



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: August 5, 2005

In reply refer to: H-05-23 and -24

Honorable Margaret Spellings
Secretary
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, D.C. 20202

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendations in this letter. The Safety Board is vitally interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations address the effectiveness of driver education and training programs. The recommendations are derived from the Safety Board's report of proceedings of its public forum on driver education and training held on October 28 to 29, 2003,¹ and are consistent with the evidence we found and the analysis we performed. In the report of proceedings, the Safety Board has issued four safety recommendations, two of which are addressed to the U.S. Department of Education. Information supporting the recommendations is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendations.

The Safety Board's public forum surveyed the current state of novice driver education and training, including the extent to which it is used, its effectiveness and shortcomings, and what can be done to improve it. While driver education has been available since the 1930s and, intuitively, should improve driving safety, in fact little consensus exists on the benefits of driver education and training, what it should entail, and how it should be delivered. The 29 forum participants included the National Highway Traffic Safety Administration (NHTSA), State government representatives, safety and consumer associations, groups offering driver education, and teachers, students, and researchers.

According to NHTSA, drivers between the ages of 15 and 20 represent 6.4 percent of licensed drivers in the United States, yet were involved in 13.6 percent of fatal crashes and 18

¹ For additional information, see *National Transportation Safety Board Public Forum on Driver Education and Training, October 28–29, 2003*, Report of Proceedings NTSB/RP-05/01 (Washington, DC: NTSB, 2005).

percent of all police-reported crashes in 2003.² In that same year, 15- to 20-year-old drivers involved in fatal crashes numbered 7,884.³ Motor vehicle crashes are the leading cause of death for 15- to 20-year-olds, accounting for two out of every five teenage deaths.⁴ In 2002, the estimated economic cost of crashes involving 15- to 20-year-old drivers was \$40.8 billion.⁵ Further, a study of crashes in four States revealed that 16-year-olds account for the highest percentage of single-vehicle crashes and crashes involving speeding and driver error.⁶ Because fatalities in car crashes are the leading cause of death among teenagers and teenage drivers are disproportionately involved in crashes, additional action needs to be taken to identify and implement solutions to reduce these fatalities.

Beginning in 1968, responding to repeated requests from both advocates and opponents of driver education, as well as from the Congress, the National Highway Safety Bureau (now NHTSA) initiated the first comprehensive study of driver education; the goal was to develop and evaluate a state-of-the-art driver education program. This effort ultimately led to a demonstration project that took place from 1978 to 1981 (commonly referred to as the DeKalb study, named after DeKalb County, Georgia, where it was conducted) and compared the effects of three programs: a comprehensive Safe Performance Curriculum (SPC), a shorter Pre-Driver Licensing (PDL) curriculum, and no driver education. Many safety advocates expected this effort to conclusively show the crash-reduction potential of a model classroom and behind-the-wheel curriculum, that is, the SPC.

The demonstration project did not yield strong evidence of a safety benefit associated with either the SPC or PDL curriculum. When the crash rates of the students assigned to each group (regardless of whether they completed the course or were licensed) were evaluated, no significant difference was found among the three groups, either in the percentage of students who were involved in a crash or in the average number of crashes per student.⁷ Debate regarding the study's methodology has been ongoing. Nonetheless, two additional analyses⁸ found no evidence of crash reduction effectiveness due to the driver education training after the first 6 months (for SPC) or after the first 18 months (for PDL). Both studies reported that the SPC and PDL courses resulted in earlier licensing among their students.

² U.S. Department of Transportation, NHTSA, *Traffic Safety Facts 2003 Data: Young Drivers*, DOT HS 809 774 (Washington, DC: NHTSA, 2005).

³ DOT HS 809 774.

⁴ <<http://www.cdc.gov/ncipc/duip/spotlite/teendriv.html>>.

⁵ U.S. Department of Transportation, NHTSA, *Traffic Safety Facts 2002: Young Drivers*, DOT HS 809 619 (Washington, DC: NHTSA, 2004).

⁶ M.X. Cammisa, A.F. Williams, and W.A. Leaf, "Vehicles Driven by Teenagers in Four States," *Journal for Safety Research*, Vol. 30, No. 1 (1999): 25–30.

⁷ J.R. Stock, J.K. Weaver, H.W. Ray, J.R. Brink, and M.G. Sadoff, *Evaluation of Safe Performance Secondary School Driver Education Curriculum Demonstration Project, Final Report*, DOT HS 806 568 (Washington, DC: NHTSA, 1983).

⁸ (a) A.K. Lund, A.F. Williams, and P. Zador, "High School Driver Education: Further Evaluation of the DeKalb County Study," *Accident Analysis and Prevention*, Vol. 18, No. 4 (1986): 349–357. (b) C.S. Davis, *The DeKalb County, Georgia, Driver Education Demonstration Project: Analysis of Its Long-Term Effect* (Iowa City, Iowa: University of Iowa, Department of Preventive Medicine, 1990).

In 1981 (before results of the demonstration project were released), the Congress required NHTSA to reconsider its list of national priority programs in terms of their potential for reducing crashes. Based on available evidence (including preliminary results from the demonstration project), driver education was dropped from NHTSA's list of priority programs in that year.

Many driver education curricula, public and private, have been developed without the benefit of information about what constitutes an effective program. For example, the American Driver and Traffic Safety Education Association (ADTSEA), with funding from NHTSA, has developed a model driver education curriculum for classroom and behind-the-wheel instruction to provide information on the basics of safe vehicle operation. This curriculum has not yet been validated to determine whether it improves teenagers' safety. NHTSA plans, probably in 2006, to begin identifying the factors that would be involved in a large-scale evaluation of driver education effectiveness and then to perform a general evaluation of driver education, including ADTSEA's curriculum. Some States already use the ADTSEA curriculum and some supplement it with other curricula. For example, Idaho and Oregon use parts of the National Institute for Driver Behavior's behind-the-wheel curriculum, in addition to the ADTSEA curriculum. Other States have no standard driver education curricula. Several private companies and associations discussed the content and effectiveness of their driver education curricula at the forum, and each claimed some level of success in reducing crashes;⁹ however, no individuals or groups have comprehensively identified and evaluated best practices for driver education and training.

Driver education takes place worldwide, and studies are under way in Europe, for example, to determine how best to provide driver education and behind-the-wheel training to improve novice driver safety. Although driver licensing generally does not occur until age 18 in Europe, the crash rate for European novice drivers is still higher than that for more experienced drivers.¹⁰ Consequently, the European Union is researching ways to improve driver education and to reduce the novice driver crash rate. European researchers note, "[N]ovice drivers can have superior manoeuvring skills and still have many crashes. Teaching scanning^[11] and anticipating as well as self-evaluation skills^[12] appear to be promising ways to reduce crash rates of novice drivers."¹³ Another European research program found that "driver education should expand from the knowledge and skills of vehicle manoeuvring and the mastery of traffic situations to include more about driving goals and context as well as about goals for life, risk awareness, and self-evaluation."¹⁴

⁹ Examples include the AAA Foundation for Traffic Safety's Novice Driver Education Model Curriculum and its driver-ZED CD-ROM, the National Institute for Driver Behavior, TeenSmart, and the National Driver Training Institute.

¹⁰ Nils-Petter Gregersen, *Reducing High Risks—Young Novice Driver Measures*. In <<http://www.etsc.be/evebody.htm>>.

¹¹ Scanning is the task of observing the entire scene around the vehicle to determine whether the path is safe.

¹² Self-evaluation skills are those used to observe one's own behavior and actions to determine whether that behavior contributes to safe driving.

¹³ A. Hoeschen and E. Bekiaris, editors, *TRAINER System for Driver Training and Assessment Using Interactive Evaluation Tools and Reliable Methodologies*, Deliverable No. 2.1, "Inventory of Driver Training Needs and Major Gaps in the Relevant Training Procedures" (Brussels, Belgium: BIVV/CARA, 2001).

¹⁴ S. Siegrist, editor, *Driver Training, Testing and Licensing—Towards a Theory Based Management of Young Drivers' Injury Risk in Road Traffic*, BFU Report No. 40 (Bern, Switzerland: BFU, 1999).

A 1996 review of the role of driver education as part of graduated driver licensing (GDL)¹⁵ programs in the United States included the recommendation that an effective 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.”¹⁶ However, most driver education courses today are not based on an evaluation of the amount of time needed to master these skills. They therefore may not have sufficient hours or the right mix of classroom and behind-the-wheel training (30 hours classroom, 6 hours behind-the-wheel is the typical amount of training provided) to provide this type of instruction.

In summary, as stated at the 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.” The Safety Board concludes that although the various approaches to driver education in the United States and Europe may have aspects that provide novice drivers with some of the training and skills needed to drive safely, no systematic evaluation has been conducted to determine which components are effective in teaching safe driving skills; consequently, educators and commercial driving schools have little or no reliable guidance to follow in designing an appropriate curriculum or in establishing requirements for classroom or behind-the-wheel instruction.

Research has advanced significantly since the DeKalb study 2 decades ago, particularly in the area of how teenagers learn. A representative from the Idaho Department of Education stated at the public forum that, in her experience, “traditional classroom lecture methods that we have used so long in our schools no longer work with teenage drivers today. Our teenagers need to be visually, mentally and physically stimulated and challenged.” Teenagers vary greatly in their learning capacity, learning style, maturity, and risk-taking behavior. Driver education and behind-the-wheel training need to accommodate those who learn visually, those who learn by listening, and those who learn by doing. Having students only read a book or listen to a lecture, as many classroom curricula do, does not take into consideration the varying ways in which students learn. A multivariate approach to teaching and learning can reach the maximum number of students and help them learn to drive safely. Noting that most programs do not attempt to employ the wide-ranging methods by which teenagers learn, a 2000 study¹⁷ of policies and practices in driver education stated, “it will be important for future initiatives to ground efforts in the overall cognitive, emotional, and physical developmental processes of youth.”

Thus, developing comprehensive driver education and behind-the-wheel training curricula requires an understanding not only of traffic safety but also of how teenagers learn. In the absence of such an understanding, educators can lose the opportunity to teach teenagers how to drive safely. Furthermore, as is reflected in their behavior, teenagers are extremely susceptible to peer pressure. Understanding this pressure and other aspects of the cultural and societal pressures that affect their behavior could help educators design curricula that take into account

¹⁵ GDL is a 3-stage licensing system that provides novice drivers with driving experience under more controlled circumstances through restrictions such as curfews, supervised driving, violation-free driving, and passenger limits.

¹⁶ D.R. Mayhew and H.M. Simpson, *Effectiveness and Role of Driver Education and Training in a Graduated Licensing System: Summary* (Arlington, Virginia: Insurance Institute for Highway Safety, 1996).

¹⁷ D. Anderson, A. Abdalla, C.N. Goldberg, T. Diab, and B. Pomietto, *Young Driver: A Study of Policies and Practices, Report of Findings* (Fairfax, Virginia: George Mason University, December 2000).

and compensate for risks associated with this environment. Some European programs have begun to focus on this aspect of educating teenage drivers.¹⁸ The Safety Board concludes that to be effective, novice driver education must take into account research results that offer an understanding of how teenagers learn and of the behavioral environment in which teenagers typically function.

One function of the U.S. Department of Education is to promote improvements in the quality and usefulness of education throughout the United States.¹⁹ Driver education in a majority of the States comes under the purview of the State Departments of Education; however, the U.S. Department of Education currently has no role in developing driver education courses. Yet the need for a more rigorous approach to novice driver education is pressing, and the time for Department of Education involvement is opportune. Research results from other educational fields on how teenagers learn may have applicability to driver education, and the Department of Education is best equipped to make this determination.

Training is necessary for skill development and proficiency in any activity, and, logically, driver education and training should provide such benefits for novice drivers. Although statistics have not shown whether driver education is beneficial for novice drivers in terms of reducing the incidence of crashes, this does not necessarily indicate that driver education is unsuccessful, when in fact no methodology is available to measure whether the roads would be less safe without driver education. Further, what specifically would improve novice driver performance has not been identified; rather, driver education curricula, including the recently developed ADTSEA course funded by NHTSA, have been developed largely based on subjective measures and use of readily available components that have not been validated. NHTSA, through a cooperative agreement with ADTSEA, is preparing a summary of subjects being taught in driver education programs throughout the country, but this agreement does not include an evaluation of the benefits of these programs. Therefore, NHTSA, in conjunction with the Department of Education, should determine which driver training methods result in increased safety for novice drivers, and the Safety Board encourages NHTSA and the Department of Education to solicit input from driver education providers during this effort. The Safety Board believes that NHTSA and the Department of Education should jointly review current driver education and training programs in use nationally and internationally and determine which instructional tools, training methods, and curricula are consistent with what the Department of Education has identified as best teaching methodologies and have led to or are likely to lead to a reduction in crashes. Further, they should incorporate these best practices into a model driver education and training curriculum.

In 1949, the National Education Association's National Commission on Safety Education²⁰ recommended 30 hours of classroom education and 6 hours of behind-the-wheel training (30 + 6) as a standard for driver education and training. The commission derived these recommendations based on a compromise between the time needed to teach driver education and the time funded and feasible for teaching driving skills during the school day.

¹⁸ BFU Report No. 40.

¹⁹ <www.ed.gov>.

²⁰ The commission was formed to provide structure and guidance to the rapidly developing field of driver education.

Despite the dramatic changes in vehicles, highways, and the driving environment over the past 56 years, the approach to driver education has changed little. According to one of the speakers at the Safety Board's public forum, many schools still regard the 30 + 6 formula as the standard. Researchers have shown that driver education, accomplished in 30 hours of classroom and 6 hours of behind-the-wheel training, cannot reasonably be expected to transform a nondriver into a safe driver.²¹ Nonetheless, even the model curriculum that ADTSEA recently developed for NHTSA is based on the 1949 standard (30 hours of classroom instruction and 6 hours of behind-the-wheel instruction),²² because it reflects the number of instruction hours allotted in States that offer school-based driver education. One driver education teacher at the forum agreed that, based on her experience, precision driving skills and safe driving habit development cannot be taught in only 6 hours of behind-the-wheel instruction. A teenage speaker at the forum also said she did not receive enough driving time with her instructor. A speaker from the Insurance Institute for Highway Safety noted "the courses are generally short duration, leading to concentration on teaching basic driving skills and less opportunity to teach safe driving techniques." The Safety Board concludes that the 56-year-old formula of 30 hours of classroom training followed sequentially by 6 hours of behind-the-wheel training was determined arbitrarily and is probably inadequate to teach teenagers the skills necessary to drive safely on today's roadways.

GDL, which the Safety Board has recommended and all States have implemented (at least in part), is a three-stage system that incrementally gives young novice drivers added privileges as they gain experience driving. First, the young driver receives a learner's permit that requires completion of both a minimum of 6 months driving without an at-fault crash or traffic violation and supervised driving practice (including nighttime driving) in which the supervising licensed driver is age 21 or older. Next, the young driver receives an intermediate, or provisional, permit that requires completion of a minimum of 6 months driving without an at-fault crash or traffic violation and imposes nighttime driving restrictions and teenage passenger restrictions. During both stages one and two, young drivers are not allowed to operate a vehicle under the influence of alcohol (blood alcohol concentration of 0.0 grams/100 ml) and may not use interactive wireless communication devices (cell phones). The third and final stage is full licensure.

In many States, teenagers cannot receive their learner's permit until they have completed the classroom phase of driver education. However, at stage 1 of GDL and beyond, the opportunities for additional classroom education are limited. While GDL provides novice drivers with actual driving experience under controlled conditions,²³ the opportunity for behind-the-wheel practice in a safe environment from a qualified instructor is minimal.

The majority of States that require both classroom and behind-the-wheel training do not require that they be taken concurrently. Most classroom training in driver education takes place when a novice driver has had little or no experience behind the wheel to relate concepts learned

²¹ (a) P.F. Waller, "Driver Education: Can Its Goals Be Met?" *Perception*, Vol. 8, No. 6 (1975).
 (b) P.F. Waller, "The Genesis of GDL," *Journal of Safety Research*, Vol. 34 (2003): 17-23.

²² <http://adtsea.iup.edu/adtsea/de_curriculum/de_curriculum.htm>.

²³ Examples include limiting driving to daytime, driving with adult supervision, limiting the number of passengers, mandatory seat belt usage, remaining accident/violation-free during the learner and intermediate stages, no alcohol violations, and prohibiting cell phone use.

to real-life driving. Students listen to a lecture but often do not practice the lesson until weeks or even months later. Michigan, in cooperation with NHTSA, is studying the effect of providing two-phased classroom education, which inserts the behind-the-wheel training between the two classroom phases. Some privately offered driver education courses discussed at the forum combine classroom and behind-the-wheel learning so that they are done concurrently. No studies to date have shown whether students' driving skills benefit from concurrent classroom and behind-the-wheel training. Yet NHTSA, through its cooperative agreement with ADTSEA, will offer technical assistance to the States on providing driver education in conjunction with GDL without corresponding research to support the validity of such assistance.

Although the specific number of hours that novice drivers need to learn to operate a motor vehicle safely may vary because of individual learning differences, setting a standard sequence for classroom and behind-the-wheel education, in conjunction with GDL qualifications, could guide educators and trainers in providing optimum training to teach the majority of novice drivers to become safe drivers. The Safety Board believes that NHTSA, in cooperation with the Department of Education, should determine the optimum sequencing, in conjunction with GDL qualifications, for educating teenagers on safe driving skills, both in the classroom and behind the wheel, and encourage the States to adopt this requirement.

Therefore, the National Transportation Safety Board makes the following safety recommendations to the U.S. Department of Education:

In cooperation with the National Highway Traffic Safety Administration, review current driver education and training programs in use nationally and internationally and determine which instructional tools, training methods, and curricula are consistent with what you have identified as best teaching methodologies and have led to or are likely to lead to a reduction in crashes. Further, incorporate these best practices into a model driver education and training curriculum. (H-05-23)

In cooperation with the National Highway Traffic Safety Administration, determine the optimum sequencing, in conjunction with graduated driver licensing qualifications, for educating teenagers on safe driving skills, both in the classroom and behind the wheel, and encourage the States to adopt this requirement. (H-05-24)

The Safety Board also issued safety recommendations to the National Highway Traffic Safety Administration. In your response to this letter, please refer to Safety Recommendations H-05-23 and -24. If you need additional information, you may call (202) 314-6177.

Acting Chairman ROSENKER and Members ENGLEMAN CONNERS, HEALING, and HERSMAN concurred in these recommendations.

By: Mark V. Rosenker
Acting Chairman