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# Trends in Driver Education and Training

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**Abstract:** This article provides an overview of trends in beginner, pre-licensing driver education and a perspective on the potential for systematic program evaluation to improve driver education programs, policy, and management. It provides a brief digest of the conclusions, limitations, and implications of the evaluation literature for driver education program practice and development.

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## Introduction

In the U.S. and Canada, the term *driver education* has usually been applied to programs for beginner drivers that consist of both classroom theory education and in-car practical training. Traditional driver education has taken place in a single stage, before the driver becomes licensed. Indeed, a principal purpose of driver education is to prepare beginners for license testing.

Most types of education are considered successful if students meet learning objectives and pass tests, but driver education is expected to change subsequent behavior sufficiently to produce measurable effects on crashes. Driver education has strong face validity among program providers and parents, who think it produces safer drivers.<sup>1–3</sup> Based on a lengthy history of evaluation research, most researchers are skeptical about the safety benefits of driver education. Despite this, driver education is widely supported by insurance premium discounts and driver licensing provisions. Driver education has become highly diverse, and creating strategic improvement is quite complex. It is a substantial industry globally, although the industry remains highly fragmented, especially in the U.S.

Driver education is intended to mitigate novice driver risk factors. Recognition is growing that safer driving involves changing the choices and habits that determine actual driving behavior. Individual, social, and cultural factors are important but not yet well addressed. Inadvertent errors and unsafe choices probably both contribute to young novice drivers' excess risk, albeit perhaps not in the same proportions for all crashes and at all times.<sup>4–9</sup>

To achieve major safety improvement through beginner driver education, it has become reasonably well accepted that it will be necessary to implement more

comprehensive approaches to research and program development, as well as building links between driver education and other safety influences.<sup>10–12</sup>

## Program Trends

Starting in the 1950s, driver education was widely available in public secondary schools in the U.S. and Canada, but availability declined in most jurisdictions after the early 1980s. When the federally funded experimental study in DeKalb County GA failed to produce unequivocal safety results,<sup>12</sup> many high school driver education programs were dropped.<sup>13,14</sup> Whether the evaluation results or fiscal constraints were the primary cause of the decline is still debated among experts. The decline was especially sharp in the U.S., where high school driver education was pervasive. In Canada, driver education has always been more diverse. High school driver education has remained strong in some provinces, never existed in others, and has declined in still others in a manner similar to that in the U.S. In jurisdictions such as the United Kingdom nearly all beginner drivers receive some instruction from a paid professional instructor,<sup>15</sup> but private instruction has always been the norm.

By the mid-1990s, the need to change driver education was recognized. The National Highway Traffic Safety Administration (NHTSA) initiated renewed activity with a national workshop and a research agenda for driver education and graduated/provisional licensing.<sup>16</sup> In 1995, the AAA Foundation for Traffic Safety supported a project to reinvent driver education, producing a draft curriculum outline intended to lead to a more intensive and comprehensive form of driver education in conjunction with graduated driver licensing (GDL).<sup>10</sup>

Although it is well known that driver education varies greatly among the states, there is no clear and detailed current understanding of programs across the U.S. A federal project to address this need is in development. A project to assess driver education status across Can-

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ada was completed by Natural Resources Canada in support of its mandate for education in aid of energy conservation.<sup>17</sup>

Many recent, current, and developing trends can be perceived in driver education, both in the U.S. and Canada and offshore. This article attempts to identify potentially important trends. But clear documentation is not always possible, and some perceived trends may be more hoped-for than real. Even where a trend is real, it is important to keep in mind the fundamental nature of trends. They are rarely universal, linear, or infinitely persistent. Important trends also may be overlooked—there is no clearinghouse for program developments, internationally or even within the U.S.

To present identified trends and developments in a clear framework, this article uses a compressed version of the program taxonomy developed for the AAA Foundation's series on *Evaluating Driver Education Programs*.<sup>18,19</sup> This framework is used because it addresses the full range of program areas in beginner driver education, including:

- **Program theory:** theoretical and logical bases of driver education programs;
- **Program context:** political, administrative, economic, and social environments that influence programs and their effects;
- **Program standards:** program principles, regulation, and governance;
- **Program products and processes:** the content and methods of instruction;
- **Program organization:** structure, operation, and management of programs; and
- **Program evaluation:** program outcomes, impacts, unintended consequences, and side effects.

The remainder of the article presents perceived trends within these six program categories.

### **Program Theory: Trends in Conceptualizing How Driver Education Is Supposed to Work**

Program theory refers to the rationale that explains the objectives of a program and how it should meet them—that is, why we think a program should work. In other fields, this explanation is often presented in an explicit logic model that shows the relationships among a program's assumptions, goals, objectives, activities, outcomes, and impacts. There has been little detailed description or evaluation of the theory underlying most driver education programs, so it is not evident how or why they are supposed to work.

More education is always a popular prescription for improving safety, but demonstrated effectiveness in improving safety performance solely through education of any form is relatively rare. Instruction can facilitate

the development of better cognitive and psychomotor skills; for example, there was a demonstrated gain in knowledge and skills from the longer course in the DeKalb study.<sup>20</sup> However, better skills do not automatically lead to greater safety, which depends both on skills and behavior. Influencing behavior to reduce risk is much harder to accomplish than is generally understood.<sup>21–25</sup>

Early driver education programs often used blood and guts films to induce motivation to avoid risky behavior. There is little or no evidence that this approach was effective. One of the innovations in the DeKalb curriculum was to put more emphasis on perceptual skills and less on motivation. The operative theory was that driver education should and could, through improved perceptual skills, help new drivers over the first few months of very high risk, rather than try to scare them into a lifetime of safe driving, as seemed to be the earlier implicit theory.

It has been difficult for driver education to focus on both skills and motivation at the same time. There may even be some fundamental interaction between the two—better skills may lead to less caution. A promising trend is increased recognition of the need for stronger program theory and logic to break this vicious circle. This need can be seen in the objectives provided by the AAA Foundation *Novice Driver Education Model Curriculum Outline*<sup>10</sup> and the *European Goals for Driver Education*.<sup>26,27</sup> Both of these theoretical approaches are based on hierarchical ordering of a comprehensive range of driver characteristics, traits, mental states, driving skills, motives, values, self-management skills, and driving behaviors.

### **Program Context: Trends in Structural and Influential Factors External to Driver Education**

Important trends are taking place around driver education. A salutary trend in the U.S. is renewal of federal research and leadership in driver education. After a fatal crash of a driver education car, the National Transportation Safety Board (NTSB) held hearings<sup>13</sup> and produced recommendations for renewed federal support for driver education development.<sup>28</sup> It is possible that this will add impetus to the slow turnaround that appeared to be taking place in centralized support and direction for research and development (R&D) relevant to driver education. The NTSB has directed NHTSA to work with the Department of Education to (1) review programs and instructional methods to identify best practices and incorporate them into a model curriculum and (2) determine the optimal sequencing of driver education components in conjunction with GDL and encourage states to adopt that sequencing.

Another broad trend in road safety is the recognition that active and passive safety measures need to be and can be further developed. There have been legitimate concerns in the past that support for driver education would limit support for effective occupant protection. These concerns are no longer justified, as continuous improvement in vehicle safety is firmly established. We can and should take effective steps to make drivers part of the solution.<sup>29</sup>

Graduated driver licensing has been the major driver safety initiative in the U.S. and Canada, and graduated driver education to complement GDL has been advocated on theoretical bases. It is reasonably clear that not all the skills needed by a driver can be learned at one time. Instruction should be spread over time because of the student's initial lack of readiness to learn<sup>6</sup> or inadequate cognitive capacity.<sup>30</sup> In Canada and the U.S., only Michigan has implemented a graduated second-phase training requirement; this involves classroom sessions only (no in-car training), and the possible benefits have not been evaluated.

In the U.S., Europe, and Australia, interest is apparently growing in brief post-licensing training programs for new drivers' skills and motivation. These include computer-based instruction, facilities-based (off-road track) in-car training, or simulator-based training. However, the development of these advanced programs seems to be taking place quite independently from both beginner driver education and GDL, and most programs have not been evaluated.

In Europe, the minimum driving age is typically 18, and graduated licensing is not used. There, the primary strategic thrust is to extend supervised driving practice and mandate second-stage programs. Permitting earlier accompanied driving practice (at age 16) has shown positive safety results in Sweden.<sup>30</sup> Oddly, some countries permit pre-license practice driving only with licensed instructors.<sup>31</sup> This policy seems contrary to the trend toward more early accompanied practice and is opposite the trend of expanding family supervised practice driving in the U.S. and Canada.

A number of European countries have introduced a second phase of training that is required after a new driver has been licensed for a period of time.<sup>32-35</sup> Some safety benefits of the European second-stage programs have been observed, although in a limited range of evaluations.<sup>36</sup>

The evaluations of skid control training indicate that it can create a higher crash risk. In Norway, Glad<sup>32</sup> found a positive effect of a night driving module, but the effect was negative for a slippery-road training session among young men, with no effect among young females. Jones<sup>37</sup> found that skid-trained Oregon teen-aged drivers showed marginally significant worse records overall, but better records in the slippery conditions to which the training had been addressed. Scandinavian researchers have taken the lead in evalu-

ation research on second-phase training, and there may be much value in expanding this work in Canada and the U.S.

In Europe, beginner driver training is given less emphasis. It is seen as rather basic and uniform, addressing simply maneuvering skills and mastery of traffic situations.<sup>38</sup> Fuller<sup>4</sup> pointed out that it is poorly developed technically:

It has to be recognized that universally in Europe driver training courses have developed on a piecemeal basis and are not based on evaluative research. Neither have they been traditionally designed through the application of established principles of learning or skill acquisition.

Driver education is addressed as a strategic part of road safety planning at the European Union (EU) level, but again there seems to be little emphasis on beginner driver education. As in Canada and the U.S., there is great diversity in driver education among the EU countries.<sup>39</sup> All EU countries except the UK have some training requirement in their driver licensing, but these requirements vary greatly.<sup>31</sup>

In Australia, there is also a primary focus on development of post-licensing training. A brief training course for young drivers 6 to 12 months after they have been licensed has been developed, based on a best-practices curriculum whose development was sponsored by the Australian Transport Safety Board. The course will involve a mix of driving with one-to-one feedback and small-group discussions.<sup>40</sup> Pilot implementation is pending.

Attempts to help parents better manage their teen's early driving after licensing represent a distinct trend in young driver safety. The leading example is a research-based program for parents and teens called Check-Points, sponsored by the NIH. Early evaluation results on intermediate measures have been promising.<sup>41</sup>

### **Program Standards: Trends in Guidance and Governance of Driver Education**

In the U.S., the 1949 program standard for high school driver education still prevails (30 classroom hours and 6 hours in-car). The NTSB pointed out that this standard may not be adequate for modern times and that many issues beyond the basic time frame are important. Illustrating the need, NTSB quoted a witness at the board's public forum: "Without national leadership, everyone has done their own thing. As a result, what driver education is in one community is entirely different [from what it is] in another community."<sup>28</sup> There appears to be a trend to accept the need for better and more uniform program standards, and some developments are taking place.

Benchmark standards for program content are being developed and promulgated by a number of organizations: the National Institute for Driver Behavior,<sup>42</sup> the Driving School Association of the Americas (DSAA),<sup>43</sup> and the American Driver and Traffic Safety Education Association.<sup>44</sup> A certification program for private providers is proposed by the DSAA in conjunction with the Road Safety Educator's Association of Canada. The American Automobile Association (AAA) has embarked on a new initiative that could lead to a national network of AAA-approved private driving schools.

Beyond content, operating standards are also an issue. They currently range from none to strict centralized control, but there appears to be a nascent trend for organizational benchmarking and standardization. One large Canada-based driving school (Young Drivers) maintains International Standards Organization (ISO) quality standard certification.

It is too early to conclude that a strong trend exists toward standardization of program content or operations, but this would be desirable. Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), enacted in 2005, represents a major investment in highway safety for the U.S., but it remains to be seen whether its incentives and comprehensive planning requirements will catalyze a new way of thinking about driver programs in general and driver education in particular.<sup>28</sup>

### **Program Products and Processes: Trends in Content and Delivery**

Questions of content and method are controversial in driver education. In general terms, effective safety education should be progressive, building on earlier knowledge. It should take into account motivation and the target audience's readiness to learn.<sup>22-25</sup> Such general factors can easily be identified, but content and methods to address them typically have not been put into practice. Driver safety education programs have been more likely to be developed from a common sense perspective than a scientific perspective.<sup>45</sup> A definite trend toward recognition of the limitations of past program content is now emerging. New content development has not reached a scientific ideal, but it may be that the common sense bases of development have become better informed. New directions in evaluation, discussed later, may have beneficial effects in this area.

There appears to be a trend toward having an explicit curriculum, where previously there was typically no curriculum other than the textbook used. A number of states and provinces have developed explicit curricula for their approved driver education programs, either high school-based or private. Some of these jurisdictions have also purchased textbooks cus-

tomized to their curriculum and local conditions from the Canadian firm, NTSA International.

The AAA has developed new curriculum material in its *Licensed to Learn* program, which was introduced in 2001. This program is a comprehensive risk-based approach that incorporates extensive video and interactivity. Some other providers, such as Top Driver and Young Drivers, have developed their own materials. The development of quality materials to fill 30 hours of classroom time is time consuming and costly, and this may, in part, explain the greater recent interest in brief post-licensing courses.

Strong trends in instructional methods and program delivery are also emerging. Traditionally, all driver education activities involved face-to-face interaction between instructor and learner, often supported with video media only loosely connected to the curriculum. More recently, self-instruction, computer-based instruction, interactive simulation, and web-based instruction are becoming prevalent. Some recent studies have shown positive effects of computer-based instruction and simulation on intermediate measures of skill-learning effectiveness.<sup>46,47</sup> A California study found similar benefits for the knowledge-learning effectiveness of CD-ROM and Internet/workbook presentation of basic driver education material, compared with conventional classroom presentation.<sup>48</sup>

It is not yet certain whether technology changes will improve the safety effectiveness of driver education. Many changes are directed toward delivery efficiency, and they are often technology-driven and entrepreneurial, rather than systematic and evidence-based. However, detailed research on other specific aspects of teaching processes has also started to appear, such as Rismark and Solvberg's<sup>49</sup> work on in-car teaching. These trends should be helpful in the long term if systematic follow-up occurs.

Unless there is a strong logical link between program content and potential safety improvements, it is not apparent why slightly more efficient or effective teaching of conventional content should be expected to produce a substantial safety benefit. Better theory and content will likely prove to be the keys, but it is not yet evident that better theory-based empirical content development has begun in earnest.

### **Program Organization: Trends in the Business of Driver Education Delivery**

There are distinct trends for driver education to become more and more private. Most commercial driving schools are small, many having only a single location. A few driving schools, mainly outside the U.S., have many locations and teach thousands of students each year. Privatization may be seen as having implications for universal access and social equity, relative to subsidized

public driver education, and some jurisdictions may be extending subsidies to private providers. Web-based and CD-ROM-based private programs also teach many thousands of U.S. students, and the programs' low cost may benefit access, at least for those with a computer. Among the remaining public programs, some are small and receive little support, while others involve many thousands of students each year and receive strong support from the state or province.

Interesting trends in the highly fragmented driving school business include recent efforts to (1) consolidate the industry, (2) create a U.S. national brand, and (3) integrate with other businesses for purposes of relationship marketing. For example, General Motors and auto insurer MetLife Casualty supported the startup of Top Driver in an attempt to build a national brand and consolidate the U.S. private driving school industry. Top Driver later had equity participation from Ford Motor Company. In the 1990s, Ford also took majority ownership in Young Drivers, a large and long-established international driver education provider based in Canada. Ford has since withdrawn from its equity position in beginner driver education. Top Driver and Young Drivers carry on independent of partners in the automotive industry, and they are almost unique as large, private, for-profit providers of driver education.

Another example of driver education integration and branding is under way at AAA, which has long produced driver education materials and training programs. AAA has recently expanded direct delivery of driver education programs through member clubs. In addition to AAA and Top Driver, Sears Driving Schools are the closest to a national brand in U.S. driving schools, but even these large players operate in only a minority of states. Young Drivers is larger than the private U.S. schools, and it represents a name brand in most provinces in Canada, as well as in Finland. Globally, the largest driving school provider is the UK's British School of Motoring. Whether the earlier trends toward consolidation of U.S. driving schools, integration with other businesses, and growth in scale of the providers will persist is uncertain. It seems to be a desirable trend, given the high costs of material production and updating, which a large provider can amortize over a much larger number of locations and students.

The trend toward growing diversity of driver education programs can be seen as an indication of vigorous development that may lead to greater effectiveness. On the other hand, it may also result from a few leading program providers or jurisdictions building new and better high-tech programs while many programs remain static or decline. The full extent and possible benefits or drawbacks of trends in privatization and program diversity need investigation.

## **Program Evaluation: Trends in Research on Outcomes and Impacts**

The great majority of driver education programs have seen little formal evaluation. This includes some of the apparently best-developed and best-managed programs. A substantial literature of published evaluation studies exists, but past evaluations were severely limited in scope, power, and scientific rigor.<sup>18</sup> The field has developed in a strangely unsystematic manner compared with other research and evaluation fields. This may have resulted from little central R&D funding, lack of ongoing involvement of researchers, and the previously mentioned concerns that support for driver education could reduce efforts initially to bring in more effective passive safety measures.

Reviewers of evaluations have typically addressed the substantive question of whether driver education works. They all concluded that beginner driver education has not demonstrated success in improving the safety of new drivers who receive it, or of youth on a population basis. In the last decade or so, quite a number of broad scholarly reviews of driver education evaluation have appeared.<sup>10,23,36,38,50-56</sup> These reviews have usually addressed driver education in conjunction with other forms of driver instruction or graduated licensing. Two systematic reviews have also appeared.<sup>57,58</sup> While representing the application of a strong methodologic trend from other fields, the narrow systematic reviews added little to what was already known from the scholarly reviews. Earlier reviews of both types excluded some good studies, and positive findings within included studies were sometimes inexplicably ignored.<sup>18</sup>

A quantitative meta-analysis by Elvik and Vaa<sup>59</sup> made a valuable contribution to summarizing the findings in an objective manner. It clearly indicates how mixed and inconsistent the evaluation literature has been. Pooled results show significant or near-significant differences in different directions, depending on what crash indicators are used and which studies are included. Despite the complexity of the findings, the authors' final conclusion is similar to the overall negative conclusions of earlier reviewers.

In support of the development of evaluation guidelines for driver education, Clinton and Lonero<sup>18</sup> provided a methodologically oriented literature review critical of a number of individual evaluations and earlier reviews. They characterized evaluations into three forms: experimental studies (RCTs), quasi-experimental studies, and ecologic studies. The relative merits of the three approaches were discussed. The authors pointed out the great difficulty of attempting RCTs with a no-treatment control group in evaluating beginner driver education. This approach has been considered the gold standard of study designs in health and safety fields (although not in education evaluation). They concluded that no one study design is perfect, and

progress will likely develop on a weight-of-evidence basis across numerous studies of different types.

When looking critically at past evaluations, one is struck by how little they have contributed to developing and improving driver education. Evaluation research in driver education has been unsystematic, in the sense that all studies failed to build on earlier research.<sup>18</sup> Even credible RCT findings, such as those of Dreyer and Janke,<sup>60</sup> who found positive effects of one type of training, were not followed up by further research. Scientific knowledge usually develops through systematic replication of research, but that has not yet happened in driver education evaluation research. Earlier thinking, including that behind the DeKalb project, seemed to favor a single massive development effort to achieve driver education safety goals in one big step. More recently, however, researchers and theorists have emphasized the importance of incrementally building knowledge and other intermediate effects,<sup>10,56,61,62</sup> as well as continuously developing and improving programs. For example, Keskinen and colleagues<sup>34</sup> wrote: "We have decided . . . that the development of driver education will take place in short steps, with constant evaluations of the results and trying to avoid solutions which are thought to be final."

Beyond simply asking if driver education works, there appears to be a nascent trend toward recognizing the importance of answering a more comprehensive range of evaluation questions. Do some types of driver education programs lead to better educational and safety outcomes than others? Can we identify which components of driver education programs do and do not work? Do programs meet their learning objectives? How can driver education programs be improved to yield safer young drivers? The narrow and unsystematic evaluations of the past have left these questions unanswered. A lack of comprehensive research aimed at improving programs, as well as proving whether driver education works, has held back the development of more effective programs. To remedy this, the AAA Foundation initiated a project to reinvent evaluation research in driver education. This resulted in the recently published *Evaluating Driver Education Programs: Comprehensive Guidelines*<sup>18</sup> and two companion documents.<sup>19,63</sup> These publications are intended to encourage better quality, more comprehensive and, ultimately, more constructive evaluation research in beginner driver education, as well as a more critical appreciation of evaluation quality and benefits.

In the wider context, post-licensing training also has a weak evaluation history. Such training is easier to evaluate by means of RCTs than is beginner driver education, because post-license training can be delayed or withheld from a control group.<sup>18</sup> NHTSA is currently carrying out an evaluation of a brief track-based program (Drivers Edge). In Australia, a large-scale experimental trial is planned of the brief training

course for young drivers 6 to 12 months after licensing. This RCT is a massive project (14,000 attendees and 14,000 control subjects) and is a cooperative venture of federal resources and two states.<sup>64</sup> This trial has been delayed in starting but was expected to begin in 2007 (R. Christie, RCSC Services Pty Ltd, personal communication, 2007). It is not clear how much change there may be in evaluation research in Europe.

Support for more comprehensive and systematic evaluation research in beginner driver education has become available in the U.S. Projects are being undertaken at NHTSA. Under funding from the AAA Foundation for Traffic Safety and the National Center for Injury Prevention and Control (of the CDC), NHTSA, and Manitoba Public Insurance, Northport Associates and the Traffic Injury Research Foundation are implementing the Large-Scale Evaluation of Driver Education program between 2007 and 2009. This program of ongoing, related, and systematic evaluations of a number of driver education programs is initially focused on three jurisdictions—Michigan, Oregon, and Manitoba—with other sites to be added as broader financial support is found. These research programs seem to constitute a trend toward more systematic and ongoing evaluation research in beginner driver education. This trend, if real and sustainable, is the likely key to eventual development of clearly effective driver education.

An important missing link in the chain of systematic science in driver education is the lack of a global forum or clearinghouse for R&D in the various forms of driver education. There is a strong need for better global communication and collaboration. The gap between the research and program communities is wide, and this gap must be narrowed if there is to be a renaissance in driver education.<sup>65</sup>

## Summary and Conclusion

This article reports on apparent progress and prospects for meeting the needs of more clearly effective driver education. Certainly there are perceptible trends and renewed development in most aspects of this increasingly diverse field. A renewal of federal leadership in the U.S. and central direction in other countries bode well for the future. However, most of the factors that have constrained healthy development in the past are still in place. Bringing science to bear on the problems and solutions related to young drivers and driver education is critically important, and it appears this approach is becoming more common. However, theory is still weak and shows little movement. Driver education delivery is highly fragmented, and both consolidation and further fragmentation appear to be taking place simultaneously.

If it is to achieve success in its demanding mission, driver education needs to be more firmly based in sound research and theory concerning young driver

skills, behavior, motivation, and risk and, at the same time, in the principles of effective behavior change. Meeting the ultimate goal of reducing novice drivers' serious crashes will also require better management of the linkage of driver education with parental and community influences, graduated licensing, and other behavioral influences such as incentives and cultural factors.

Comprehensive and systematic evaluation research can be constructive. A comprehensive approach to evaluation addresses program theory, context, products, processes, and management, as well as outcomes and impacts. The need for such research is increasing, vigorous development is occurring in some public and private programs, clearer guidelines for evaluation are being developed, and support for more systematic evaluation is growing. If the trends toward data-driven development can be sustained and expanded, they could ultimately lead to improved safety outcomes.

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