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Driver Education in The Minnesota Schools and its Effect on The Teacher and Student

Melvin C. Lawson

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DRIVER EDUCATION IN THE MINNESOTA SCHOOLS
AND ITS EFFECT ON THE
TEACHER AND STUDENT

16

A Thesis
Submitted to the Faculty of the Graduate School
of the
University of North Dakota

by
Melvin C. Lawson
"

In partial fulfillment of the requirements for the Degree of
Master of Science in Education

August, 1954

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This thesis, submitted by Melvin C. Lawson as a partial fulfillment of the requirements for the Degree of Master of Science in Education at the University of North Dakota, is hereby approved by the Committee of Instruction, under whom the work has been done.

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The author wishes to express his grateful appreciation for the valuable assistance given by the many persons cooperating in this study. He wishes to acknowledge his indebtedness to Dr. A. J. Bjork, Professor of Education at the University of North Dakota, whose constant guidance and generous help carried the entire work to its completion.

To his wife, Neva, the author gives thanks for her assistance.

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Melvin C. Lawson

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CHAPTER I
THE PROBLEM AND ITS SCOPE

Introduction

All students sometime during their life span will come in direct contact with present automobile traffic problems as a driver, passenger or pedestrian. A lack of skill and proper training of today's drivers accounts for a great part of the injuries and fatalities that occur as a result of automobile accidents. Because the students of the high schools will become the drivers and pedestrians of tomorrow the school as a supplemental agency should assume a large portion of the responsibility for a downward inclination of the traffic accident rate. With the complicated traffic patterns and problems that now exist it hardly seems adequate to rely on the trial-and-error method of learning to drive. A more feasible approach would be through an organized system of instruction. Without this organized system of training the young driver, if he does receive help, may tend to pick up all the mistakes and unsafe practices of the one teaching him.

Statement of the Problem

The problem which concerns this investigation may be stated as follows: Driver training in the Minnesota high schools and

its effect on the teacher and pupil with reference to time, schedules, practice areas, study units and certification.

Scope of the Problem

Driver education has begun to find its way into more school systems of Minnesota as indicated by the State Department of Education. Studies made in several of the states show much of the possibility in reducing automobile accidents through education.

A study of the accident records from June, 1939 to November, 1941 of 1,880 Cleveland High School students taking driver education and training courses sponsored by the Cleveland Automobile Club and 1,372 students receiving no such instruction indicates: "Generally speaking, it can be said that training reduced accidents for men by 50%."¹ Such statistics as these quite definitely indicate the possibility of the formal driver education classes.

Source and Treatment of the Data

Questionnaires were sent to driver educators in 182 Minnesota schools that now offer a full course in driver education. Schools affiliated with teachers' colleges, private and parochial schools were not included. Schools that were known to have driver education only as part of the summer recreation program were not included in the survey. Of the 182 questionnaires sent

¹ Driver Training Reduces Traffic Accidents One Half, p. 13. Washington, D. C.: American Automobile Association, 1945.

145, or 79.1 per cent, were returned.

Thirty-five questions were included in the survey, of which nine were of the yes and no type, five were of the check type, twenty-one were quantitative as to number, per cent or time. A copy of this questionnaire is included as Appendix A.

Delimitations

This study showed some of the shortcomings of the questionnaire method of approach, especially in examples of misinterpretation of the question and the lack of continuity of thought on some questions. Because this study concerns itself with the schools teaching the full course in driver education there was no attempt to survey those schools that only teach the classroom portion of the subject or those that just teach the adult program.

In spite of the fact that the questionnaire had its faults this method was the only means that seemed feasible as to time, money and the relative effort expended in comparison to the better results obtainable by personal interview. However, several personal interviews were made with the driver educators in the Karlstad area.

Definition of Terms

"Driver Education" refers to all those learning experiences provided by the school for the purpose of helping students to learn to use motor vehicles safely and efficiently.

"Classroom Instruction" in driver education programs refers

to those learning experiences which are provided elsewhere than in an automobile.

"Practice Driving" or "Behind-the-Wheel" refers to learning experiences in driver education provided for the pupil as an observer and student driver in an automobile.

Previous Research

Strand¹ in 1953 made a questionnaire study to determine the status and function of driver education in Minnesota high schools. Questionnaires were distributed to 400 public schools and replies received from 332 or eighty-three per cent. Two hundred twenty-three of the schools reporting were teaching the entire program with sixty-eight of these schools scheduling driving during the school day. Seventy-two per cent of the schools pay their instructor a yearly salary. One hundred per cent of the instructors had attended a certified driver training instructor's course. Fifty-five per cent of the schools responding use film and film strips. Eighty-six of the schools do not offer an adult class in conjunction with their driver education program. Strand concluded that more of the smaller school systems should have the program and that a larger per cent of schools should offer adult driving courses.

¹ Vernon O. Strand, "The Status and Function of Driver Education in Minnesota High Schools", 143 pp. Unpublished Master's Thesis, University of North Dakota, Grand Forks, North Dakota, 1954.

CHAPTER II

DRIVER EDUCATION

A Brief History

The first course for the preparation of high school teachers in this field was conducted by Professor Amos E. Neyhard, American Automobile Association Consultant on Road Training, pioneering in 1936 at the Pennsylvania State College¹. Public acceptance on a national basis has been widespread and rapid from the first driver training program with the help and coordinated efforts of the Institute of Public Safety of the Pennsylvania State College, the American Automobile Association, the National Conservation Bureau and the Center for Safety Education of New York University. These foregoing national organizations have spent a great deal of time and money in furthering the program.

"Seeking to further the driver education and training programs, and realizing that one of the basic requirements was a supply of trained teachers, the American Automobile Association instituted in 1936 a plan for training teachers. Since that time some five thousand teachers have been trained. Up until the

¹ Eleven Comprehensive Services in Driver Education, p. 1. Washington, D. C.: American Automobile Association, 1949.

the current year this work was supported in part by grants from the Automotive Safety Foundation."¹

Some of the basic practices for the teaching of driving were set up at this time and are still in practice. The program consists of two major phases of the work, namely: classroom instruction and behind-the-wheel instruction. These two are so closely coordinated that neither one can be taught alone without losing most of the teaching results.

A general procedure has been to teach the classroom before the students get any driving perhaps due in a large part to the ease in which schedules can be fitted into the regular curriculum. According to W. L. Neuenschwander, Director of Safety Education at Akron, Ohio the two should run concurrent although they at Akron compensate for this lack by a review of the classroom work when the student is enrolled in practice driving. Akron schools are pioneers in the field of driver education which began in 1938 as an elective. In the spring of 1948 driver education was resumed there after an interruption during World War II.

Limiting factors of securing automobiles with full dual controls including steering, shift, horn, brakes, clutch, accelerator and rear view mirror could have made the cost beyond the reach of most schools. The Studebaker Corporation did sell a few of these cars on special order mostly to commercial driving agencies who would teach adults to drive for certain fees. The

¹ Norman Key, Education for Traffic Safety, p. 23. Washington, D. C.: American Automobile Association, 1949.

"basic dual control" was developed in 1938 by the American Automobile Association and operates auxiliary clutch and brake pedals in connection with the regular driving system. These may be installed at very low cost to the school and without greatly changing the physical make-up of the car. Two prime reasons for the auxiliary clutch and brake are: (1) safety to the student and instructor should an emergency arise and (2) teaching of the proper foot action technique to be used in starting the car in motion and stopping the automobile.

Commercial companies were quick to grasp the value of having young potential drivers use their make of automobile as the one in which they received their training and so there was little time lost in making cars available to the schools on a loan basis. In 1938 the Pontiac Motor Division and the General Motors Corporation began furnishing at no cost new automobiles to schools that would maintain a full course in driving with the necessary high standards of teaching. These cars were distributed through the American Automobile Association with more restrictions placed upon the classroom instruction and the driving practices. As was the case of Akron High School the free loan of automobiles was discontinued during World War II but has since gained tremendously. In Minnesota during the school year 1950-51 there were 177 cars on loan from six of the major car manufacturing companies.

During the school year 1950-51 there were a total of 19,766 students enrolled in the course. Of these, 7,909 were receiving

both classroom instruction and behind-the-wheel training. During the school year 1951-52 there were a total of 28,369 students enrolled in some form of driver education. Of these, 8,798 were receiving both classroom instruction and behind-the-wheel training. During the school year 1952-53 there were a total of 34,611 students enrolled. Of these, 11,352 received both classroom instruction and behind-the-wheel training.

CHAPTER III
ASPECTS OF DRIVER EDUCATION

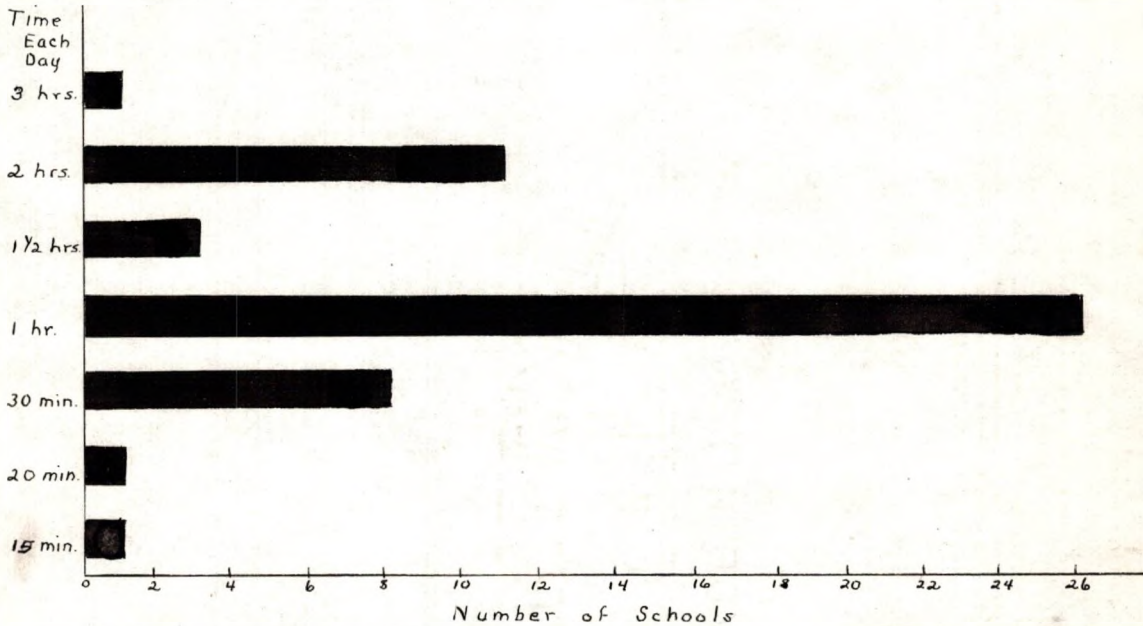
Effect on Teacher Time and Salary

Some of the first educators to feel the need of education for safe living through driver education were the classroom teachers. In the 182 schools surveyed there were 15 of the 145 answering the questionnaire who were doing the teaching upon their own time just to get the program started. According to a letter received on July 17, 1951 from Joseph Intorre of the Pennsylvania State College the consequences of starting the program through the teachers own efforts without extra compensation or acceptance into the curriculum may become grave. It then becomes difficult for him to get the school people either to install the course as part of the curriculum or to pay for overtime work.¹

In a curriculum where most of the teacher and pupil time are fully occupied there occurs much difficulty in finding a place and time for an additional subject. With most schools having regular hours from 9:00 A.M. to 4:00 P.M. with an hour for lunch period there leaves two or less open periods for which

¹ Infra, Appendix B.

the student has not already scheduled a class. Fifty-three of the schools questioned could not schedule enough time during the regular school day for the course and were forced to teach during other hours.



GRAPH 1. TIME TAUGHT OUTSIDE OF REGULAR SCHOOL HOURS BY THE FIFTY-THREE SCHOOLS

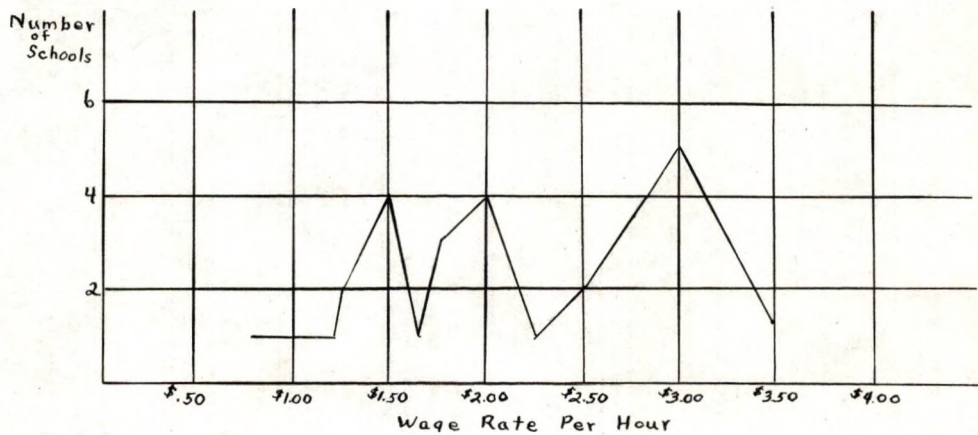
The maximum number of hours of any school illustrated by the graph was three hours spent outside of school time and the minimum was fifteen minutes. Twenty-six schools occurred in the one hour bracket. If these twenty-six schools would hold driving class every school day of the semester the needs of an additional eleven students a semester could reach the graduation standards of an eight hour behind-the-wheel requirement.

All hours illustrated do not include those spent by the teacher on Saturdays, Christmas vacations, Easter vacations or

during the summer months. Schools that indicated time spent during the foregoing did not average out the amount of time spent per day but rather stated some time was spent during those days.

The problem of finding a place for the course in the curriculum seems quite significant when there were fifty-three of the one hundred forty-five schools, or 36.5 per cent, who needed to spend hours outside of the regular school day to get the course taught.

Twenty-six of the fifty-three schools reporting extra time after school were willing to pay the teacher for time spent. A wide range of figures resulted.



GRAPH 2. HOURLY PAY SCALE FOR TIME SPENT OUTSIDE REGULAR TEACHING HOURS

As evidenced by Graph 2 there seems no standard by which teachers are paid for extra work. The range is from \$.75 an hour to \$3.50 with the median wage at \$2.00 an hour. There should be little difference in rate as there seems no difference in the kind, amount or time that would be reason for this wide range.

In several of the schools the salary of the teacher was increased by a lump sum rather than to break it down on an hourly basis. Other schools offer the driving portion of the course during the summer months and the teacher receives a certain amount with no specified number of hours stated by those answering the questionnaire.

Teacher teaching load increased in seventy-two cases of the one hundred forty-five reporting. Three schools did not answer and seventy schools indicated that driver training did not increase the teaching load.

Of the schools offering driver training there are a few large enough to have more than one teacher to handle both classroom and behind-the-wheel instruction. Fifty-five of the schools have separate teachers to handle the classroom and behind-the-wheel teaching, eighty-eight have just one teacher doing all the driver education and three schools did not answer. Certainly the number of students would determine the need for one or more teachers for the course.

Grade Placement and Subject Field

Conventional patterns of class arrangement with classes meeting each day for a designated number of minutes and lasting for the whole semester have not been used. For the classroom work the State Department of Education recommends thirty class periods of one hour each.¹ This kind of arrangement would leave

¹ An Administrator's Guide for Driver Education, p. 2. State of Minnesota: Department of Education, 1948.

two six-week periods without classroom work unless in correlation with some other subject. If behind-the-wheel is then offered the maximum number of students who can be instructed each hour is four.

When the course is offered in correlation with another course there appears a wide range of correlated subjects such as is shown in the following Table I.

TABLE I
CORRELATION WITH OTHER SUBJECTS
IN THE SCHOOL PROGRAM

Correlated Subject	Frequency		Correlated Subject	Frequency	
	Number	Per cent		Number	Per cent
Physical Education	2	3	Social Studies	3	4
General Science	40	56	Commercial Civics	1	1½
Business Relations	6	9	Biology	1	1½
Health	16	22	Orientation	1	1½
History	1	1½			

Of the wide range of subject fields that the course may occur in, there are very few that are offered on the ninth or tenth grade level that are not included. There are several units in the general science field that are somewhat in the order of driver education and this may account for fifty-six per cent of the schools correlating it in this manner. The State Department of Education has set up in Curriculum Bulletin No. 10 for a

health and safety course on the ninth grade level to include thirty hours of classroom work. This would account for the right number of hours other than time for behind-the-wheel which could then be given during free time of the student. As indicated by the table there are twenty-two per cent of the schools that offer driving as part of the health course.

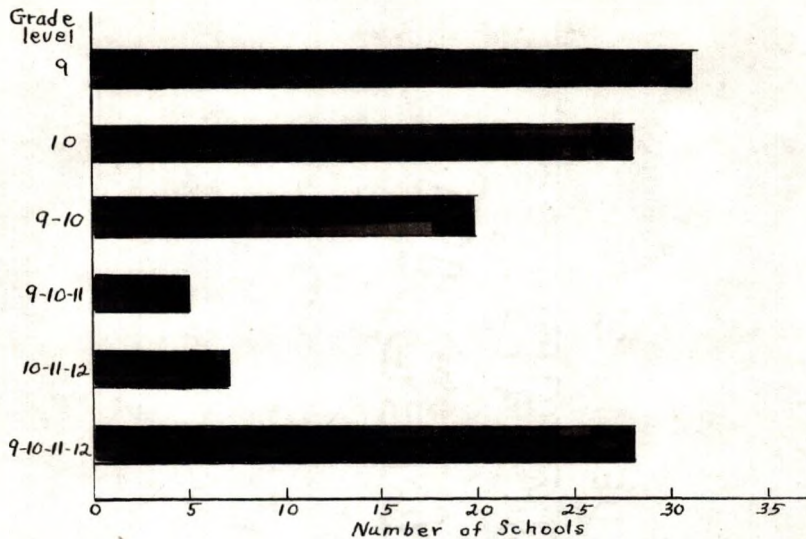
The results of the survey show that seventy-two schools offer the course as a separate subject and seventy-one in correlation with some other subject. Two schools failed to answer.

A complete course in driver education could not very well be offered on a ninth grade level and have full enrollment of all students. Minnesota laws require a student to have reached his fifteenth birthday before he can drive on the public streets and highways.¹

Seventy-three schools questioned were teaching classroom and driving the same year, sixty-eight taught them on separate years and fourteen schools did not report. Many schools offer classroom instruction one year and then after the student is old enough he gets behind-the-wheel training. These requirements on age determine in a large part the grade placement of the subject. If a unit on safety driving were taught in a required class there would be no way of completing the required subject if the student were not old enough to drive. As a result many

¹ Driver's Manual, p. 4. State of Minnesota: Department of Highways, 1950.

schools offer the subject on several levels as indicated by the ensuing Graph 3.



GRAPH 3. GRADE PLACEMENT OF DRIVER EDUCATION IN 118 MINNESOTA SCHOOLS

There appears a direct split in the 118 schools that are teaching the course in a combination of grade levels and those teaching the course for one grade only. The total number of schools teaching the course on the ninth and tenth grade level is fifty-nine and the total number of schools teaching it on any combination of the upper four grades is also fifty-nine. The greatest number in any one classification falls in the single class of the ninth grade with a total of thirty-one schools using this grade placement. The least number in any classification falls in the ninth, tenth and eleventh grade with only five schools using this grouping.

Grade placement then appears to make little difference except to meet the needs of the individual school.

TABLE II
UNDERGRADUATE FIELD OF THE INSTRUCTOR

Subject Field	Frequency		Subject Field	Frequency	
	Num- ber	Per cent		Num- ber	Per cent
Physical Education	33	³ 26	Health ¹⁷ / ₄₆	3	³ 2.7
Mathematics	6	5	Physics	1	.8
Social Science	17	13	Political Science	1	.8
Industrial Arts	15	11	Art	1	.8
Science	34	27	Biology	2	1.6
Music	3	2.7	Guidance	1	.8
Commercial	4	3	Sociology	1	.8
History	6	5			

All instructors whether teaching the classroom work or behind-the-wheel are included in Table II. Twenty-six per cent or about one-fourth of the teachers included were teachers of physical education. Twenty-seven per cent of the teachers were those in the field of science which corresponds with the facts presented in Table I which indicated science as the major subject correlated with driving. There appears to be a significant difference in the number of instructors who have background work in the required subject fields and those who have work in the vocational or elective fields; for instance, physical education (a required) has twenty-six per cent and biology (an elective) has 1.6 per cent. Perhaps a larger number of students can be

reached in required subjects than in subjects of the student's choice.

Some research has been done on the qualifications of teachers and also the educational background necessary for the best teachers. Few significant conclusions as to subject field background have been drawn but significant teacher qualifications are evident.

In order to become certified in Minnesota these requirements must be met:

Any teacher holding a legal Minnesota teaching certificate may be qualified to give behind-the-wheel instruction in driver training through (1) having satisfactorily completed the American Automobile school of instruction (40 hours) or (2) having satisfactorily completed a similar course approved by the State Department of Education.

It is suggested that the following points be considered by an administrator who is considering assigning a teacher to driver education:

- A. He should have had satisfactory driving experience of at least two years and hold a valid Minnesota driver's license.
- B. He should be convinced of the necessity of providing beginning drivers with systematic behind-the-wheel training.
- C. He should have an interest in this field of training and a desire to do this work.
- D. He should have an understanding of his pupils and a keen interest in working with them.
- E. He should be a good teacher. ¹

Because behind-the-wheel is constantly before the public its accomplishment, as measured by the parents, depends more on

¹ An Administrators Guide for Driver Education. pp. 3-4. State of Minnesota: Department of Education, 1948.

the personality, character, ability and professional preparation of the teacher than most areas in education. In considering the before mentioned traits they would fit very well into any area of teaching more as general statements of qualities to look for in a teacher than specific qualities that are peculiar only to driver education teachers.

Age differential of children in the same class provides for peculiar circumstances in scheduling classes for all students. In order to facilitate the scheduling and also to get a more flexible program to meet the individual needs of students sixty-eight schools questioned have the subject matter taught one year and behind-the-wheel the next. Sixty-three schools teach both the same year. With the subject matter taught on a ninth grade level there are a few who do not reach their fifteenth birthday early enough to qualify for driving. In using a two year span of time for the course most of the students should then have the opportunity of driving. In using a one year plan the underage student can get some of the necessary driving experience in areas that are not designated as streets and highways of Minnesota. This plan also eliminates the necessity of a review of the subject matter the second year before he begins his driving practice.

Although the greatest per cent of the students fall within a chronological pattern with reference to age and grade placement there are always the exceptions. These exceptions in the driving class do not create a problem if the student is over fif-

teen. On the other hand, if the student has not reached his fifteenth birthday the behind-the-wheel instruction is postponed.

In the 145 schools returning questionnaires there were 7,688 students in driving courses. The age groupings were:

- a. 1,938 students under fifteen years
- b. 3,841 students fifteen years
- c. 1,909 students sixteen years and older

The 1,938 or twenty-five per cent of the students, in this group of 7,688 will have to wait until their fifteenth birthday before taking behind-the-wheel training. Static periods of this nature make a rather loosely scheduled testing and driving program.

A Brief Description of Psycho-Physical Testing Devices

In the distance judgement test the ability to judge distance is measured by lining up two movable miniature cars with a fixed car in the center. By means of a mirror placed at ten feet an apparent distance of twenty feet is obtained. Constant illumination is provided for by four twenty-five watt lamps.

The visual acuity test consists of four letter charts each having fourteen letters representing visual acuity from 20/100 to 20/13. The use of a mirror gives an apparent distance to the letters of twenty feet while requiring only about twelve feet of room space.

In the glare acuity test the time lapse between subjecting the student to a glaring light and his recovery to read normally

gives a rough measure of ability to see when faced with glaring head lights.

The night vision or night adjustment consists of a test target at the end of a thirty-six inch dark box with a movable screen on which are mounted four radium buttons. Visibility of the target is gradually increased by moving the screen toward the target until the direction of the black and white stripes can be discerned. The distance the screen is from the targets at that point determines the score.

The color vision test most commonly used is the Ishihara test. This consists of several circular areas filled with spots and dots of various colors. Spots of a given color are arranged in patterns to form numbers. Persons who are color blind are unable to distinguish the numbers from the background.

The field of vision test is made in an arc of 200° with two small white targets moved up on either side while the student looks straight ahead. The angle at which these objects are first noticed is then read from a scale on the test.

The eye dominance test is taken on a device that has a cone which is focused on a line in the background. The movable aperture should be correctly lined up with the vertical white line in the background. The degrees of variable left or right of the white line determines the dominant eye.

The reaction time test consists of a brake, clutch, accelerator, red light, green light and timer motor. In operation the motor runs on 110 volt alternating current. Pressure on the

accelerator closes a circuit which turns on the green light and starts the motor. This motor starts a timer hand traveling around a dial that is located on the side of the test box. As the timer hand passes "0" on the dial the red light flashes. The brake pedal is pressed immediately and this stops the time hand so that the reaction time may be read.

The strength test is done with a dynamometer since grip is an index of strength.

The steadiness test consists of a vertical slot between two brass strips. A stylus $1/8$ inch in diameter is moved down through the slot which tapers from $3/8$ inch at the top to $1/8$ inch at the bottom. Unintentional contact with the sides flashes the light and indicates the score or hand steadiness.

Some of the psycho-physical aspects of the driver have been composed by Professor Howard R. DeNike of the E. Stroudsburg State Teachers College, Pennsylvania and should be considered in judging the student driver.¹

¹ Howard R. DeNike, A Course of Study in Safety Education for Efficient Living, pp. 65-67. Minneapolis, Minn.: Burgess Publishing Co., 1953.

PHENOMENON OR TRAIT	LIMITATION OR DISABILITY	CORRECTION OR COMPENSATION	TEMPORARY OR PERMANENT	TEST OR MEASUREMENT
<p>VISUAL ACUITY ability to discern sharply some object approximately 85% impression through eyes. 20% of traffic violators have visual defects.</p>	<p>Three Conditions: 1. MYOPIA-nearsighted 2. HYPEROPIA - farsighted 3. ASTIGMATISM - distorted vision, irregular curvature of eyeball.</p>	<p>Glasses Occulist Exercises(?) Diet (?) Lights (?)</p>	<p>Usually permanent - age makes a difference</p>	<p>SNELLEN EYE-WALL CHART EGYPTION E CHART PROJECTO-CHART AAA GLARE ACUITY TESTING DEVICE AAA VISUAL ACUITY TESTING DEVICE</p>
<p>PERIPHERAL OR SIDE VISION Average 170-190</p>	<p>TUNNEL VISION Leon Brody Study (Less than 140°)</p>	<p>Move head Avoid night driving Avoid fatigue Reduce speed</p>	<p>Usually permanent</p>	<p>AAA PERIPHERAL VISION DEVICE BROMACH PERIMETER ARMY PERIMETER N.Y.U. PERIMETER</p>
<p>COLOR VISION 4-10% male drivers handicapped red green One in 20 had difficulty in distinguishing color Ratio 5-1 (men versus women)</p>	<p>COLOR BLINDNESS</p>	<p>Watch traffic Learn to distinguish varishades of gray Memorize position of lights Diet (?)</p>	<p>Permanent</p>	<p>AAA COLOR TESTER STILLING TEST (colored yarn) ISHIHARA (series of cards) used commercially</p>

PHENOMENON OR TRAIT	LIMITATION OR DISABILITY	CORRECTION OR COMPENSATION	TEMPORARY OR PERMANENT	TEST OR MEASUREMENT
VISUAL FUSION OR IMBALANCE	Lack of fusion Eye dominance (one-eyed drivers)	Glasses (for weak eye) Exercises Eye shield Surgical operation	Permanent	SNELLEN CHART (not too accurate) KEYSTONE TELI- BINOCULAR AND DR. BETES SLIDES
NIGHT VISION AND RECOVERY FROM GLARE	Night blindness (varying degrees) Glare sensitivity	Rest eyes Avoid night driving Watch side of road Tilt light beam down	Temporary and/or permanent	AAA GLARE ACUITY DEVICE FELDMAN ADAPTO- METER
STRENGTH Depends upon: 1. Nourishment 2. Rest 3. Exercise (Activity) STONE FULL POWER CAR CONTROL FOR AMPUTEES	Weakness Lameness Amputation of leg or arm	Corrective exercises Check with doctor Change diet Elimination of waste Artificial limbs	Both tempo- rary and permanent	DYNAMOMETER DR. ELKOW'S STUDIES AND PROCEDURES FOR TRAINING AMPUTEES

PHENOMENON OR TRAIT	LIMITATION OR DISABILITY	CORRECTION OR COMPENSATION	TEMPORARY OR PERMANENT	TEST OR MEASUREMENT
<p>REACTION TIME should not be over-emphasized, more important is good attitudes and skills</p> <hr/> <p>Following increase reaction time</p> <ol style="list-style-type: none"> 1. Alcohol 2. Age 3. Tobacco 4. Drugs 5. Fatigue 6. Fumes 7. Eye strain 8. Low visibility 	<p>Unusually slow reaction time Average reaction time 1/2 - 3/4 second (0.75 sec.)</p>	<p>Reduce speed (drive slower) Be alert (observant) Avoid hurrying</p>	<p>Permanent (Effect of training in sports?)</p>	<p>AAA BRAKE REACTION DETONATOR AAA SIMPLE FOOT REACTION TESTING DEVICE SIMPLE TELEGRAPH KEY TEST</p>
<p>DEPTH PERCEPTION ability to judge distance</p>	<p>Alcohol throws it off Poor vision handicap Eye strain Effect of drugs Fatigue Poor ventilation in car Poor illumination</p>	<p>Avoid eye strain Glasses Use caution in traffic Avoid night driving Drive slowly Try to avoid smoking, drinking, drugs</p>	<p>Generally permanent</p>	<p>AAA DISTANCE JUDGEMENT TESTING DEVICE U.S. ARMY ROD TEST</p>

Determining the Use of Psycho-Physical Testing Devices

Some of the preliminary aspects of driving should be along the line of physical evaluation or determining personal limitations. Without much question good vision is a must for driving because where the moving automobile goes depends on the driver. His eyes must furnish him with signals of color, distance, speed, position and number of automobiles. Pedestrians, signs and signals are also part of the responsibility of the eye.

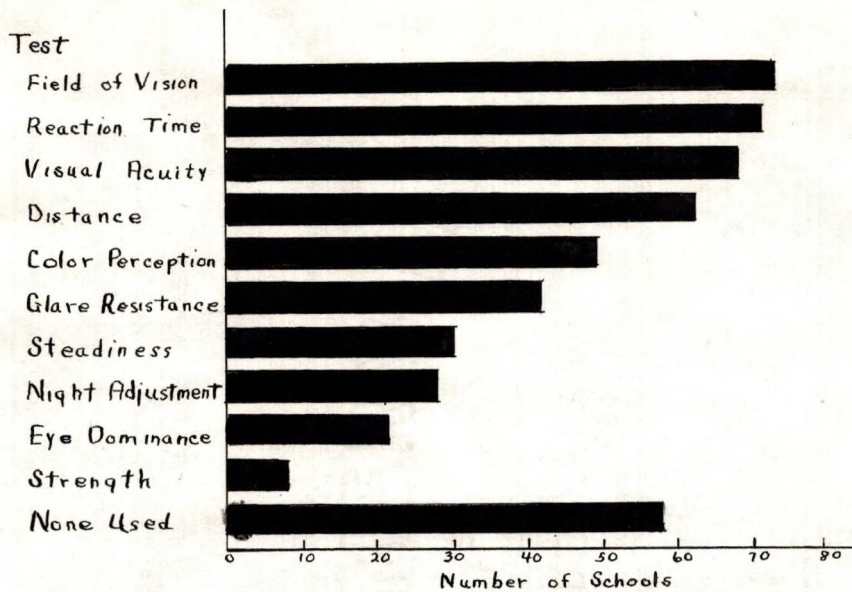
With some mechanical devices the student's vision may be checked rather accurately. Minnesota laws require visual acuity and color perception tests as part of its driving tests. The results of the questionnaire indicate that sixty per cent of the schools answering used some kind of psycho-physical testing device.

With normal vision one sees an object in three dimensions and is able to judge distance, shape and size. Distance judgement affects the inexperienced driver and also those who do not have the ability to judge distance. Some limitations on speed and space between automobiles can be used by students who fall below normal in the distance tests.

The most widely used testing device is the field of vision with seventy-three schools participating. The strength device was used the least with only eight schools using this test.

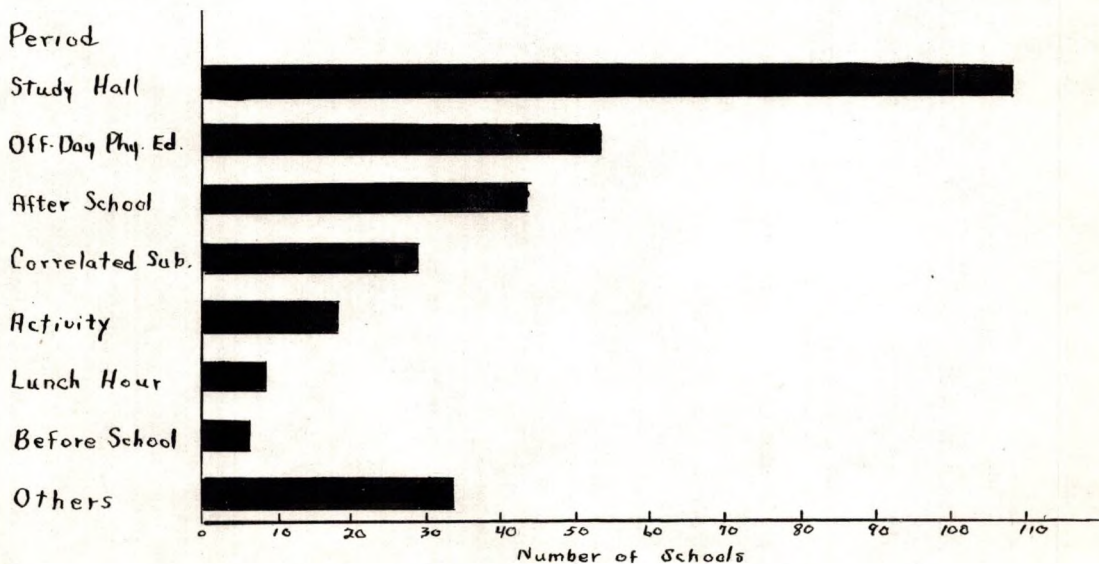
Determining When During the School Day Behind-the-Wheel is Scheduled

Behind-the-wheel practice in driving is limited to four stu-



GRAPH 4. PSYCHO-PHYSICAL TESTING DEVICES IN 148 MINNESOTA SCHOOLS

dents at a time with one doing the actual driving and the other three observing. The time allotment for each group of four ranges within the limits of an hour. A great variety of school periods are therefore used to accomplish the driving aspect of this program.



GRAPH 5. PERIODS IN WHICH DRIVING IS PROVIDED

One hundred and eight, or seventy-four per cent, of the schools make use of the study hall periods for driving. This is perhaps due in part to the ease with which a student's schedule of driving can be fitted into his academic class work. Using the study hall period of the student twice a week would give him a maximum of thirty-six hours of experience (nine hours driving and twenty-seven hours observation) on a semester basis. This is 1.77 hours more than the state average of 7.23¹. Nine hours has been recorded as a maximum for several reasons:

1. Inclement weather and unable to drive
2. Illness of student
3. Holidays
4. Schedule conflicts (general assemblies, music festivals, plays, etc.)
5. Tests for drivers' licenses.

The above listed reasons over a period of a semester would perhaps cut the number of hours to 7.23.

Fifty-three, or thirty-six per cent, of the schools use the off-day physical education period. As most schools schedule physical education only two or three times a week there are a few open periods of the week that may be used for other work. This extra time fits rather nicely with driving and may be the reason for this significant per cent of the schools using the off-day physical education periods. This kind of arrangement would also separate the class into boy and girl groups.

Forty-three, or twenty-nine per cent, of the schools use periods after school. Periods after school may work well in a

¹ Driver Education Facts, p. 1. (Code XIV -B-260) State of Minnesota: Department of Education, Division of Health, Physical Education, Recreation and Safety, 1953.

metropolitan area but where there are rural students these after school periods are prohibitive. There seem to be few conflicts after school and this may be the answer in scheduling for other schools.

Twenty-nine, or twenty per cent, of the schools use the time scheduled for the correlated subject. This arrangement would seem the most ideal as far as scheduling pupil time was concerned but the question of what to do with the remaining portion of the class while the four students were driving would make this kind of schedule negative in aspect in a small school.

Eighteen, or twelve per cent, of the schools use the activity period. As a great number of the schools do not have a period so specifically named the above mentioned per cent is quite small. However, this period would appear to be one of the best times in which to schedule driving practice.

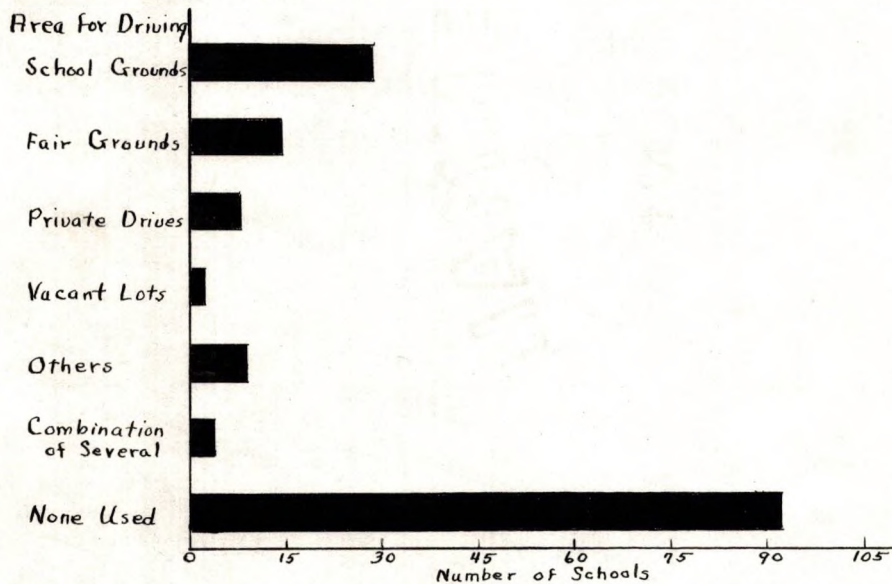
Eight schools, or five per cent, schedule driving during lunch hour and six schools, or four per cent, use the time before school. Thirty-three, or twenty-two per cent, of the schools use other times. Eight of these schools use Saturdays, twenty-one teach driving during the summer months, and one school uses the Christmas vacation to teach driving.

It is rather obvious to note that there is a total greater than 145 schools and also more than one hundred per cent but no attempt has been made to show just single periods per school. This shows an over all perspective of how the 145 schools questioned were scheduling their driving. One hundred and forty-five was also used as the denominator in figuring the percentages.

Determining Areas Used for Driving Before Driving Permits

Some of the more basic manipulations of driving may be taught while waiting for the permit to drive on the streets and highways of Minnesota. With the great increase in number of schools now offering driving as part of their curriculum the driver licensing officers are not as readily available to the schools. There is also a waiting period after the student takes his permit tests and the time he receives his permit from the State Department of Highways. This waiting period can be used to great advantage in teaching the basic manipulations.

Several areas are being used for this purpose as evidenced by the following Graph 6.



GRAPH 6. AREAS USED BEFORE DRIVING PERMITS

The most easily attainable area and the area most used is the school grounds with twenty-nine schools evident. Perhaps a limiting factor is from the standpoint of safety to the other children.

In the classification of "other" on the graph are such areas as airports, athletic fields, frozen lakes, baseball parks and parking lots.

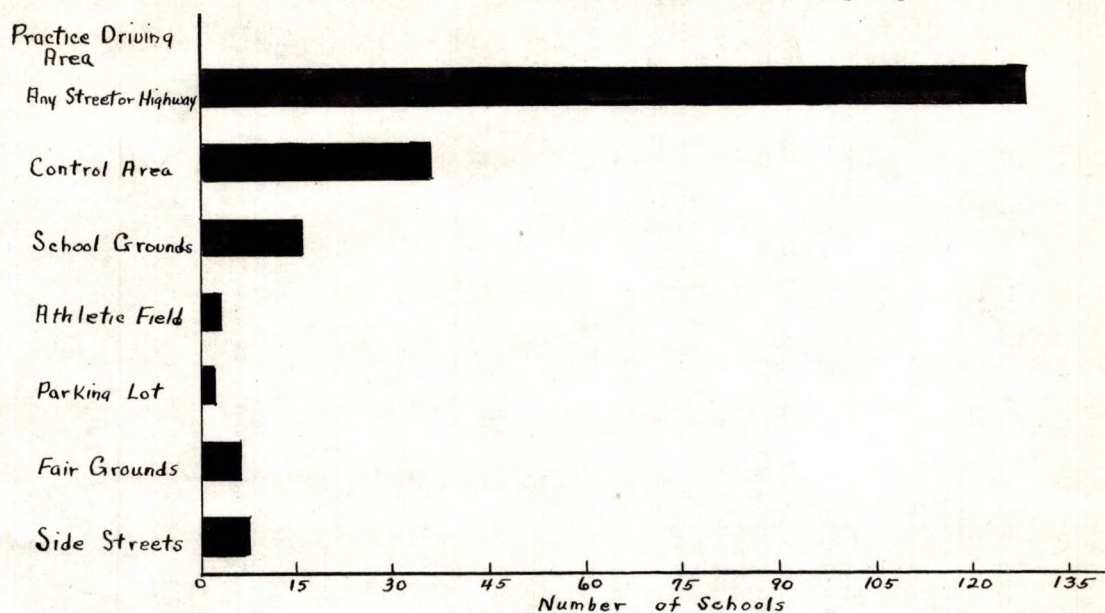
Ninety-two schools show no driving until the student has received his driving permit. Perhaps this policy creates a stimulating effect on those students who expect to learn to drive but have not passed their driving permit tests. There remains, however, that period before the actual permit is received that could be put to educational use.

Four schools use a combination of areas for driving. No statements were made on the questionnaire as to why more than one area was necessary.

Determining Areas Used for Driving After Driving Permits

In order to get the real experience of handling an automobile the child must practice. Although these practice experiences are under the direct supervision of the instructor, the instructor has no way of controlling all the traffic except in a control area. These control areas for driving practice may be private or roped off areas on a side street. Most of the instructors questioned who used more than one area for practice used a progressive sort of program. The first steps in handling the automobile were taught in a very remote or controlled area and as the student increased in skill he was moved into the more complicated traffic patterns where the instructor had little or no control over the everyday traffic situations that the student would later meet.

These areas and the number of schools are graphed below.



GRAPH 7. AREAS USED AFTER DRIVING PERMITS

It is rather interesting to note that 131 schools actually take the student into traffic areas that he will later experience as a solo driver. In other words over ninety per cent of the students have experience as drivers in everyday traffic while under the supervision of an instructor. Six of these 131 schools do use any street or highway as the third and last step in driving. Eight of the 131 schools use any street or highway as the second step, although in these cases the second step is the last part of a two-step program.

Perhaps the last six items of Graph 7 could be listed as control areas. They are separated from the main stream of traffic and therefore do give the student a chance to gain the basic skills in driving. Any one of the last six items of Graph 7 can be used as the beginning area in which to teach driving. Perhaps the only factor that determines which one to use in the

area that meets the needs of the individual school.

Units of Driver Training

In compiling the data on units of study the entire program of classroom and behind-the-wheel instruction was listed. The average number of hours for classroom work is 31.2 and for behind-the-wheel is 7.23 making a total of 38.43 hours per pupil.¹ An attempt was made to find out what per cent of time was spent on the various units of study. Many of the units are a carry over into the actual driving but the data will give a comparative estimate.

TABLE III
UNITS OF DRIVER TRAINING

Unit	Per cent of time
Physical and mental qualifications of a safe driver	7.5
Attitudes and responsibilities of a safe driver	11.5
Care, maintenance and construction of the car	7.3
Rules of the road and sound driving practices	16.8
Pedestrians and their obligations	5.5
Highways and transportation	4.5
Improving traffic	4.5
Training within the car	42.4

¹ Driver Education Facts, p. 1. (Code XIV-B-260) State of Minnesota: Department of Education, Division of Health, Physical Education, Recreation and Safety, 1953.

In the unit on the physical and mental qualifications of a safe driver these broad divisions of study could be considered:

1. Advantage of being a safe driver
2. Effect of physical abilities on driving
3. Effect of mental power and alertness on driving
4. Effect of general fitness on driving.

Seven and five-tenths per cent of the total time was spent on this division of study.

The unit on attitudes and responsibilities of a safe driver includes for consideration these broad divisions of study:

1. Attitudes of the driver
2. Effect of habits on safe driving
3. Need for desirable attitudes
4. Acquisition of desirable attitudes and responsibilities.

Eleven and five-tenths per cent of the total time was spent on this unit of study.

Perhaps the unit of least interest to the girls in the class is the unit on care, maintenance and construction of an automobile. This unit may be broken down into these three broad divisions:

1. Effects of care in relation to performance
2. Maintenance of the car for economic operation
3. How the car operates.

Seven and three-tenths per cent of the total time was spent on this unit.

The one unit that stands out in importance for the student is

the unit on rules of the road and sound driving practices. This portion of the classroom work becomes the basis for passing the tests for permits to drive. The written test is divided into two major parts: 1. Rules of the road, and 2. Sign test. This unit has several broad divisions which are:

1. Laws of physics and how they affect driving
2. Local traffic regulations
3. State traffic regulations
4. Sound practices in urban traffic
5. Sound practices in rural traffic
6. Adapting driving to weather conditions.

Sixteen and eight-tenths per cent of the total time was spent on this unit.

The average student of driver education spends as much time as a pedestrian as he does a driver, and in this unit on the pedestrians and their obligations he has the opportunity to learn just what those pedestrian obligations are. There are several large general phases for study:

1. Sound practices as a pedestrian
2. Results of pedestrian failures
3. Obligations as a pedestrian.

Five and five-tenths per cent of the total time of teaching was spent on this division of study.

A review unit of the history of highways and transportation can be brought about in this area of study. Also the trend in improving highways and automobiles is emphasized. Five and five-

tenths per cent of the total time was spent on this unit.

A general over view of traffic conditions and improvements should reach the student through this type of unit. Local conditions and needs create a rather spontaneous interest. Four and five-tenths per cent of the total time is spent on this unit.

In figuring on the basis of per cent of time the training within the car stands out rather clearly, although the actual time of driving is about one-fourth of the total time the learning process is going on during the observation period. This unit on driving is basically the acquiring of skills in driving and putting into practice a great number of the ideas obtained during the classroom work. Forty-two and four-tenths per cent of the total time was spent on this division of driver training.

Determining Credit Toward Graduation for Driver Training

After compiling the data on the credit toward graduation, requirement for graduation or part of the summer recreation program question there appeared some rather revealing facts.

Twenty-six of the 145 schools answering the questionnaire give credit toward graduation for driver education. There was no attempt made to find out if this credit was in correlation with some other class, but it does show that a few schools have accepted it into their curriculum. One hundred and fifteen schools of the 145 answered "no" to the question, and four schools failed to answer.

Twenty-one schools to whom the questionnaire was sent are teaching driver education during the summer recreation program.

This may account for some of the schools who did not answer the first two questions of this issue. One hundred and eighteen schools answered "no" to teaching this course as part of the summer recreation program. It must be stated here that three schools were not sent questionnaires because they were known not to be teaching driving during the regular school year but during the summer. Six schools failed to answer the question.

Determining the Major Problems in Present Practice by Importance

In order to make the data acquired on the question a bit unified the answers were rated in three divisions, namely: major problems, minor problems, and little or no problem. These three divisions were suggested by the ratings given by the instructors. For instance, if the instructor rated the problem one or two it was placed in the major problem division; if the instructor rated the problem three, four or five it was placed in the minor problem division and if the instructor rated it six or seven it was placed in the little or no problem division.

Problems other than those listed on Table IV on page 37 were commented on by the driver training instructors answering the questionnaire. These comments include:

Teacher load is too heavy, making it impossible to schedule enough behind-the-wheel training.

My big problem is getting to a place where traffic gives the student a challenge (such as Grand Forks or Crookston). We have little traffic in our little town.

Lost time due to weather.

TABLE IV
DETERMINING THE PROBLEMS IN DRIVER EDUCATION

Problem	Major Problem		Minor Problem		Little of No Problem	
	Frequency		Frequency		Frequency	
	Num- ber	Per cent	Num- ber	Per cent	Num- ber	Per cent
Securing and giving of psycho- physical tests	29	21	40	29	68	50
Scheduling of classroom time for driver education	45	33	29	21	63	46
Restrictions set up by Minnesota state laws (age limits)	6	4	29	21	102	75
Securing of qualified teachers for the subject	15	11	21	15	101	74
Scheduling of behind-the-wheel training	72	52	26	19	39	29
Financing the program	13	9	27	20	97	71
Breaking bad habits acquired before the training program began	54	39	45	33	38	28

* Note: Eight schools rated the problems in a different manner and are not included in this table.

No car at home for practice between driver training instruction periods.

The importance to the student of their use of common judgement after their immediate training is finished.

I would list the No. 1 problem - Minnesota weather.

Getting cooperation of parents in so far as students need home practice and many parents are not willing to devote the time or effort.

Scheduling of road tests.

Getting student scheduled and checked for behind-the-wheel test.

Credit for course.

Time for members that want behind-the-wheel driving.

How can we prevent a large number of students from going native - falling into bad habits and practices as Dad, Mother, Brother, Sister, etc. do? A method of getting students to accept course for its worth and not as a means to an end, ie., a drivers license.

Number of students in driver education in relation to time element for giving driver education.

Lack of interest in participation in behind-the-wheel training by students who are already driving without permits and no enforcement. Also, lack of initiative of a number of students who cannot pass the vision test to get glasses.

Giving me time to teach driver training.

Provide housing for car; preventing administration from using car.

We practice in our little farm town, and then have to go to a big city for the tests - which means quite a change.

Time element.

Attitude of examiners when giving the road tests to students. Delay in receiving permits back from Highway Department (runs about 20 days).

Securing visual aids for the classroom.

Would like to give students more time.

Adequate pay. Slow students. Uncooperative parents.

Convincing people of its necessity.

Getting the driver training at the beginning of the school year.

Local criticism.

Getting youngsters who need it enrolled.

Bad weather.

Table IV shows rather precisely that the problem is not with the teaching profession in recognizing the needs and getting enough qualified teachers to do the job. One hundred and one instructors, or seventy-four per cent, listed this problem as being little or no problem.

One hundred and two, or seventy-five per cent, of the instructors felt that restrictions set up by Minnesota state laws were of little importance as a problem. Yet, fifty-four, or thirty-nine per cent, of the instructors felt that the breaking of habits acquired before the training program began was of some consequence. There appears here a slight inconsistency in that if the legal age requirement were not so high the bad habits would not have been formed before the training program began.

The scheduling of behind-the-wheel training stands out rather clearly as a problem with seventy-two instructors, or fifty-two per cent, reporting scheduling as a major problem. The time consuming aspect of driving must in a large part account for the scheduling problem. In comparison with a regular academic

subject that takes one period a day or less the driving program takes at least two hours each day of the instructor's time.

CHAPTER IV
SUMMARY AND CONCLUSIONS

Summary

The following items are listed numerically according to their order of appearance in the body of the thesis. No implication as to importance is to be suggested by the number.

1. A small minority, fifteen of the 145 instructors, were teaching driving on their own time just to get the program started.
2. Fifty-three instructors of the 145 must spend at least one hour outside regular school time to teach the course.
3. Pay scales for time spent outside regular teaching hours range from \$.75 to \$3.50 per hour.
4. More than fifty per cent of the instructors acquired a greater teaching load as a result of driver training.
5. Eighty-eight schools have only one teacher doing all the driver education teaching.
6. Fifty-six per cent of the instructors correlate driving with general science rather than with one of the other eight subjects.
7. Thirty-one schools teach driver training during the ninth grade only.
8. Fifty per cent of the schools teach driver training in only one grade and fifty per cent teach driver training in a

combination of grades.

9. Twenty-seven per cent of the instructors have their professional training in the field of science.

10. Exceptionally young students create a problem in scheduling behind-the-wheel training because of legal age requirements.

11. Twenty-five per cent of 7,688 students fall below the fifteen year age group.

12. Seventy-three instructors use the field of vision testing device.

13. Seventy-one instructors use the reaction time testing device.

14. Only eight instructors use the strength test.

15. Seventy-four per cent of the schools use the study hall period of the student for his practice driving. Only six schools use the periods before school for driving.

16. Ninety-two schools do no driving on any location before permits are issued.

17. One hundred and thirty-one instructors take the students onto any street or highway to do their practice driving.

18. Forty-two and four tenths of the entire time of the driving course is spent on training within the car.

19. Sixteen and eight tenths per cent of the entire time of the driving course is spent on rules of the road and sound driving practices.

20. One hundred and fifteen schools give no credit toward graduation for driver training while sixteen require the course

for graduation.

21. The greatest problem in driver education to most instructors is the scheduling of behind-the-wheel training and the least problem is the securing of enough qualified teachers for the course.

Conclusions

When a great many of the aspects of driver training are considered with respect to the teacher there seems little uniformity in hourly rates for the teacher. As the teaching should be quite comparative for each instructor the pay scale should be comparative within the state.

Many more of the instructors could be using mechanical devices to become aware of the physical limitations of the student.

Students should be credited for the knowledge acquired in driver education upon completion of the course although few of the schools now offer credit for the course.

Some means of scheduling behind-the-wheel should be worked out between the driver training instructor and principal or other school scheduling committee.

CHAPTER V
RECOMMENDATIONS

1. An association of driver education instructors should be formed on a district, regional and divisional basis.
2. More uniformity in extra pay for extra hours should prevail in the professional circles of driver education.
3. The teacher's own time should not be jeopardized by extra teaching load.
4. Each group of children, in so far as possible, should be taught both classroom work and behind-the-wheel by the same instructor.
5. Driver education should be taught as a separate subject.
6. A greater number of schools should be using the psycho-physical testing devices to determine student limitations.
7. Behind-the-wheel training periods should be part of a definite planned school schedule.
8. Little or no driving should be permitted in any area before permits are issued.
9. Driving practices should be started in control areas and become progressively more complicated.
10. A greater amount of time should be spent on the attitudes and responsibilities of a safe driver.

11. As many hours of training behind-the-wheel should be given each child as the individual child may need.

12. More schools should teach driving during the summer months as part of a summer recreation program.

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APPENDIX A

Karlstad, Minnesota
January 7, 1953

I am making a study of Driver Training in the High Schools of Minnesota as part of the requirement for the Master's Degree at the University of North Dakota. The project is under the supervision of Professor A. J. Bjork, School of Education, University of North Dakota.

I should like your assistance in the completion of this study. Please fill out this questionnaire to the best of your ability and return at your earliest convenience in the stamped, self addressed envelope which is enclosed.

In appreciation of your cooperation I will be happy to send you a summary of my findings and recommendations at the conclusion of the study if you request it.

Thank you for your kind cooperation and the information which you have supplied.

Sincerely,

M. C. Lawson

DRIVER TRAINING IN THE HIGH SCHOOLS OF MINNESOTA

Note: The phrase driver training will mean and include behind the wheel unless otherwise stated.

I. Determining the effect on teacher time and salary

- ___ hrs. 1. How much time is spent each day outside of regular school hours?
- Yes ___ No ___ 2. Was driver training added to the regular teaching load?
- Yes ___ No ___ 3. Does teacher receive extra pay for hours spent outside school hours? If so, please state approximate amount. _____
- Yes ___ No ___ 4. Is classroom teaching and behind the wheel taught by same one?
- Yes ___ No ___ 5. Is the teacher doing the teaching upon his own time just to get the program started?

II. Determining grade placement and subject field

- Yes ___ No ___ 1. Is driver education taught as separate subject?
- _____ 2. If not in correlation with which subject?
- _____ 3. What is the undergraduate field of the instructor?
- Yes ___ No ___ 4. Is classroom instruction taught one year and behind the wheel taught the next?
- 9_10_11_12_ 5. On what grade level is driver education taught?
- a. _____ Number of students 15 years old?
- b. _____ Number of students 16 years old or older?
- c. _____ Number of students under 15 years?

III. Determining the use of psychophysical testing devices.
(check those you use)

Distance judgement___, Strength___, Visual acuity___, Color vision___, Field of vision___, Reaction time___, Eye dominance___, Steadiness___, Night adjustment___, Glare resistance___.

IV. Determining when during the school day "behind the wheel" is scheduled

During student study hall period___, During lunch hour___, Before school___, After school___, During off day Phy. Ed. periods___, During regular period of correlation subject___, During activity period___, Others_____

V. Determining areas used for driving before driving permits.
Please check those you use.

School grounds___, Private roads or drives___, Pastures___, Fair grounds___, Vacant lots___, Others_____

VI. Determining areas used for driving after driving permits.
Please check those you use.

Any street or highway___, Controlled area away from traffic___,
Area provided on the school grounds___, Others_____.

VII. Units of driver training (Indicate % of time spent on
entire course)

____ % Physical and mental qualifications of a safe driver
 ____ % Attitudes and responsibilities of a safe driver
 ____ % Care, Maintenance, and construction of the car
 ____ % Rules of the road and sound driving practices
 ____ % Pedestrians and their obligations
 ____ % Highways and transportation
 ____ % Improving traffic
 ____ % Training within the car
 _____ 100 % total

VIII

Yes ___ No ___ 1. Is credit toward graduation given?
 Yes ___ No ___ 2. Is the course required for graduation?
 Yes ___ No ___ 3. Is driver training part of the summer recreation
 program?

IX. Determining the major problems in present practices by im-
portance. Give problem of most concern number 1 and second
most number 2 etc.

____ Securing and giving of psychophysical tests
 ____ Scheduling of classroom time for driver education.
 ____ Restrictions set up by the Minnesota state laws. (Age limits)
 ____ Securing of qualified teachers for the subject.
 ____ Scheduling of behind the wheel training.
 ____ Financing the program.
 ____ Breaking bad habits acquired before the training program
 began.
 ____ Others _____

APPENDIX B

July 17, 1951

Mr. M. C. Lawson
University Station
Grand Forks, North Dakota

Dear Mr. Lawson:

Since Professor Neyhart is not expected in the office until the early part of September, I am replying to your recent letter, addressed to him and requesting information about the establishment of a Driver Education Course in smaller school systems.

We prefer to see the course added to the present curriculum. Where this is not possible, the course is usually begun on a very meager basis outside of school hours. In such a case, however, we urge the instructor to make certain that he is paid for the extra time from the very inception of the course.

There have been times when an instructor has been so eager to start the course that he has taught before and after school hours and on Saturdays without compensation. Then it is difficult for him to get the school people either to install the course as part of the curriculum or to pay for overtime work.

We also prefer that the course be offered for credit. In our state, although the course has been offered on a number of different plans in the past, we are beginning to standardize on the offering of the course for credit and as part of the school curriculum. After September 1, 1951, 12 college credits will be required for the teaching of Safety Education in our high schools.

In counties where the schools are too small to offer driver education course, the county superintendent employs an instructor to teach the course in several different high schools. He spends a few weeks in one school and then continues on to the next school.

If you have any other questions concerning the offering of a driver education course, we shall be very happy to try to help you to get the answers.

Sincerely yours,

Joseph Intorre
Associate in Charge of Driver
Testing

Jl:OBB

140018 The Pennsylvania State College
State College, Pa.