

LEGAL DISCLAIMER

The views expressed in this paper are the views of the author(s) and do not necessarily reflect the views or policies of the Asian Development Bank (ADB), or its Board of Directors or the governments they represent.

ADB does not guarantee the source, originality, accuracy, completeness or reliability of any statement, information, data, finding, interpretation, advice, opinion, or view presented, nor does it make any representation concerning the same.

Module 6: Driver Training, part II

Purpose:

To explore strategies for effective driver training

Learning Outcomes:

Upon completion of the modules the participant will be able to:

- Identify three options for driver training
- Describe at least three classroom teaching strategies that can promote the development of safe driving attitudes and effective decision-making
- Identify benefits of driving schools having a curriculum plan
- Explain why it is important to monitor/evaluate driver training schools and programs

Contents:

- A. Driver training models
- B. Effectiveness of formal driver training methods
- C. Strategies for improving effectiveness of driver training
 - Benefits of blending driving theory and practice
 - Getting new drivers involved in their learning
- C. Driving School curriculums for basic driver and rider training
- D. Maintaining training standards

Format:

1. Overhead Presentation

- General information on driver training

2. Group Discussion

1. What are the advantages for new drivers of blending driving practice (off-road AND on-road) with driving theory? What are the disadvantages?
2. What are the current standards, generally, for monitoring school and instructor performance in China? Could these be improved? If so, how?
3. List the characteristics of an effective driver training school program in China?
4. List the advantages and disadvantages of a common curriculum for new drivers.

Driver training models

Many new drivers of passenger vehicles learn to drive from parents or friends (“informal training”). Some take driver training at a driver training school (“formal training”). Individuals who drive professionally generally take formal driver training after holding a passenger vehicle licence for a period of time. This module addresses training of passenger vehicle drivers and Module 8 addresses training of professional drivers.

To some degree, any driver training/education system has three components:

- What is to be learned
- A learning process
- An assessment of driver competencies (the test)

To support new drivers/riders, jurisdictions generally prepare documents to provide them with necessary information. These guides are used by new drivers/riders regardless of the training model selected (informal, formal, mixed). For example, ICBC has prepared a series of guides available at no cost to new drivers/riders that were based on several sources, including:

- Mapping a Safe Course Curriculum (introduced in subsequent section *Driving School curriculum(s) for basic driver training*)
- Published literature on driving and riding skills, aptitudes and training
- Content analysis of existing BC driving guides
- Review of guides and manuals from other jurisdictions

A summary of the BC guides is provided on next page.

Informal driver training

Drivers who do not take formal driver training still need to learn the same things as those who take formal training. However, when people learn to drive from their parents or friends, the quality of training varies from very poor to excellent in terms of parameters such as the length of time spent learning and practicing prior to attempting the test, the skill level and instructional ability of the person teaching them, and what they are taught. There is no monitoring of the learning experience.

Formal driver training

Formal driver training programs for passenger vehicles vary widely, for example

- Length varies from a few hours to 40 hours of mixed in-class sessions and in-car practice
- Instructor training varies from none to college preparatory courses
- Content varies from specific skills (e.g., parallel parking) to a broad curriculum including knowledge, skills and attitudinal components (e.g., ICBC graduated licensing course)
- Instructional strategies vary from teacher-directed delivery of information to student-centered involvement
- Balance of in-class and in-car lessons (the majority of driver training in BC is in-car only)

Research into the effectiveness of driver training generally doesn't distinguish between the nature of the training, and the diversity of formal learning opportunities likely influences the findings of research studies.

In Germany, learner drivers receive formal driver training. Training continues until the driving instructor is certain that the learner has actually acquired the necessary knowledge and skills (Deutsche, 1995).

Mixed

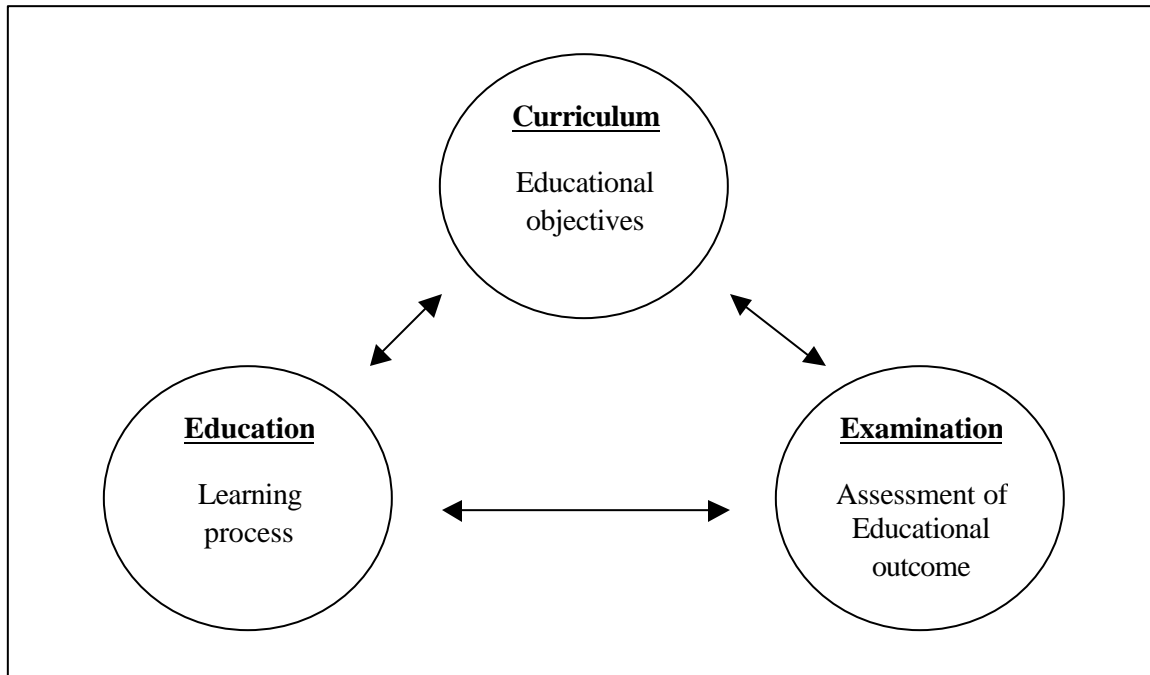
A few jurisdictions – e.g. France, Belgium and British Columbia– have developed educational/training approaches in which both laypersons and professionals participate in the training of novices. In some jurisdictions, efforts have been made to provide supervisors with support materials (for example, the *Tuning Up* guides in BC) that will facilitate their serving in this role.

In the United States the National Highway Traffic Safety Association (NHTSA) is developing a training module for use by parents (Mayhew and Simpson, 1996).

In Sweden the adult who supervises the learning process must be formally registered to teach the new driver. The figure below demonstrates such a driver education system in terms of driver education programs in Sweden. Mattsson (1999, p. 41) states: “Each of

the three parts are interconnected and must work in harmony. The educational objectives are stated in a curriculum plan. Learning processes describe the activities students will undertake with teacher and parent support to achieve the educational objectives. Finally, the process will be measured by on-going and final examinations.”

Competency-Based Training and Testing of Advanced Skills in Sweden



Source: Mattson, Pg 41

British Columbia: GLP driver training courses in British Columbia a mixed model in that drivers enrolled in GLP training programs must be taught in both the car and in the classroom, and connected with home practice. To complete a GLP driver training course, students must complete 12 hours of in-car practice, 16 hours of in-class work, 4 hours of either car or classroom experience depending on the particular learning needs of a student, and submit a log certifying that they have completed 30 hours of at-home practice. Through this process, they integrate formal learning and on-road practice through a “feedback” process where they learn from their errors and successes. See also the *Learning to Drive* figure in a subsequent section *Benefits of blending driving theory and practice*.

Effectiveness of formal driver training methods

A review of the historical and contemporary evidence on the effectiveness of driver training shows little support for the effectiveness of formal driver training in preventing crashes. As stated by the well-known researchers Mayhew and Simpson (1996, p. 5), “There is some evidence that at least some driver education programs can successfully teach driving skills and impart knowledge, but skills and knowledge acquired in training do not necessarily produce driving behavior that leads to reduced crash involvement.”

However, research also indicates that driver training traditionally does not address the key skills and knowledge needed by new drivers to become responsible drivers. In addition, as formal driver training programs vary widely in content, length, quality and other features, it is still not clear if high quality programs can “make a difference” in terms of increased traffic safety.

Two perspectives on the effectiveness of driver training are provided below.

Lack of support for driver training

The Mayhew and Simpson report provides a commanding overview of research and insights into issues related to driver training. Although the executive summary is included in this binder, the full report may be of interest.¹

According to the authors, key areas that should be addressed in driver education/training in graduated licensing programs are as follows:

- The program should be empirically based and focus on those psycho-motor, cognitive and perceptual skill deficiencies that have been shown to be associated with high collision rates of novice drivers.
- The curriculum should include experiences that demonstrate the value of safety practices and, thereby, motivate novice drivers to drive safely.
- Training strategies should be incorporated to make novices aware of their limitations and counteract the problem of overconfidence.
- Teaching methods and techniques should be developed to address lifestyle and psychomotor factors that can mitigate any beneficial effects of training and lead to risk behaviours.
- Competency-based programs that recognize individual differences and are tailored to address the specific skill deficiencies of novices should be included.

The authors also note that it is challenging to design a course that effectively addresses lifestyle and related psychosocial factors, and that the research has yet to be done to confirm whether such a course would be successful.

¹ For full report, contact Publications, Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, VA 22201, USA

Effectiveness and role of driver education and training in a graduated licensing system: Summary

By: D. R. Mayhew and H. M. Simpson

Date: 1996-09-09

A report prepared by the Traffic Injury Research Foundation, Ottawa, Canada K2P-0B4.

Supported by the Insurance Institute for Highway Safety

This Executive Summary is available in hard copy from:

Publications

Insurance Institute for Highway Safety

1005 N. Glebe Rd.

Arlington, VA 22201

Background

The genesis for this report is the link between the formal education and training of young drivers and their licensing. The first of these systems has endeavored to teach the skills, knowledge and attitudes needed for safe driving; the latter has endeavored to ensure that this skill set has been acquired.

A controversial issue for decades, the relationship between education/training and licensing has recently become the subject of renewed debate, primarily as a result of a relatively new system of licensing called graduated licensing, which involves a phased entry into full driving privileges. In some of the jurisdictions that have introduced graduated licensing, education/training has been given a very prominent and significant role—its completion reduces the length of time the young driver must comply with the restrictions imposed by the graduated licensing system.

Implicit in this "time discount" is the assumption that the education/training provides safety benefits equivalent to those that would have accrued from gaining experience under the restrictions imposed by the graduated licensing system. This is an important assumption that should be carefully evaluated before it becomes an automatic feature of new laws.

Purpose

Given that there is a precedent for the practice of incorporating education/training into a graduated licensing system, it is likely that many other jurisdictions will consider such a feature when adopting this new licensing system. Accordingly, it is timely to examine the justification for such a practice. This is the primary purpose of the present report.

However, an examination of the role that driver education/training might play in a graduated licensing system requires, as a precursor, an evaluation of the benefits of formal instruction per se. Accordingly, this report begins with a review of the historical and contemporary empirical evidence on the effectiveness of driver training/education before it considers the role that driver education/training can or should play in a graduated licensing system.

The safety impact of driver education and training

The report first examines the effectiveness of traditional driver education, motorcycle rider education and advanced training courses in reducing the collision involvement of new drivers. Empirical literature from around the world is reviewed. This review takes the position that the principal goal of driver instruction is to produce "safer" drivers, defined in terms of collision involvement, i.e., drivers exposed to formal instruction should have lower crash rates than those who do not receive such instruction. This perspective is certainly consistent with the stated objectives of driver education and training as well as with the support it has received.

Key findings

The DeKalb County project—conducted in the U.S. in the late 1970s and early 1980s to evaluate the effectiveness of a comprehensive driver education program—stands as the most large scale, well-designed and ambitious effort to assess the impact of formal instruction. Data from that study have been the object of intense scrutiny and sophisticated re-analysis over the years. Despite the different methods and statistical procedures that have been applied to the data, however, the findings have been extremely consistent and disappointing to the driver education community—driver education was not associated with reliable or significant decreases in crash involvement.

This conclusion has not been altered by the results of contemporary evaluation studies of other driver educator programs that have been conducted since then. Studies in the United States, Sweden and Australia suggest that driver education produces no beneficial advantage in reducing collisions compared to informal training. There is one apparent exception to this. A study in Quebec, Canada suggests that mandatory driver education did have a small beneficial effect on collision rates. However, this differential was offset by the increased collision rates that accrued from earlier licensure—a by-product of the mandatory training. Earlier licensure as a result of driver education programs is a common finding.

Collectively, the results provide little support for the safety benefits of formal driver educator. The same can be said for formal rider instruction (motorcycle training). A review of the evaluation research conducted in three countries—the United States, Canada and the United Kingdom—provides no compelling evidence that rider training is associated with reductions in crashes.

On a more positive note, some beneficial effects have been observed from advanced skill training, although the benefits vary as a function of the type of program or skill as well as the age and gender of the driver. There is reasonably compelling evidence that remedial advanced skill training for motorcyclists, who failed their licensing test, has significant safety benefits. Unknown at this time, however, is whether these positive benefits would hold for those riders who already have the skills necessary to pass the test.

There is also evidence that training in night time driving can produce reasonably long-term safety benefits among male drivers.

On the other hand, skid training, a very popular feature of advanced driving courses, has fared less well. Studies conducted in the United States, Norway and Finland suggest that this type of advanced skill training actually has a detrimental effect, especially for young males, i.e. it is associated with an increase rather than a decrease in crash involvement,

perhaps as a result of overconfidence. The effect of such courses on females is mixed: two studies found no effect and one study found a negative effect on young females that was similar to that of males.

Summary

The review of scientific evaluations performed to date provides little support for the claim that driver instruction is an effective safety countermeasure. The overwhelming preponderance of evidence fails to show that formally trained students have a lower frequency of crashes than those who do not receive such training. Even worse, a few studies have shown a safety disbenefit of driver education/training. The harsh reality is that driver education/training programs have been evaluated and have not reduced crash risk of young drivers and, therefore, the safety value of such programs remains unproven. There is some evidence that at least some driver education programs can successfully teach driving skills and impart knowledge, but skills and knowledge acquired in training do not necessarily produce driving behavior that leads to reduced crash involvement.

The role of education and training

Given the rather disappointing results of the evaluations conducted to date on the effectiveness of driver education/training. Two issues remain salient. The first concerns the potential role that education/training might be able to play as a traffic safety countermeasure if modified in some way. The second related issue involves the specific role that education/training can play in a graduated licensing system.

Can driver education/training reduce the crash risk of young drivers?

Research has shown that current driver education/training programs have been unable to affect the crash risk of young drivers and, therefore, the safety value of such programs remains unproven. A critical issue is whether such programs have the potential to produce bottom line safety benefits. The answer to this question is speculative but some insights can be gained through a consideration of why driver instruction has not been effective and what current developments might help overcome these deficiencies.

Among the possible reasons why driver education has not been effective are: 1) the skills and capacities that have been shown to reduce the risk of collision are either not taught or are given superficial treatment in most driver education courses; 2) adequate attention has not been paid to the importance of motivation in determining whether young drivers will apply the skills they have learned; 3) the overconfidence that arises from skill acquisition, particularly advanced skills, is not addressed; 4) lifestyle factors related to risky driving and the developmental processes are not addressed.; and 5) program curricula tend to treat young drivers as a homogeneous group rather than tailoring program content to meet the needs (deficiencies) of the student.

In each of these areas, there are opportunities for improvement and a considerable amount of contemporary activity is directed at such improvements. However, before any of these changes are implemented on a permanent basis, it is essential that these new directions be evaluated to determine if they do, in fact, have a positive effect on crashes.

Although these recent initiatives may hold some promise as stand-alone changes to driver instruction, major improvements will likely require rethinking the way driver education

and training are conceptualized. Such a re-conceptualization of driver education/training has also generated considerable attention recently and warrants monitoring.

Should driver education/training be linked with graduated licensing?

Intimately related to the issue of the effectiveness of driver education/training is the issue of how it can or should articulate with the new graduated licensing systems that are developing rapidly across North America. Graduated licensing attempts to control the risks encountered by young drivers through a series of restrictions that minimize exposure to more dangerous traffic conditions at the outset. As experience is gained, the restrictions are lifted.

A number of graduated licensing systems currently in place have established a prominent and significant role for driver education/training. At issue is whether this practice would be recommended for others who are planning a graduated licensing system.

The logical position is that there can be no safety benefit from the integration of driver education with graduated licensing, given that the preponderance of scientific evidence shows that driver education does not reduce young driver crashes. Moreover, even though recent improvements to driver education/training may hold promise, it could be argued that the safety impact to these improvements need to be demonstrated before new and/or modified programs become part of a graduated licensing system. This position maintains that there is currently no role for driver education in a graduated licensing system and there will be none until such time as a safety benefit is clearly identified.

This report does not adopt such a rigid, unilateral position for two reasons. First, such a position fails to acknowledge the practical reality that driver education/training is already an integral part of several existing graduated licensing systems; it is also an integral part of many regular licensing systems in the U.S. and this relationship is likely to be retained when graduated licensing is implemented. Second, it fails to acknowledge potential benefits that might accrue from the linkage of formal instruction with graduated licensing.

Notwithstanding these caveats, given the nature of the existing scientific evidence, at this time we would not recommend that jurisdictions introduce driver training/education into their graduated licensing systems if there is no precedent for doing so. If the jurisdiction has no special requirements in its licensing system for driver education/training we see no compelling reason for adding it to its graduated licensing system.

On the other hand, there are jurisdictions that have a well-established precedent linking formal instruction with their licensing system. In this case it is very likely that this precedent will be extended to their graduated licensing system. If this occurs, we do not recommend that the current driver education/training be merged with the graduated licensing system without due consideration of factors that might serve to strengthen that relationship.

How can the relationship between driver education/training and graduated licensing be strengthened?

For jurisdictions that intend to merge driver education with their graduated licensing system, we recommend that consideration be given to several potential areas for improvement. However, until these potential improvements have been tested and shown to add to

the safety benefits of graduated licensing—i.e. reducing the crash involvement of young drivers—wide-scale implementation should be discouraged. The move toward graduated licensing may provide the mechanism and rationale for examining not only what is taught in driver education/training but how it is taught.

Motivating young drivers to use their safety skills

It has been suggested in the literature that young drivers, for various reasons, choose not to apply or use driving skills acquired through driver education and training. From this perspective, motivating them to do so is a key to safe driving. Herein lies a potential symbiotic link between education/training and graduated licensing.

Driver education/training might be able to provide a structure for the orderly and efficient acquisition of critical safely driving skills during the graduated licensing phase. For its part, graduated licensing might be able to provide the motivational framework for encouraging the use of the safe driving skills that are acquired, because it can demand a collision- and violation-free driving record before the novice can exit from its limitations. Indeed, several jurisdictions have already introduced such incentive-based approaches.

Such an incentive-based approach can, however, be weakened by allowing age to be the criterion for graduation to a full license. If a full license is automatically issued on turning 18, there may be little incentive to use the knowledge and skills acquired in training to drive safely.

The motivational potential can also be reduced considerably if few and/or weak restrictions are applied in the graduated licensing system. This is so because it is the desire to remove these restrictions that serves as the incentive to obtain a full-unrestricted license. If novices do not find the restrictions especially onerous or demanding, the motivation to achieve a full-unrestricted license is undermined.

The motivational properties of the system might also be strengthened by including additional hurdles, such as more frequent and demanding tests. Novices should be motivated to acquire and practice safety skills required to prepare for the test(s). Test failures should demonstrate their skill limitations and the importance of learning the skills needed to pass. It may also be advisable to introduce the test earlier in the process. The reason is that once the novice passes the exit test and obtains a full-unrestricted license there may be no further incentive to actually use the knowledge and skills acquired in training. This problem could be resolved by requiring the advanced test in an earlier stage of licensing so that not all restrictions have been removed. Alternatively, once the novice has passed the advanced test and obtained a full license, they could be placed on probation for a reasonable length of time, i.e., even though they have full driving privileges, any crash/violations would result in being placed back in the graduated licensing system.

Further consideration also needs to be given to alternative incentive/motivational approaches. The success of an incentive-based approach ultimately depends on the extent to which novices appreciate the value of what can be learned in driver education/training and whether they perceive the reward—e.g. a full license—as desirable enough to warrant routinely driving safely. Indeed, driving safely and thereby achieving a full

license needs to be valued as highly as other sought-after goals, such as winning an athletic competition, graduating from high school, obtaining employment, and gaining peer approval. This is a major challenge that needs to be addressed by licensing authorities and driver educators to ensure that an integrated system has the potential to work effectively.

Driver education and graduated licensing should be multiphased

By definition, graduated licensing is multiphased—typically it involves a two- or three-stage licensing process that becomes progressively less restrictive as the novice moves towards full licensure. Despite this prominent feature of graduated licensing, most systems that include driver education/training do so only as part of the learner's stage. As a consequence, driver education/training does not fit well with the multiphased graduated licensing system. To rectify this situation, NHTSA has recommended a two-stage driver education program: a basic driver education course in the learner stage of graduated licensing. And a more advanced safety oriented course in the intermediate stage. A comparable system is currently being implemented in Michigan.

Such an approach is based on the premise that beginning drivers are not prepared to benefit fully from safety instruction in driver education. For some students, learning to drive and maintaining basic control of the vehicle are so demanding that safe driving concepts cannot be applied. Thus, it may be advisable to introduce more safety-oriented driver training following initial licensing and after some driving experience has been gained.

Such a multiphased approach also provides an opportunity to harmonize the delivery of specific driver training/education lessons with the graduated licensing requirements. For example, if a night curfew is in effect throughout the graduated licensing system, there might be some benefit to providing supervised in-vehicle lessons on night driving prior to the beginner graduating to full unrestricted driving privileges. In this way, training can supplement but not replace the protective benefits of the graduated licensing system.

Multistaged driver education also provides an opportunity for combining formal and informal instruction. An important safety feature of graduated licensing in the learner phase is an extended period of supervised driving. This provision allows the learner to gain driving experience under the supervision of a licensed adult, typically a parent or a slightly older licensed peer. Although opinion is divided regarding the extent to which the supervisor is competent to teach or train the new driver, there is consensus that the presence of the older licensed driver minimizes the likelihood that the novice will engage in deliberate or intentional risk taking behaviours. And indeed, the limited research that has been conducted suggests that supervised learners seldom crash.

Formal driver education/training could be structured to complement this extended period of adult supervision. In this regard, a few jurisdictions—e.g. France, Belgium—have already developed educational/training approaches in which both lay persons and professionals participate in the training of novices. Moreover, efforts have been made to provide supervisors with support materials that will facilitate their serving in this role, e.g. NHTSA is developing a parent training module.

The content and delivery of driver training/education should be reviewed

If driver education/training is to be integrated with graduated licensing, the proposed program should be carefully scrutinized to determine if it addresses certain key areas:

- The program should be empirically based and focus on those psycho-motor, cognitive and perceptual skill deficiencies that have been shown to be associated with high collision rates of novice drivers.
- The curriculum should include experiences that demonstrate the value of safety practices and, thereby, motivate novice drivers to drive safely.
- training strategies should be incorporated to make novices aware of their limitations and counteract the problem of overconfidence.
- teaching methods and techniques should be developed to address lifestyle and psychomotor factors that can mitigate any beneficial effects of training and lead to risky behaviors;
- competency-based programs that recognize individual differences and are tailored to address the specific skill deficiencies of novices should be included.

Designing a program that effectively addresses critical skills may be less challenging than designing one that effectively addresses lifestyle and related psychosocial factors. The limited success that has been achieved in modifying other health risk behaviours underscores this fact. Moreover, the benefits of the potential improvements described above have not been established, so it cannot be assumed that just because a program addresses these factors it will be effective. Nonetheless, effectiveness can only be determined if they are encouraged and implemented on an experimental basis.

A time discount should not be offered for driver education/training

One prominent feature of several of the graduated licensing systems that have been introduced is the provision for a trade-off between the length of time the new driver is governed by the restrictions and completion of driver education/training. Several jurisdictions—e.g. Ontario, Nova Scotia and New Zealand—allow the restricted driving periods to be shortened if driver education courses are completed.

This practice deserves careful consideration because it assumes that driver education/training provides safety benefits at least equivalent to those arising from the driving experiences gained under conditions of low risk (i.e. under restrictions imposed by the system). This premise, however, is not readily supported by the empirical evidence. Moreover, safety disbenefits could result from this practice because it allows earlier access to full, unrestricted driving privileges.

Consequently, if driver education/training is embedded in a graduated licensing system, we do not recommend that the length of time in the system be reduced for successful completion of the courses of instruction.

Support for driver training

In the development of the Swedish system there has also been a debate concerning educational content of driver training.

One important task in the development of a new Swedish driver education is to introduce new aspects that have not been systematically dealt with earlier. One such aspect is to make learner drivers realize their own limitations and thus counteract overestimation of own ability and skill. A second aspect is to become aware of the influence of personal preconditions, social norms and motivational factors on driving behavior and risk. Yet another aspect that has been covered earlier but needs to be emphasized much more is the concept of risk perception and risk awareness.

The decision to emphasize these aspects more has emerged from the discussion during the two previous decades concerning the effectiveness of driver training programs. Several evaluation studies have failed in proving safety effects of such efforts which has led us to a careful analysis of what young novice drivers are over represented in accidents and how driver education should be designed to reduce the problem. A conclusion that is commonly agreed upon is that training that focuses on providing car control skills, especially in critical situations, may lead to unexpected effects which even may increase the risk. A skilled driver is not necessarily a safe driver. It depends on what the skills are used for. It may be used for example for the pleasure of driving faster or competing with other care drivers or for other purposes where the potential safety margin of the training is compensated by other needs. If, in addition, the benefits of the training are overestimated, the net effect may even be negative from a safety point of view.

(Source: VTI 2000)

Strategies for improving effectiveness of driver training

The benefits of blending driving theory and practice, and for getting new drivers involved in their learning, are discussed by Dawn Howard-Rose and Carol Orom (1999, Appendix 2, pp. 2-3).

Benefits of blending driving theory and practice

It is only through continual integration of the concepts learned and considered in the classroom with driving practice that good driving habits develop as the natural, “automatic” response in real driving situations. This understanding of how conceptual or theoretical learning best transfers to real-life, practical situations is not new; educational literature dating back to the turn of the century (e.g., Thorndike and Woodworth, 1901) has emphasized its importance. The value of applying newly-learned concepts and ideas

in a variety of circumstances, to maximize the learner's ability to use them in actual problem solving and decision making, also has been well documented (e.g, Bransford)

In driver education contexts, it is critical that new drivers learn to recognize risks and overcome the tendency to attribute these risks to other drivers, even if others are less skilled in vehicle maneuvers: "Adjusting self-diagnostic techniques in combination with group discussions aiming at personal decisions may be one possible way" (Gregersen, 1996). Gregersen (19976) also offers a number of examples of how to help students develop risk awareness during actual driving practice, such as by demonstrating that their own maneuvering skills cannot always be relied on in critical situations. The link between classroom discussion and simulated emergencies during car lessons is critical in getting new drivers to become aware of their current risk tolerance, to recognize their limitations and to understand that driving risks apply to them, not just to others.

Decision making behind the wheel is another aspect of driving, which is often not addressed adequately in driver training. One major distinction between novice and experts performance in many kinds of complex behaviors, from problem solving to playing tennis, to driving, is how they decide on their next move or strategy. Research on these differences shows that conceptual learning needs to be combined or integrated with practice in varied, real-life situations (Glaser, 1981; Norman, 1992). For example, experts are known to differ from novices in their ability to recognize patterns in the information or problem facing them (in the case of driving, that information is a complex array of moving traffic, road signs, physical features of the road such as an intersection or curve, etc.). Hazard recognition would appear to belong to this category of cognitive skill. Intuitively, experience seems a likely means of gaining such skills, but the literature indicates instead that hazards tend to be rather specific – learning to recognize one doesn't help in recognizing another (McNight, 1996). Moreover, in order to respond to a hazard appropriately and in time, the driver must not only recognize it, but also perceive it as dangerous.

Experts also have a well-developed knowledge base, including the physics involved in vehicle handling under various road conditions, communication with other road users, effects of fatigue, alcohol and stress on driver performance, and so forth. But unless it is applied to a variety of practice driving situations, with effective discussion along the way about how decisions were made, this knowledge will remain *theoretical*, so that new drivers neither see it as **meaningful** to their own driving, nor know **how or when to apply it**.

Integration of theory and practice is critical for new drivers to:

- understand and, more importantly, to apply these aspects of knowledge about driving;
- develop the pattern-recognition ability that will allow them to anticipate and avoid hazards before they happen;
- develop the judgment and decision making skills needed to handle unavoidable emergencies; and

- recognize that risks in driving apply not only to others, but also to themselves (regardless of one's vehicle handling skills)

The Learning to Drive figure (ICBC GLP) presents an information-processing model of how we learn to drive by combining theory and practice. The figure shows graphically how, through formal and informal learning activities and a dynamic learning process, student drivers bring attitudes, skills and knowledge to the choices they make when learning to drive. These are applied when they practice driving. If student drivers have positive experiences when practicing their driving, they are likely to make the same choices and continue to experience success when driving. If they have a negative experience, such as receiving a ticket for speeding, they are encouraged to think about the consequences of their actions in order to use better information in making choices when driving.

Getting new drivers involved in their learning

People learn best when they re fully involved in the learning process, rather than simply receivers of information. Active involvement in meaningful ways makes the learning more interesting, fun, and permanent. By getting learners to talk about dangerous driving behaviours and consequences, problems and solutions, they are more likely to develop and demonstrate responsible driving behavior. This approach, which is used in ICBC-approved driver training courses in British Columbia, demonstrates a potential key to improving effectiveness of driver training and addresses some of the concerns about training expressed by researchers.

While the teacher-centered approach is still the dominant approach used for teaching children in North America, educators who work with adults usually favor learner-centered approaches. (Galbraith, 1990). Taking a learner-centered approach means that driving instructors will make basic assumptions about their students. They will recognize that each student:

- comes to them with previous and valuable experience about driving that can be built upon to make instruction meaningful and effective;
- makes sense and meaning of any new knowledge and understandings about driving by relating it to what she already knows;
- will be more open to new understandings if he can participate actively in educational driving experiences in a hands-on way; and
- is unique in some of her learning needs, but at the same time, shares much with other learners.

What are learner-centered strategies?	What are teacher-led strategies?
Brainstorming	Demonstrations
Debates, Group Discussions	Question & Answer (recitation)
Interviews	Tutorials
Projects and Case Studies	Lectures
Role plays, Simulations, Games	Video tapes

There are several reasons for choosing a learner-centered approach in driver training. One is that it is appropriate for teaching adults, and this curriculum assume new drivers in the GLP program are adults. Learner-centered approaches help instructors create learning environments based on the above assumptions and framed within principles of respect and equality.

The second reason for promoting learner-centered approaches is to create opportunities for new drivers to build self-awareness about their driving behaviors. This means that new drivers need to critically examine and reflect on the attitudes and motivations that they bring to their driving.

As mentioned earlier, past efforts to change poor attitudes that new drivers might bring to driver education courses have been minimal. Assessment and evaluation of progress or achievement in areas related to attitudes, values and motivations has also been avoided in typical training programs. In the last half century there has been concerted effort among educators, psychologists, and other social scientists to understand how personal values and beliefs are formed and changed. From this work, new understandings and instructional strategies have emerged. At the core of these strategies are learner-centered instructional strategies that create learning environments conducive to promoting attitudinal change. These strategies generally take learners through personalized, hands-on educational experiences that promote critical reflection on their values and beliefs. Such strategies enable the new driver to:

- examine the various forms of risky driving behaviors
- think critically about the social and personal influences related to poor driving behaviors
- identify safe driving responses
- identify personal fears and motives that might prevent their own safe and responsible driving behaviors
- take opportunities to make changes

Finally, learner-centered approaches that are participatory and based on real-life experiences, such as discussion, role-plays and interviews, help new drivers understand that they are not isolated in their cars with no connection to the rest of the world. A lecture on responsibilities to the other driver will not be effective in promoting and developing a sense of social responsibility since new drivers are not as likely to place what they hear within the context of their own personal experiences. We develop social responsibility when we become aware of our interconnections and relationship in the world and understand how our behaviors impact others.

Driving School curriculums for basic driver and rider training

A “curriculum” is a blueprint for developing a driver education course. Formal driver training courses are based on curriculums – that is, what should be included in driver training courses. The “critical content” for driver training, introduced previously in Module 5 constitutes “curriculum,” and this will vary across jurisdictions and across driver training schools in the absence of a jurisdictional curriculum. In addition, the quality and comprehensiveness of curriculums vary widely.

The rationale, curriculum model/philosophy and course standards for the passenger vehicle and motorcycle curriculums in British Columbia are described briefly below (ICBC GLP Driver Testing and Training Team Transition Report, pp. 14-16). This information may be helpful to other jurisdictions and organizations when developing a driver-training curriculum, although specific details will differ because situations are different.

The Mapping a Safe Course Curriculum

Rationale

Mapping a Safe Course (including passenger vehicle and motorcycle versions) describes the required content and course design standards of an ICBC-approved driver education course. The philosophy, principles and content contained in this curriculum document support the content of the newly enhanced Knowledge Tests, Road Test for passenger vehicles and motorcycles.

Research on driver training and typical behaviors of new drivers shows that new drivers have an extraordinarily high crash rate. According to the Traffic Injury Research Foundation (1997), one in five drivers are involved in a crash within the first two years of driving. These statistics are also born out by British Columbia's crash statistics. This, plus the fact that BC has the highest overall crash rates in Canada, led ICBC to take several initiatives to help reduce crashes. One of these was to implement the Graduated Licensing Program. Another was developing educational initiatives for new drivers.

With the implementation of the Graduated Licensing Program, which contains a six-month Learner period, new drivers were able to reduce their Learner period by three-months if they successfully completed an ICBC-approved driver education course. To ensure that this reduction was based on driver training courses that ICBC could fully support, and because of the concern with high crash rates among this group, a decision was made to create a standard curriculum for the province. This curriculum would serve as the basis for all ICBC-approved driver education courses and as the foundation for ICBC's new and enhanced driver licensing tests and guides.

Although resources were assigned to the development and implementation of a new driver-training curriculum for BC, it must be noted that research on the effectiveness of driver training does not show reduced crash rates for new drivers who take training. In fact, some studies have found that drivers who take training actually have higher crash rates. However, research also indicates that driver training traditionally does not address the key skills and knowledge needed by new drivers to become responsible drivers. According to Mayhew and Simpson (1997) there are good reasons why driver training has not been shown to be effective:

- The skills and attitudes that are shown to help reduce crash rates are either not taught or are only superficially taught in most driver training programs.
- Little attention is paid to the motivations that new drivers bring to the task.
- Lifestyle factors related to risky driving are not addressed.
- Individual learning needs are not considered to be important and most training programs have been delivered prescriptively.

Most driver training programs emphasize vehicle handling skills and not thinking skills or driving attitudes. As a result, new drivers who take professional training may tend to

become overconfident, thinking that they can handle their vehicle at higher speeds and in higher risk situations.

In order to overcome these deficiencies in driver training, it was recognized early on that any curriculum ICBC would mandate for the driver training industry would have to be a departure from traditional curricula.

Developing a curriculum with two goals of reducing crash rates among new drivers and helping new drivers take responsibility meant that the curriculum had to reach the overall goal of developing a “thinking” driver.” This meant that the curriculum had to go beyond training and become an educational package. That is why Mapping A Safe Course outlines, not only the content topics to be covered and time allocations, but also outlines instructional strategies that must be used and the detailed competencies that learners must achieve.

The GLP team made an early decision to develop a curriculum that had well defined standards, but which allowed the industry some flexibility in course design, rather than developing a prescribed course that all schools would be required to deliver. This approach was taken to ensure that instructors and schools would be able to develop and deliver course to meet the needs of their local client base and market.

The initial focus of curriculum development was on the driver, because it was assumed in the beginning that many of the skills needed by drivers would parallel those needed by riders. This was borne out. However, after further consultation with the rider training industry, the passenger vehicle curriculum was modified to ensure the relevance of the motorcycle curriculum.

The Curriculum Model and Philosophy

The curriculum is not a course; it is a blueprint for building an ICBC-approved course. It has four components: seven general goals, 39 learning outcomes that describe what a new driver/rider is expected to achieve, many required topics that support the goals and 39 competency statements that describe the standard of achievement for each learning outcome.

How do the goals in Mapping a Safe Course define a safe, responsible and thinking driver?

A good driver:

1. Understands the risk of driving and takes steps to avoid them.
2. Is someone who thinks that driving is a serious task.
3. Looks out for others.
4. Follows the rules.
5. Uses the skills of safe driving.
6. Respects the power of vehicles.
7. Drives safely and responsibly as possible.

The philosophy of the Mapping a Safe Course curriculum is framed around four underlying assumptions.

1. **Focus on responsibility and attitudes** – Since the main thrust of the curriculum is to help new drivers develop responsible attitudes, every aspect of the curriculum is designed with this in mind. The seven goals are oriented to safety and responsibility. Eighteen of the thirty-nine competencies are directly related to taking responsibility for self and others while driving. The instructional strategies outlined in the Instructor Resource Kit (IRK) are chosen because of their proven worth in helping learners reflect on personal behaviors and change. Assessment strategies are also outlined in the IRK, which will determine whether learners have reached the desired standards.
2. **Learning outcomes/competencies** – The main purpose of the curriculum is to define the 39 driving competencies that learners must achieve to be successful in the course, and to what standard. Focusing the curriculum on what the learner is to achieve is different from traditional curricula, which tends to focus on the body of content that must be presented and taught, with little or no mention of the needs or activities of the learner.
3. **Learner-centered** – The curriculum is designed to be delivered using learner-centered instructional strategies. This means that students are active participants in their own learning and that learning is individualized when necessary. The emphasis is on what the learners are and should be doing, rather than on what the instructor does. The instructor is seen as a facilitator of learning, rather than the person who delivers content. (See Appendix B: Rationale for BC’s new driver training curriculum, Mapping a Safe Course.)
4. **Integrated** – Traditional driver training has been focused primarily on instruction in the car, sometimes with theory taught in the classroom. In this curriculum it is expected that the topics taught in the car will be taught in the classroom and vice versa. In other words, it is expected that the instructors will help learners apply classroom knowledge directly to their driving skills and relate their developing skills to the more theoretical learning in the classroom.

Course Standards

The curriculum states that an ICBC-approved course must be at least 32 hours with a minimum of 16 hours spent on in-class instruction and 12 hours spent on in-car instruction. A further four hours of discretionary time must be included; these four hours can be used for any combination of in-car or classroom instruction, or time spent working with co-pilots of students. Instructors and schools must also ensure that a minimum amount of instructional time be spent on each of the 39 learning outcomes. They must also be schedule courses that allow coordination between classroom learning and in-car learning so that theory and practice are well integrated.

The Motorcycle Curriculum

As mentioned above, the motorcycle curriculum was derived from the passenger vehicle curriculum. The motorcycle version was created with the assistance of the BC Safety Council, to ensure that it meets the training needs of new riders. The motorcycle curriculum has 42 learning outcomes and additional required topics. Motorcycle courses require a minimum total of 39 instructional hours:

- Minimum of 13 classroom hours
- Minimum of 10 off-road on-bike hours
- Minimum of 14 on-road on-bike hours
- Maximum of 2 discretionary hours

As motorcyclists are vulnerable to injuries, they require thorough training in order to learn to ride safely. Critical content for rider training is not unlike that presented above for driver training. However, access to training curriculums is limited, possibly due to the competitive nature of the motorcycle training industry. For example, the non-profit agency, the Canada Safety Council, limits information about the *Gearing Up* curriculum (CSC web site) to the following description:

Students are placed with qualified, experienced motorcyclists who have completed an instructor-training program developed by the Canada Safety Council. Each instructor works with a small group of students thus insuring plenty of student/instructor contact.

Students are taken from basic skills such as balancing the motorcycle, through correct use of brakes, proper procedures for starting a motorcycle to use of the clutch and control of the motorcycle at slow speeds. As confidence increases they're introduced to use of the transmission and corner negotiating techniques. Moving on to more demanding exercises students are taught how to avoid collisions through the correct application of emergency braking and counter steering techniques.

While the majority of the time is spent on a motorcycle, there is a portion of the course which is delivered in a classroom environment. Students learn defensive riding strategies and risk awareness skills they can use in conjunction with their on-bike skills.

Throughout the course emphasis is placed on practicing the just-learned techniques. The course delivery is paced so that learners can keep pace with little difficulty. At the end of the course you'll be tested to determine how well you've learned. More importantly, though, it gives the student an idea of where their weaknesses are and how to improve on them

Maintaining training standards

As suggested previously, the quality of driver training instruction available through training schools varies widely. The quality of instruction affects the quality of training the new driver receives, the driver's competence as a new driver, the driver's ability to pass the road test(s), the driver's competence as he or she gains experience over time, and ultimately the crash and fatality rates in a jurisdiction. Therefore, monitoring and support of driver training programs to encourage quality driver training is an important component of traffic safety.

Administration and monitoring of driver education courses in British Columbia is described briefly below (Potentier and Zellinsky, 2000, pp. 12-13). With the implementation of graduated licensing in the province, the number of instructors who conduct this work was increased from just one to seven full-time positions.

All Driving Schools

In order to charge a fee for any form of driver training in BC, a person must apply to ICBC to open a licensed driving school and he/she must have qualified licensed instructors perform the training. The four basic requirements for driver training schools are:

- Registration as a business in BC and possession of a business licence in the municipality in which the school is located
- School owners and instructors may not have a criminal record
- A bond must be posted that is related to the number of licensed instructors at the school
- Payment of a licensing fee to ICBC

ICBC administers and monitors driver training school licensing on an ongoing basis.

Prior to GLP a few individuals (including examiners and regional managers) played an investigative role on a part-time basis when complaints were voiced to ICBC about driving schools. Inspection had been minimal. In the spring of 1999, seven full-time Driving School Inspector (DSI) positions were established to monitor the implementation of GLP course and to provide educational support to all driving school personnel. The inspectors work independently in their regions, connecting with one another on a regular basis. Organizationally, inspectors report to the managers responsible for these regions rather than to a central unit. Although inspectors have a monitoring and investigative role for all driver training in the province, their prime responsibility is to support the delivery of quality driver training in schools offering passenger vehicle education courses approved by ICBC.

Driver Training Schools Offering GLP Courses

Driver training schools that offer GLP Courses must meet requirements in addition to the four basic ones listed above.

In order to have a course approved by ICBC, driving schools are required to submit a course outline to ICBC. The course outline must be based on Mapping a Safe Course. In providing a curriculum rather than a standardized course, ICBC was responding to needs expressed by driving school businesses to offer differentiated courses in order to compete with one another. Such courses must meet standards detailed in the Course Approval Guide, for example standards regulating:

- Overall length of course and course components
- Length of classroom, in-car and at-home practice time
- Maximum length of elapsed time to deliver an approved course
- Facilities used to teach the course

Some of the driver training schools purchase the course they submit for approval from another school that has already had their course approved by ICBC. Instructors delivering GLP courses must have successfully completed the five-day GLP Instructor Course, or successfully challenged the course, and have received a GLP designation on their driving instructor license.

In addition to the monitoring role, inspectors also support driver-training instructors in schools by playing an educational role. During school visits, inspectors will often observe sessions, using a form to record the instructional activities observed (see example at end of module). Inspectors then encourage continued development an effective training program through feedback and positive reinforcement. In addition, inspectors also share their knowledge of instructional resources and educational opportunities with driving school instructors and owners.

Slides

Slide 1

Driver training/education

- What is to be learned
- A learning process
- An assessment of competency

Slide 2

See next page

Source: ICBC GLP

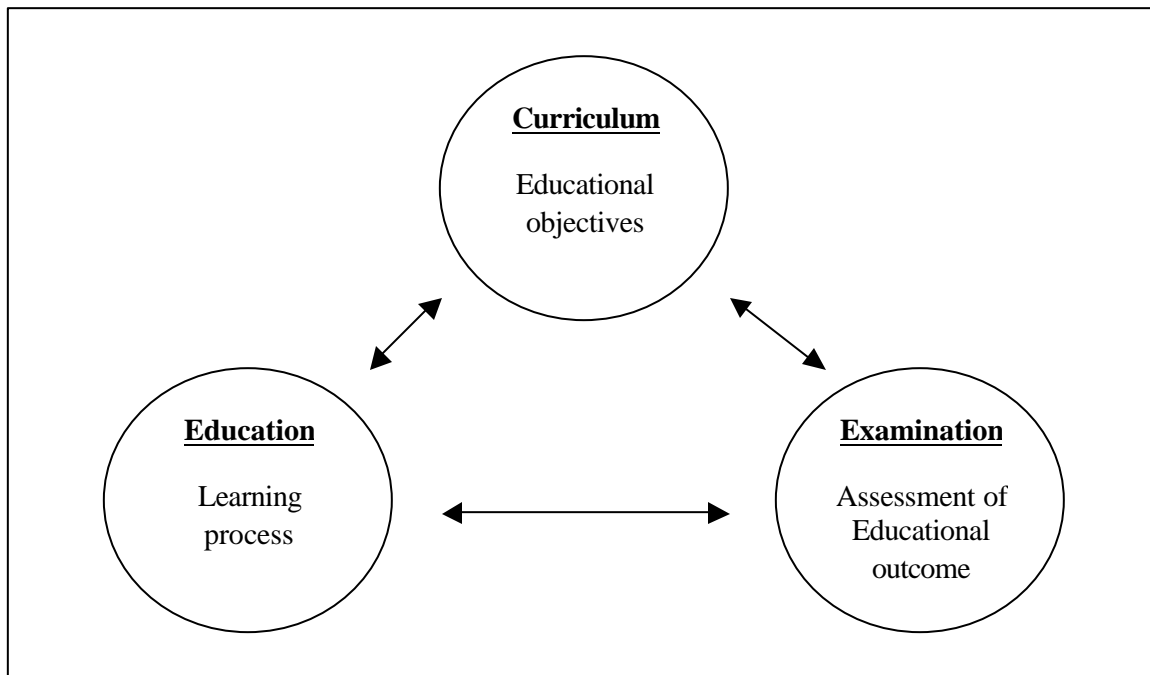
Slide 3

Driver Training Models

- Informal
- Formal
- Mixed

Slide 4

Competency-Based Training and Testing of Advanced Skills in Sweden



Source: Mattson, Pg 41

Slide 5
See next page
Source: ICBC GLP

Slide 6

Effectiveness of Driver Training

- Little support for effectiveness of formal driver training in preventing crashes
- BUT driver training does not address the key skills and knowledge needed

Source: Mayhew & Simpson, 1996

Slide 7

Strengthening Driver Education in Graduated Licensing Programs

- Motivate drivers to use their safety skills
- Offer multiphased programs
- Review content and delivery of programs
 - Teach skills associated with high collision rates
 - Demonstrate the value of safety
 - Counteract overconfidence
 - Use techniques to mitigate risk behaviours
 - Competency-based programs
- Don't offer time discounts for training

Source: Mayhew & Simpson, 1996

Slide 8

See next page

ICBC GLP

Slide 9

Learner-centered instruction:

- Teaching based on the needs of the learner, not the instructor or the curriculum content

Slide 10

Teaching Strategies

What are learner-centered strategies?	What are teacher-led strategies?
Brainstorming	Demonstrations
Debates, Group Discussions	Question & Answer (recitation)
Interviews	Tutorials
Projects and Case Studies	Lectures
Role plays, Simulations, Games	Video tapes

Source: Howard-Rose & Orom

Slide 11

Rationale for learner-centered approach:

- Working with adults
- Building self-awareness
- Examining attitudes, values and motivations
- Fostering social responsibility

Source: Howard-Rose & Orom

Slide 12

Curriculum

- A blueprint for developing a driver education course

Slides 13-14-15

ICBC Driver Training Curriculum Development

- Rationale
ICBC has highest overall crash rates in Canada
1/5 drivers in crashes in first 2 years of driving
- Model/philosophy
Learner-centred
Outcomes-based
Integrated: Knowledge, Skills, Attitude
Integrated: In-class, in-car, at-home
Attitudes
- Course Standards
32 hour course
16 in-class
12 hours in-car
4 – either
30 hours with co-pilot
39 learning outcomes
scheduling for class/car integration

Source: ICBC GLP

Slide 16

See Next Page

Source: ICBC

Slides 17-18

See next pages

Source: ICBC GLP