident, rather a combination or sequence of circumstances (Yost, 1958, p. 1).

Yost continued by stating that accidents can be controlled, to an extent, by teaching traffic safety. One primary reason for teaching traffic safety to elementary children is to reduce the fact that one half of all the deaths that occur among school age children are caused by accidents that may have been prevented (Steward, 1958, p. 4).

F. GOALS OF TRAFFIC SAFETY RELEVANT TO THE STUDY

Safe behaviour may be divided into several important classes:

1. knowledge (information),
2. skill,
3. attitude.

Strasser and Aaron (1964) reported that lack of knowledge, performing a task beyond an individual's skill, and a negative attitude are the cause of many accidents. They would suggest that understanding acquired by sufficient knowledge, proper training to perform tasks to the very best of one's ability, and also through a positive attitude, accident rates could be reduced. Florio and Stafford (1956) tended to agree by stating that an unsafe behaviour is characterized by:

1. inadequate knowledge,
2. insufficient skills,
3. improper attitudes and habits.

They continued by stating that the three above characteristics of unsafe behaviour may be ultimately responsible for accidents, because it has been found that there is a high correlation between faulty attitudes and a lack of knowledge.

In reviewing the above mentioned literature the writer concluded that the primary goal of traffic safety education is to:

1. help the elementary child acquire sufficient knowledge,
2. develop the appropriate skills, and
3. ascertain a positive attitude.

G. METHODS OF TEACHING SAFETY TO ELEMENTARY SCHOOL CHILDREN

"Our Goal is Safety" (Zirbes, 1969, p. 4).

Zirbes (1969) reported that one must recognize safety as a vital aspect of experience. Therefore it is necessary that one be realistic in safety instruction. Zirbes' (1969) study indicated that

safety techniques should require thought, as well as independent choice, and give experiences to children. He continued by saying that too often one uses practices that train, but do not educate children. The view taken was that room should be left for human intelligence, flexibility, and adjustment. It was suggested that children be given the opportunity to increase skills in judgment, self reliance, and also gain insight into traffic safety. As was mentioned earlier, teaching traffic safety to elementary children is difficult. They squirm, yawn, even throw an occasional spitball; and you can see in their faces the same reaction that many adults have toward safety training; "Aw that will never happen to me." But statistics showed that it does happen to them, at least to some of them (Fewster, 1968, p. 4); and for this reason educators have discussed, prepared and tested various ways of teaching safety to elementary school children. Experimentation, observation, experience, and research suggest that effective instructors in safety utilize various techniques (Florio and Stafford, 1956).

Summary

This study was conceived in an attempt to find out how teachers could make effective use of various techniques for teaching traffic safety to their children. At the Thomas A. Edison Elementary School, in Daly City, California, Mrs. Judi Fewster has made a special effort to interest her first grade class in safety, by utilizing the audio-visual aid approach:

> Movies and filmstrips make safety a personal experience for my pupils rather than a dull lesson (School Safety, Fewster, 1968, p. 4).

Fewster (1968) indicated that experience is the key word for teaching children good safety habits and attitudes. Besch (1968) indicated that teaching good safety habits includes a well organized program of physical fitness. This seemed to suggest that this program is concerned with the total individual, his knowledge, skill and attitude. Stack (1946) expressed the view that a safe individual is one who is well informed, possesses superior skills and desirable attitudes and uses these in his everyday life.

The results of such studies as those referred to in the foregoing account, indicated that there is a need for more experimental research in the area of traffic safety for elementary school children. The most important need is to determine which is the most effective way to provide an experience for children, as methods tried to date have not been able to capture children's attention. Children must acquire a depth of information as well as superior skills and desirable attitudes in this field.

H. LITERATURE RELATED TO THE INSTRUMENT

Introduction

Since the method of testing seemed to be the most effective means available for revealing the preferences, likes, or dislikes that exist among the members of a group, various efforts have been made to determine the reliability and validity of these tests.

I. METHODS OF MEASURING RELIABILITY

Reliability provides an index of the accuracy with which a test or instrument measures (Wrightstone, 1956). It is commonly defined as an estimate of the degree of consistency or constancy among repeated measurements of individuals with the same instrument.

In its broadest sense, Anastasi (1954) stated that, test reliability indicates the extent to which individual differences in test scores are attributed to chance errors of measurement, and the extent to which they are attributable to true differences in the characteristic under consideration. As used in psychometrics, reliability refers to stability and constancy. According to Anastasi, test reliability is the consistency of scores attained by the same persons when retested with the identical test or with an equivalent form of the test. Anastasi, also, indicated that no one type or measurement of test reliability is universally preferable. The choice depends upon the use to which the test scores are to be put.

The practical application of test results assumes some constancy of test choice. However, as Wrightstone (1956) stated it is impossible to obtain a perfect measure. The measure is always contaminated or made impure by chance factors which affect the accuracy of the measurement. Revealing actual changes in chance factors, is as important a requirement of the test, as providing results that are constant enough to have predictable value.

Although psychological measuring instruments, also, have conflicting requirements (revealing change and providing constancy of

results) the extensive variability in the area of social relations poses special problems in evaluating the reliability of the different tests. It has been necessary to utilize the traditional concepts of reliability developed in the area of psychometric measurement, because as yet, special techniques for coping with these problems have not been devised.

Techniques for measuring test reliability are: test-retest, split-half, equivalent-form and the inter-item consistency test. Attempts to measure the reliability of tests used in this study, have been made using the last procedure.

Reliability Coefficient employed in present study - The Kuder-Richardson

For this study, types, uses and qualities of major reliability techniques were surveyed. Much of the literature showed that all the various reliability techniques have advantages and disadvantages (Wrightstone, Justman, Robbins, 1956; Thorndike, 1961; Anastasi, 1957; Travers, 1955; and Remmers, 1960).

The Kuder-Richardson formula, classified as the reliability technique that gives you inter-item consistency, was used for this study.

Wrightstone, Justman, Robbins (1956) placed the Kuder-Richardson reliability technique and the split-half reliability technique in the same category: i.e. coefficients of internal consistency. Thorndike (1961) stated:

> The Kuder-Richardson estimate takes no account of variation in the individual from time to time, and it is inappropriate for speeded tests. Within these two limitations, it provides a conservative estimate of the split-half type of reliability (p. 181).

Since a test-retest reliability method was not feasible, the writer concluded because this study was an exploratory one with elementary school children, the Kuder-Richardson might be a more accurate reliability technique to use than the split-half reliability technique.

When using the split-half reliability technique one must be very precise and objective in obtaining the comparable halves. The writer, again, was of the opinion that this procedure was too complex for elementary school children, because to determine the difficulty level of each item for each elementary child and then split the test accordingly was impossible to accomplish with the particular grade two children used in this study.

In any event, Remmers, Gage and Rummel (1960) indicated that Kuder-Richardson yields a figure that is usually lower than that obtained by the split-half technique.

Interpretation of Reliability Data

A question that is often raised is: What is the minimum reliability that is acceptable? Thorndike (1961) indicated, that actually, there is no specific answer to this question. He contended that if one must make some decisions or take some course of action with respect to an individual, one should do so in terms of the best information one

has, however unreliable it may be, provided only that the reliability is better than zero. It is always necessary that the appraisal of any new procedure be in terms of other procedures with which it is in competition. Thus a procedure for judging attractiveness that may have had a reliability of no more than .60 might look very good if the alternative were a set of controlled ratings having a reliability of .45 to .50. The writer was unable to find a reliability rating with which to compare the test used in this research.

The Kuder-Richardson reliability rating for this study was as follows:

1. for the information test 0.53,
2. for the attitude test 0.62,
3. for the skill test 0.65.

Thorndike (1961) noted that a relatively low reliability will permit one to make useful studies of and draw accurate conclusions about groups, but relatively high reliability is required if one is to have precise information about individuals. In this instance the study was concerned with groups of grade two school children.

Remmer, Gage, and Rummel (1960), when discussing reliability, stated that for research purposes, tests may be useful if their reliability coefficients fall as low as .50. They also noted that the length of a test, range of student talent, and testing conditions are factors that greatly effect reliability ratings.

Summary

From the review of the literature on reliability techniques it

appeared reasonable to assume that the coefficients of the tests were acceptable when applied to groups of elementary school children. At the time of this experiment the writer was unable to find any standardized tests with which to compare the tests designed for this experiment.

J. RESULTS OF VALIDITY STUDIES

To the degree that a test actually measures what it purports to measure, it is said to be valid. Wrightstone, Justman and Robbins (1956) stated that validity is judged by the relationship between the measure or diagnosis and such meaningful criteria as ratings by teachers or performances or specific tasks. They continued by saying validity is not an absolute characteristic of an evaluative technique; it is relative to the purpose of the test user. The same technique may be used for several different purposes, and its validity may vary from "high" to "low," depending upon the purpose.

As already mentioned, the determination of validity usually requires some independent external criteria pertaining to whatever the test is designed to assess, against which results may be measured. Anastasi stated that no test has "high" or "low" validity in the abstract. Its validity can be established only in terms of one or more specific criteria. A statement of test validity without reference to the procedures employed in computing such validity is even less meaningful than an unqualified report of test reliability. The choice of such criteria poses particular problems for determining test

validity. Although teacher judgments and judges' ratings have been used most extensively in this study, they are subject to various limitations.

Teachers' judgment

Thorndike (1961) stated a teacher's own test has content validity to the extent that a wide and thoughtful analysis of course objectives have been made in the blue-print, and that care, skill and ingenuity have been exercised in building test items to match the blue-print. Travers (1969) reported that the validity of rating systems based on an outsider's observations has not been shown to be particularly high.

An average correlation of .60 between the accuracy of some ratings and teacher judgments have been found in a number of studies (Gronlund, 1956, 1958). A lower average correlation coefficient of .48 was obtained when 103 teachers were required to predict the exact choices made by each pupil in a study with fourth, fifth and sixth grade classes (Gage, Leavitt, and Stone, 1955).

For this particular study the author used the judgment rating of grade two teachers who were familiar with grade two material and also with traffic safety for the elementary school child.

Judges' rating

Thorndike (1961) stated that when one wished to appraise a test, one can really do so only by asking: How well do the tasks of this test represent what one considers to be important outcomes in

this area of instruction? How well do these tasks represent what the best and most expert judgment would consider to be important knowledge, skill and etc.? If the correspondence is good one considers the test valid; if poor, the validity must be deemed to be low. Thorndike continued by saying the responsible maker of a test for wide spread use goes to considerable pains to determine the widely accepted goals of instruction in the field in which his test is to be built. There are many types of sources to which he may and often does resort. For example:

1. the more widely used text books in the field,
2. recent courses of study for the school unit,
3. reports of special study groups, often appearing in yearbooks of one or another of the educational societies,
4. specialists in universities, cities, and state departments concerned with the information in this field.

For the judges' rating for this study, the author made use of the following judgment of the various safety experts concerned in this field:

1. The City Police Safety Department,
2. Alberta Motor Association,
3. The National Safety Council.

Summary

It should be clear, from what has been said above, that there are various ways of obtaining test validity. The literature indicated that there are no general rules for the selection of validation

material; this problem may be left to the individual test maker (Smith, 1942; Wrightstone, et al, 1956; Thorndike, 1961). As already mentioned, the writer used the combined rating of several grade two teachers, other judges, and material validated, for this study.

CHAPTER III

DEFINITIONS AND HYPOTHESES

A. DEFINITIONS OF TERMS

For the purpose of this study the major terms utilized are presented below with the following defintions.

Rules

Rules refer to an established guide or regulations for action and conduct. They are fixed principles that determine conduct.

Safety

Safety is used to refer to freedom from danger and damage. It gives security.

As used in this study, traffic safety is a condition or state of being resulting from the modification of human behaviour, in order to eliminate the possibility of hazards, thereby eliminating accidents. In reference to a safe person, this definition implies a person who has modified his behaviour pattern to prevent accidents from occurring to himself or others. The above definition involves the two principle concepts which always emerge whenever safety is considered. First, human behaviour must be considered - whether safety in relation to traffic or in relation to educational programs under study. Second, the prevention of accidents is the ultimate goal of all safety educators (Strasser, Aaron, Bohn and Eales, 1964). Safety education has as its principle objective, the changing of human behaviour in a

manner which will prevent the occurrence of traffic accidents.

Safety is both a need and a benefit in living. One does their part for safety when they learn the causes of accidents, obey safety rules and try to protect themselves and others.

Entertaining

Entertaining refers to occupying oneself pleasurably; that which keeps one in good humor. Entertainment implies a suspension of personal cares, a relaxation of tensions and a resultant feeling of well-being, satisfaction or renewal.

Information

Information refers to knowledge acquired by a child in any manner. The information test given in this study was concerned with traffic safety for elementary school children.

Attitude

Attitude is a predispotion to perform, perceive, think, and feel toward something or some object in the environment (Newcomb, 1950). An attitude is not an act but a readiness to react to a situation as soon as it develops. The individual does not have to analyze and think. The reaction is determined by the attitude and takes form in response to the stimulus. The attitude test, for this study was designed to direct the grade two childrens' attitude toward a traffic situation in the environment.

Skill

Skill refers to an ability to react to a situation. It is

gained by knowledge (information) and an attitude toward the situation. Skill is also referred to as the ability to do things well with ones body (Thorndike, 1960). The skill test, for this study, was concerned with how well the grade two children reacted to various play traffic situations set up in the classroom.

Behaviour

Behaviour refers to any response(s) made by an organism, an act or activity, a movement or complex of movements.

Audio Visual Aids

Audio visual aids refer to the safety film and the video tape used in the study.

B. HYPOTHESES TO BE TESTED

The objective of this study was to explore which of three techniques, live performance, video tape, and commerical safety film was more feasible for teaching traffic safety to elementary school children. In adopting the tradition of keeping an open and unbiased mind in any statistical investigation, the problem is restated in terms of null hypotheses. Specifically then, the following null hypotheses were advanced.

1. That there would be no significant difference among groups in treatment results on information, attitude or skill.

2. That there would be no significant sex difference in treatment results on information, attitude or skill.

CHAPTER IV

METHODOLOGY

A. SAMPLE

As was mentioned earlier one elementary school which was selected by the Edmonton Public School Board administrative officials was used in the study. Eighty grade two subjects were selected to constitute the sample.

B. EXPERIMENTAL DESIGN

Time span

Children in Group One, Group Two and Group Three were seen for approximately eight and one-half hours three consecutive times in a week. Group Four received no treatment during the week. People involved with the study were aware of the various groups and the treatment administered.

Selection and Assignment of Subject to Treatment Condition

The eighty grade two subjects were randomly selected for the four groups.

Selection of Treatment

Keeping Elementary Children Alive

1. Avoid walking or playing between parked cars. Never walk into the street from between parked cars.

2. Look both ways before crossing the street.

3. Never jay walk; cross only at corners or marked intersections.

4. Always watch for turning cars before crossing the street.

5. Always walk when crossing the street.

6. Play away from traffic - never play in the street.

7. Obey all traffic signals.

8. Never walk with your back to the traffic.

9. At night wear white or light colors.

10. Never cut corners; cross the corner straight and within the crosswalk.

11. Make sure your bicycle fits you.

12. Always walk your bicycle through the intersection.

13. There should never be two on a bicycle.

The above rules were selected from various traffic safety material. The live safety performance act, the video tape and the safety film stressed the above thirteen rules.

Eithier, President of Ring 28, Edmonton (1970), decided there was a need for lecturers in traffic safety. For this purpose he created Moosie, the Magical Safety Klown Kop (The Ling Ring, Vol. 50). Being a professional entertainer, Eithier (1971) performed various traffic safety acts to a group of twenty grade two children classified as Group One. His performance was based on the thirteen traffic safety principles mentioned earlier. Eithier attempted to make this particular group of children more safety conscious by stressing traffic

safety through entertainment.

Crothers (1971), Coordinator of the Audio Visual Media Centre of the University of Alberta, made a video tape recording of the live traffic safety performer interacting with the twenty grade two subjects. This video tape was shown to twenty grade two children classified as Group Two.

The twenty grade two students classified as Group Three viewed a standard traffic safety film available to teachers, noting the same thirteen traffic safety principles as Eithier (1971) stressed.

C. TREATMENT

The eighty grade two subjects were randomly assigned to one of the four groups. Each group consisted of twenty subjects:

1. Group One - An Experimental Group
   Life Traffic Safety Performance Act.
2. Group Two - An Experimental Group
   Video Tape on Traffic Safety.
3. Group Three - An Experimental Group
   Traffic Safety Film.
4. Group Four - Control Group
   No treatment.

Treatment Given to Students in Group One - (An Experimental Group)

Students in this group were given the traffic safety live performance act. This technique, as mentioned earlier, was based on

traffic safety rules, information, etc., taken from various traffic safety resources in the City of Edmonton, i.e., Library, Alberta Motor Association, Safety Council, Elementary Schools, etc. These sources were mentioned earlier.

Treatment Given to Students in Group Two - (An Experimental Group)

Subjects in Group Two were given the traffic safety video tape. This tape was based on the same rules, information, etc., as the live safety performance act. The tape also required the same amount of time, one-half hour.

Treatment Given to Students in Group Three - (An Experimental Group)

Subjects in this group were given the traffic safety film. The film was based on the same rules, information, etc., as the live safety performance act and the video tape. This film also required the same amount of time as the above two traffic safety techniques.

Treatment Given to Students in Group Four - (Control Group)

No contact was made with the children in this group from the time they took the pretests to the end of the experimental period when they repeated the same tests.

The rationale behind the setting up of this group was to show that time alone will not produce a significant change, so differences in scores could be attributed to treatment effects in the other group.

D. METHODS USED TO MEASURE EFFECTS OF DIFFERENTIAL TREATMENT

Administration of Pretest

Each of the groups received three tests:

1. an information test (Appendix A),
2. an attitude test (Appendix B),
3. a skill test (Appendix C).

The above tests were administered to each group separately, as a result, it took approximately two hours to test each group of children. The completed tests were then collected and scored by the researcher.

The Instrument

The three tests given to the eighty grade two subjects were:

1. an information test,
2. an attitude test, and
3. a skill test.

The information test was mainly concerned with collecting information from the children. Its reliability and validity were stated earlier. This test was based on the same traffic safety literature, rules, etc., as the treatment.

The attitude test was mainly concerned with the children's attitude toward traffic safety. The reliability and validity of this test were noted earlier. This test was also based on the same literature, etc., as the information test.

The skill test attempted to measure the children's skill when

reacting to simulated traffic safety situations. This test was closely related to the two previously mentioned tests.

The writer was unable to find tests on traffic safety for elementary children. Devices for this study were thus designed from information gathered from the literature. The form of the tests was based on various forms common to grade two children. The teacher's manuals at this level provided some of the guide-lines for framing these test questions. The form of the information test was one asking students to select the correct answer.

The form of the attitude test used in the study was one which instructed the students to complete the sentences expressing their feelings and concerns.

The form of the skill test used in the study was one which instructed the students to act out various traffic safety situations that occur from time to time in daily living. The classroom was set up with these situations.

Administration of the Posttest

After the pretest and treatment the posttest was administered by the writer. The posttest was a re-test to see what changes, if any, had occurred since the first testing on traffic safety.

CHAPTER V

A. RESTATEMENT OF THE PROBLEM

Introduction

As pointed out in Chapters I and III, the objective of this investigation was to evaluate three differential methods of teaching traffic safety to elementary school children.

The null hypotheses to be tested were:

1. That there would be no significant difference among the four groups in treatment results on information, attitude or skill.

2. That there would be no significant sex difference in treatment results on information, attitude or skill.

B. ANALYSIS AND RESULTS

The entire investigation, therefore, consisted of three separate substudies; one for each of the criterion variables, Information, Attitude and Skill. The data for each substudy were analyzed by means of a two-way (sex by treatment) analysis of covariance, using the University of Alberta, Division of Educational Research Services (DERS) documentation. In each case. the pretest scores served as the covariate.

It is well known that difference scores are unreliable (Harris, 1963). For this reason an analysis of variance on the raw difference scores, (the difference between the posttest and pretest scores) another possible statistical design, was rejected in favor of an

analysis of covariance. Besides, the analysis of covariance reflects gains in posttest scores after group differences in the pretest scores have been statistically controlled for, and it reduces experimental error (Winer, 1962).

As remarked previously, the sample was one class of eighty second graders at the King Edward Elementary School, Edmonton, Alberta. Naturally the sample was not balanced for sex. Thus, in using the analysis of covariance technique, a choice arose between taking the minimum number of boys or girls in one group to define the number of observation in each cell and employ the 'equal cell frequencies' approach, or make the number of observations proportional across rows and across columns and use the 'unweighted means' approach.

The latter approach employed more subjects than the former, and so reduced error variance. For this reason, the unweighted means approach to the analysis of covariance was selected as the basic statistical design for this study.

In order to meet this requirement subjects were randomly dropped until there were nine boys and five girls in each group. The analysis, therefore, was based on the data from this subsample of 56 students and not on the complete sample of 80 students.

For each substudy the statistical design generated three hypotheses: two main effects - sex difference and treatment difference - which were the major hypotheses of the investigation, and an interaction effect - sex by treatment - which was a secondary hypothesis.

The hypotheses and results for each substudy are discussed

separately below in greater detail.

Substudy 1: Analysis of Covariance when Criterion Measure is Information Test Score

Hypothesis A (Sex Effect)

That there would be no significant sex difference on information test scores.

Hypothesis B (Treatment Effect)

That there would be no significant difference among the four groups in treatment effect on information test scores.

Hypothesis C (Sex by Treatment Interaction Effect)

That there would be no significant interaction effect between sex and treatment effects on information test scores.

A summary of the analysis of covariance is presented in Table 1. The critical value for a 0.05-level test on the sex difference is $F_{.95}(1,60) = 4.00$. Thus the main effect of sex difference is not statistically significant. Also, the interaction effect of sex x treatment is non-significant ($F(3,60) = 1.42$, p 0.05).

In the case of the treatment effect, however, the experimental data indicate statistical significant differences among the posttest scores for the four groups even after adjustment is made for the linear effect of the covariate ($F(3,60) = 3.2$, p 0.05).

TABLE I

RESULTS OF TWO-WAY ANALYSIS OF COVARIANCE ON INFORMATION TEST SCORES

Source of Variation	Degrees of Freedom	Mean Square	F
Sex	1	4.3017	1.891
Treatment	3	7.2812	3.200*
Sex x Treatment	3	3.2324	1.420
Within	47	2.2759	

*Significant at 0.05 level. $F_{.95}(3,60) = 2.76$.

The adjusted means for the groups are shown in Table II. Since the analysis of covariance reveals that the treatment effect among the four groups was significant, Tukey's multiple comparison procedure (Glass and Stanley, 1970, p. 384), was employed to test the significance of the difference between all possible pairs of adjusted means. A summary of the results is shown in Table. III.

TABLE II

ADJUSTED TREATMENT MEANS OF INFORMATION TEST SCORES FOR THE FOUR GROUPS

Live Performance	Video Tape	Commercial Film	Control
13.64	15.11	14.53	13.64

TABLE III

q-VALUE FOR TESTS ON DIFFERENCES BETWEEN PAIRS OF ADJUSTED TREATMENT MEANS OF INFORMATION TEST SCORE FOR THE FOUR GROUPS

	Live Performance	Video Tape	Commercial Film	Control
Live Performance		3.646*	2.208	0
Video Tape			1.438	3.646*
Commercial Film				2.208

*Significant at the .05 level. $.95^{q}(3,60) = 3.40$.

The q-tests following the significance treatment yielded two significant results, both at the 0.05 level (see Table III); live performance treatment versus video tape treatment (q(3,60) = 3.646, p. 05)., and video tape treatment versus no-treatment (2(3,60) = 3.646, p .05).

In comparing each method of teaching traffic safety to the no-treatment group, it can be observed that only in the case of the video tape do the results prove superior to the no-treatment group. There is no statistical difference between the live performance treatment group and control group, or between the commercial film treatment group and the control group.

It is interesting, also, to note the relative relationship among the three methods of teaching traffic safety. The results seemed to indicate that the video tape treatment was more effective than the

live performance, but that there was no significant difference between the video tape treatment and the commercial film presentation.

In conclusion, therefore, the findings suggest strongly that the video tape is the superior of the three methods of teaching traffic safety to these elementary school children.

Substudy 2: Analysis of Covariance when Criteria Measure is Attitude Test Score

Hypothesis A (Sex Effect)

That there would be no significant sex difference on attitude test scores.

Hypothesis B (Treatment Effect)

That there would be no significant difference among the four groups in treatment effect on attitude test scores.

Hypothesis C (Sex by Treatment Interaction Effect)

That there would be no significant interaction effect between sex and treatment effects on attitude test scores.

The results of the analysis of covariance on the attitude test scores are presented in Table IV. The F-ratio obtained for the sex difference factor is 4.43 which exceeds $F_{.95}(1,60) = 4.00$. Therefore, the probability, (p), of obtaining an F value as large as or greater than 4.43 if the null hypothesis for sex difference is true is less than 0.05. Hence, the null hypothesis for sex difference is rejected.

TABLE IV

RESULTS OF TWO-WAY ANALYSIS OF COVARIANCE ON ATTITUDE TEST SCORES

Source of Variation	Degrees of Freedom	Mean Square	F
Sex	1	26.124	4.430*
Treatment	3	4.8429	0.8215
Sex x Treatment	3	1.1391	0.2433
Within	47	5.8949	

*Significant at 0.05 level. $F_{.95}(1,60) = 4.00$.

Table V presents the adjusted mean scores for the boys and girls as well as the subsequent t-test. The critical t-value with N-2 (N = total sample size) degrees of freedom is $.99^{t}$ 60 = 2.39. The value of 24.66 (see Table V) exceeds this critical value. The result indicates, therefore, that boys have a higher mean posttest score than girls on the attitude measure even after controlling for differences in the pretest scores.

The critical value for both the treatment and the sex x treatment interaction effects is $F_{.95}(3,60) = 2.76$. The obtained values of 0.821 for the treatment effect factor and 0.243 for the interaction factor do not exceed this critical value. Hence, the null hypotheses in these cases are not rejected at the 0.05 level. That is, there seems to be no treatment and interaction effects.

TABLE V

SAMPLE SIZES, ADJUSTED MEANS AND t-TEST BETWEEN BOYS AND GIRLS ON ATTITUDE MEASURE

	Boys	Girls	t-Value	P
Sample Size	36	20	24.66	.01
Adjusted Means	18.62	16.95		
$.99^{t}60 = 2.39$				

Substudy 3: Analysis of Covariance when Criterion Measure is Skill Test Score

Hypothesis A (Sex Effect)

That there would be no significant sex difference on skill test scores.

Hypothesis B (Treatment Effect)

That there would be no significant difference among the four groups in treatment effect on skill test scores.

Hypothesis C (Sex by Treatment Interaction Effect)

That there would be no significant interaction effect between sex and treatment effect on skill test scores.

The analysis of covariance is summarized in Table VI. The F-values for sex difference ($F_{.95}(1,60) = 0.002$, p 0.05), treatment effect ($F_{.95}(3,60) = 1.478$, p 0.05), and sex x treatment interaction effect ($F_{.95}(3,60) = 0.919$, p 0.05) are in each case less than the corresponding critical values. Consequently, all three hypotheses are

not rejected at the 0.05 level. The results, therefore, suggest that in the case of the skill test scores there is no sex difference, no treatment effect and no interaction effect. No subsequent analysis was therefore undertaken.

TABLE VI

RESULTS OF TWO-WAY ANALYSIS OF COVARIANCE ON SKILL TEST SCORES

Source of Variation	Degrees of Freedom	Mean Square	F
Sex	1	.007	.002152
Treatment	3	4.8065	1.478
Sex x Treatment	3	2.9895	0.9191
Within	47	3.2532	
$F_{.95}(1,60)$ 4.00, F(3,60) = 2.76			

SUMMARY OF RESULTS

Hypotheses I

The results indicate that following the treatment there was a significant difference in the mean scores among the groups on the information measure. Further analysis seemed to suggest that the Video Tape treatment was the most effective of the three treatment methods. No such difference was observed on the attitude and skill measures.

Hypotheses II

There was a significant sex difference on the attitude measure after the treatment period with the boys having a higher mean score than the girls. No noticeable differences were found with respect to the information and skill measures.

A secondary objective of this study was to test the significance of the interaction effect of sex by treatment for each of the three criterion measures, information, attitude and skill. In each case the hypotheses were not tenable.

CHAPTER VI

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

SUMMARY

The Purpose of the Study

The purpose of this study was to investigate the effects of a short term traffic safety treatment with a sample of eighty grade two subjects in terms of increased traffic safety awareness in information, attitude and skill.

The Sample

As was previously stated the sample consisted of eighty grade two students. These students were randomly assigned to four groups and given the pretest, treatment and the posttest.

As was mentioned earlier the sample was taken from a normal classroom setting and, therefore, was not balanced for sex. However, in using the statistical approach (Unweighted means approach of Analysis of Covariance) described on page 39 of this thesis, which calls for proportionality of cell frequencies; (i.e., making the number of observations proportional across rows and across columns) subjects had to be randomly dropped until there were nine boys and five girls in each group. The statistical analysis, therefore, was based on the data from this subsample of 56 students.

The Instrument

The instrument consisted of three sets of tests measuring information, attitude and skill. These tests were designed by the author and administered to grade two children in Edmonton, Alberta.

The Method

The experimental groups were treated as follows:

Group One received the live performance safety act,

Group Two received the video tape of this performance, and

Group Three received the commercial safety film.

The control group received no treatment.

The pretest was administered to all eighty students on the same day. There was a time lapse of a day and then the treatment was given to all three groups, a half hour apart, also on the same day. Following the treatment there was another time lapse of a day; and then the posttest was given.

It was suggested by the teachers that the posttest be given again near the end of June, but due to the early closing of school, this was impossible to accomplish.

Findings

In terms of traffic safety gains the findings seem to indicate that following the treatment there was a significant difference among the groups on the information test. Further analyses seemed to indicate that the video tape treatment was the most effective of the three methods. No differences were observed on the attitude and skill

measures.

After the treatment period there was a significant sex difference on the attitude measure. The boys had a higher mean score. No noticeable differences, however, were found with respect to the information and skill measures.

DISCUSSION AND RECOMMENDATIONS

In dealing with the topic of teaching traffic safety to elementary school children, both literature and research were very limited. There have been various suggestions on how traffic safety may be taught, but the author was unable to find an extensive study that pertained to teaching traffic safety to elementary school children, especially here in Alberta.

In the presence of such limited literature and research it was difficult to determine the outcome of this particular study. It would be too self-assertive to draw any definite conclusions or generalizations on the basis of the findings of this study. Therefore, the following discussion and recommendations offered should be considered tentative until further research has been done in this area.

1. In the present study the degree of difference among the groups receiving treatment was significant for the information test only. When further statistical investigation was taken, it appeared that the group receiving the video tape treatment was the one that performed best on the information test. Various factors may have contributed to this. Fewster (1968) stated experience was the key-word

and that some audio visual aids may provide a "contrived experience, or simulation of reality" for a child. The above statement could be a valid reason why children receiving the video tape treatment improved in information. Attitudes and skills develop over a period of time. The time span of the above study was not sufficient to dramatically change the attitude and skill of the children in this experiment. Some literature suggested that children need first hand involvement for effective learning. The video tape, which included children reacting to an entertainment orientated traffic safety technique, may have provided a sense of involvement. This could have contributed to an increase in the students' information. It was suggested by some writers that a realistic approach should be used in teaching children traffic safety. The author is of the opinion that the video tape represented a television set which in today's world constitutes a very vital part of most childrens' reality. The live performance act and the film may have been a novel experience, although they both may have held the students' attention, the children, being more familiar with the television media, would respond quite differently to the video tape technique than to the other two techniques.

2. This particular study also showed that there was a significant sex difference on the attitude measure after the treatment period. The boys had the highest mean scores. As defined earlier an attitude is a predisposition to act in a certain way. It is a state of mind or feeling with regard to some matter. After reviewing the literature from the National Office of Vital Statistics (1961), it was found that

boys are:

(i) more active than girls and are involved in activities and situations that may cause potential injury,

(ii) expected to exercise more control (i.e., repress their emotions and cope with the situation).

From the above statements it may be expected that boys would have a different attitude in regard to traffic safety since the expectations for them are different than for girls. The National Safety Council (1963) indicated that boys are involved in more accidents than girls. This factor may also have contributed to the sex difference in attitude. Vilarido, Nicol and Heldreth (1969) indicated that twice as many boys ride their bicycles after dark than girls. Therefore boys would be more exposed to traffic hazards and may have had practical experience, which influenced their attitude as well as their responses to some of the attitude test items. In referring to accidents, it was suggested in some literature that girls live a more sheltered life than boys and, therefore, are less involved in accidents. This seemed to indicate that boys may have a tendency to react to traffic safety situations in a different manner than girls.

3. The greatest limitation in this present study as seen by the author was the length of time provided for the experiment. The researcher is of the opinion that the length of time was insufficient for the treatment to be effective with some students, or for some of the effects to be observed. It might be suggested that when teaching traffic safety in schools, it should be continued over a longer time

period.

4. The variation in the techniques used in this particular study seem to indicate that current research is needed to determine the future effectiveness of these techniques.

5. The present study seemed to indicate that some students apparently derived some benefit as a result of the video tape treatment. After further research in this area, it may be possible to predict more readily how this technique may be used more effectively in the schools.

Further research should be done in the area of teaching traffic safety to elementary school children and as previously mentioned, should be carried on over a more extended time span, utilizing a larger number of individuals. Certainly this study has lent support to the concept that traffic safety can be taught through entertainment, particularly through the means of video tape.

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APPENDICES

APPENDIX A

These 3 sets of tests were designed by the author to serve as a pre and posttest design, in order to determine students' information, attitude and skill in regards to traffic safety.

INFORMATION TEST

NAME _____

GROUP _____

Instructions: First read the question; then read the answers under the question. When you find the best answer, put a cross in the box next to that answer.

Remember choose the most correct answer.

Example: I am in grade _____

a) Five

b) Two

c) Three.

1. Cross the street_____

a) ☐ at the corner

b) ☐ in the middle

c) ☐ when the light is yellow

d) ☐ anywhere, as long as no cars are coming.

2. Always _____ when crossing the street.

a) ☐ run

b) ☐ walk

c) ☐ run slowly

d) ☐ look and walk

3. When walking down the street or road at night, it is best to wear _____

a) ☐ light red

b) ☐ warm clothes

c) ☐ light purple

d) ☐ light yellow

e) ☐ navy

4. A flashing red traffic light means _____

a) ☐ run across the street if cars are coming.

b) ☐ see if cars are coming

c) ☐ walk quickly across the street if there are no cars coming.

d) ☐ stop, look and walk carefully across the street if cars are coming

e) ☐ slow down and look.

5. Look left, Look right, Look _____again

a) ☐ left

b) ☐ right

c) ☐ both ways

6. Traffic signals have different colors. Yellow Means_____

a) ☐ look and go

b) ☐ wait and go

c) ☐ slow down and go carefully

d) ☐ stop

7. Green means _____

a) ☐ stop, look and go

b) ☐ stop and go

c) ☐ go

8. Red means _____

a) ☐ pause, look and go

b) ☐ Stop

c) ☐ go

d) ☐ stop, look and go.

9. What shape means stop?

a) ☐ 

b) ☐ 

c) ☐ 

d) ☐ 

10. When walking on the road, you should walk _____

a) ☐ on the right hand side, facing the traffic

b) ☐ on the left hand side, facing the traffic

c) ☐ on the side that is easier to walk on.

11. One should _____ before crossing the street.

a) ☐ look one way

b) ☐ look both ways

c) ☐ wait

12. One should never cross the street on a _____light

a) ☐ yellow

b) ☐ red

c) ☐ green

13. If there is a traffic light at the corner, wait until it turns _____ then cross the street.

a) ☐ red

b) ☐ blue

c) ☐ yellow

d) ☐ green

14. If the light says "Don't Walk", then one must _____

a) ☐ hurry across the street

b) ☐ run across the street

c) ☐ stop

d) ☐ walk quickly and carefully across the street.

15. Play _____

a). ☐ between parked cars

b). ☐ on the side walk

c). ☐ in the street

d). ☐ away from the traffic

16. When the light turns yellow, the next light will be _____

a). ☐ green

b). ☐ red

17. Accidents _____ happen

a) ☐ just

b) ☐ don't just

18. Your bicycle _____

a). ☐ should be one size bigger

b). ☐ should be small

c). ☐ should fit you.

19. When riding a bicycle, one should _____

a). ☐ ride double and on the left hand side of the road

b). ☐ ride single file, and on the left hand side of the road

c). ☐ ride single file and on the right hand side of the road

d). ☐ ride double and on the right hand side of the road.

20. When crossing an intersection, one should _____

a). ☐ ride their bicycle slowly.

b). ☐ ride their bicycle quickly.

c). ☐ push their bicycle.

21. When making a right hand turn while riding a bicycle one should _____.

a). ☐ signal, then look

b). ☐ look then turn

c). ☐ turn quickly

d). ☐ look then signal

22. When riding on the sidewalk

a) ☐ ride slowly

b) ☐ ride quickly

c) ☐ give the people on the sidewalk the right-of-way

d) ☐ ride near the edge.

APPENDIX B

ATTITUDE TEST*

Part A

Complete the following sentences

1. When hurrying home and I come to a corner, I usually _____.
2. When the traffic light is yellow, I always _____.
3. When crossing the street, I never _____.
4. When the light turns green, I always _____.
5. If my friend and I are playing ball and the ball rolls out into the middle of the street, I would _____.
6. I am hurrying home from my friends house because it has started to rain. The light has just turned yellow. I would _____.
7. I am walking home from school. The patrol boy is younger than I am. He tells me to stop for the light. I would _____.
8. When getting out of a parked car, I always _____.
9. I am late for school. The light has just turned green. I would _____.
10. When walking down the road, by myself, I always _____.
11. When riding a bicycle down the road, I usually _____.
12. My friend and I would like to play ball. There is a wide lane (road) right behind my house. We would _____.
13. My friend is waiting for me on the other side of the street. He is in a hurry. He tells me to cross in the middle of the street because there are no cars coming. I would _____.

---

*This test was given orally. The instructor read the first part of the sentence and the child completed the sentence.

14. I must cross the street in order to get home. There are two parked cars right in front of me. I would _____.

15. I am riding my bicycle down the street. I come to a corner. I want to cross the street. I will be safe if I _____.

16. My friend and I are playing tag. There are four parked cars near by. My friend hides behind one of the cars. I would _____.

17. When walking in the dark, I usually _____.

18. When crossing the street at a corner, I always _____.

19. When I am around a lot of traffic, I usually _____.

20. The bus is at the stop. I want to catch it up town. I run to the corner. Just as I get there, the light turns yellow. I would _____.

21. When riding a bicycle on the sidewalk, I usually _____.

22. I usually play _____.

23. It is not safe for me to _____.

24. When the traffic light is red, I always _____.

25. If my brother asked me to give him a ride to the store on my bicycle, I would _____.

ANSWER SHEET FOR ATTITUDE TEST

APPENDIX C

SKILL TEST: This test was designed to determine your ability to perform, or respond to certain traffic situations. (Each question will be explained carefully to the child).

1. A set of traffic lights -

   Each traffic light will be flashed separately and instantly.

   The child will have three seconds to tell what each light means.

2. A Street map -

   Block one is the school.

   Block two is the child's home.

   The child will have three seconds to show where he would cross the street in order to go to school.

3. A Situation -

   You are walking home from school.

   The streets are icy.

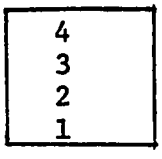
   You want to cross the street.

   You look both ways; nothing is coming.

   You start across the street. Suddenly a car appears and you have to stop or move out of the way.

Instructions: The Instructor will say - "Suddenly a car is coming and you have to stop", when I say "Stop", I will drop a marker.

You are to catch the marker as quickly as you can.



Example of the marker

This exercise will be repeated three times and the responses will be averaged.

4. The Wisc -

The picture completion exercise will be given to each child.

5. You are playing ball in your back yard at home.
Your ball rolls under the fence and out into the traffic.
Show me what you would co.

(Using an imaginary street that will be marked off in the classroom, a ball will be rolled out into the street to see how the child reacts).

SKILL TEST

1. A set of traffic lights

   a.

   b.

   c.

2. A street map

   a.

3. A situation

   Responses

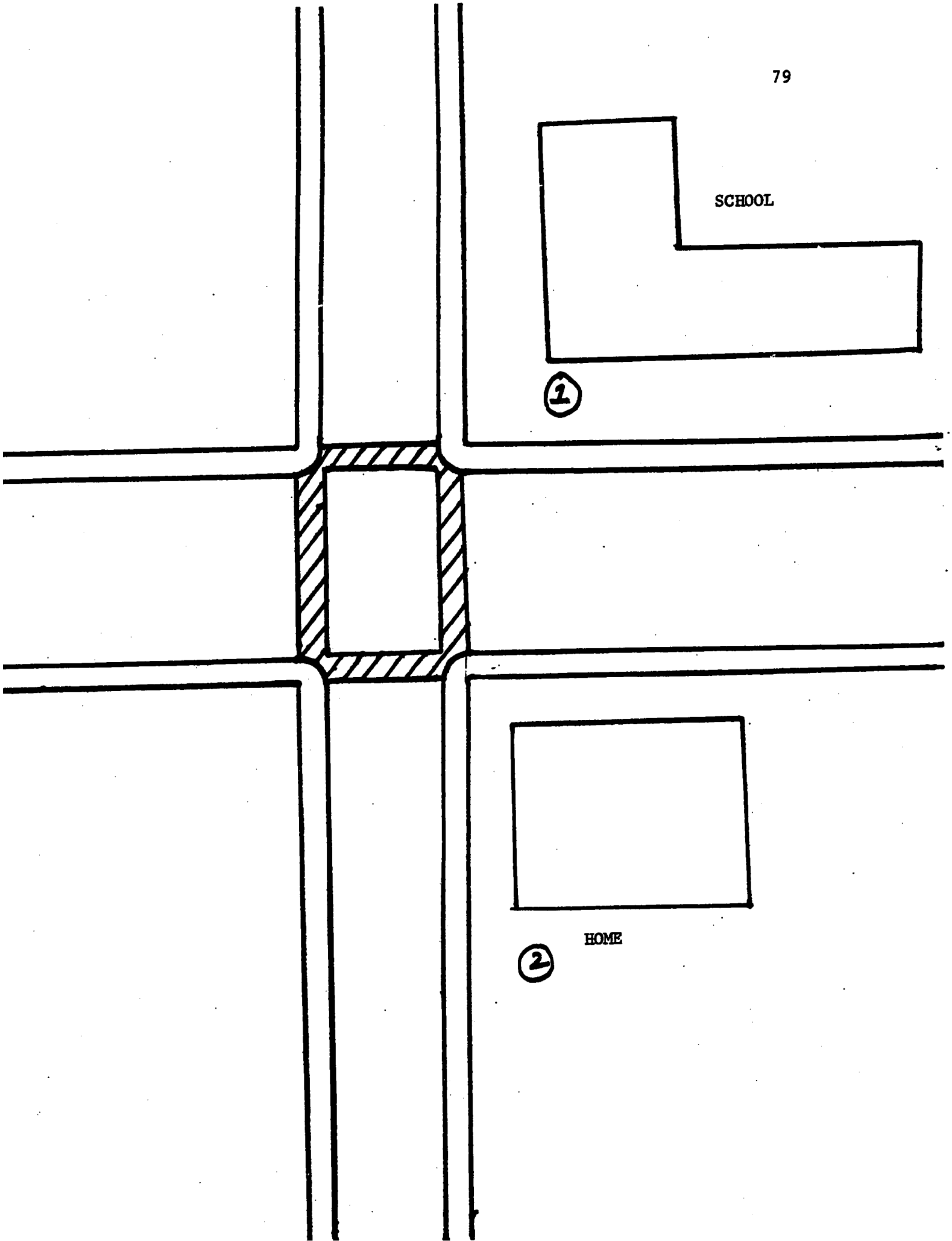
   a.

   b.

   c.

4. Answers are on a separate sheet for question four.

5. The Child.....


SCHOOL
1
HOME
2

4. WISC PICTURE COMPLETION

Score 1 or 0

1. Comb
2. Table
3. Fox
4. Girl
5. Cat
6. Door
7. Hand
8. Card
9. Scissors
10. Coat
11. Fish
12. Screw
13. Fly
14. Rooster
15. Profile
16. Thermometer
17. Hat
18. Umbrella
19. Cow
20. House

Total .....

APPENDIX D

305 - 10820 - 78 Avenue,
Edmonton, Alberta.
June 30, 1972.

To: Edmonton Public School Board Pupil Personnel Staff,
Principals and Grade Two Teachers at the
King Edward School:

The writer wishes to acknowledge the cooperation and assistance that you gave in order to make the completion of this study possible.

This thesis has evolved with your help and interest, for which I am grateful.

Sincerely yours,

Norma J. Bowen.