



OOIDA Foundation

RESEARCH • SAFETY • ECONOMICS

WHITE PAPER Entry-Level Driver Training

10/29/2012



Table of Contents

- List of Tables 2
- Abbreviations and Acronyms 3
- Introduction 4
- Background 4
- The Reasoning For Truck Driver Training..... 6
 - Table 1: Summary of Training Adequacy Findings for Motor Carriers 6
- OOIDA Comments 7
- Driver Training..... 10
 - Table 2: Minimum Curriculum Standards for Truck Driving School by FHWA and PTDI..... 11
 - Table 3: Minimum Curriculum Standards for Private Truck Driving Schools 12
 - Table 4: Minimum Curriculum Standards for Public Education Institutions..... 12
- Foreign Approach to Training 13
- Longer Combination Vehicles 15
- Issuance of Fraudulent CDLs 15
- Computer Based Instruction and Simulators 17
- Training Requirements in Other Professions 19
 - Table 5: Comparison Chart..... 21
- Bibliography 24

List of Tables

1. Summary of Training Adequacy Findings for Motor Carriers	8
2. Minimum Curriculum Standards for Truck Driving Schools by FHWA and PTDI	13
3. Minimum Curriculum Standards for Private Truck Driving Schools	14
4. Minimum Curriculum Standards for Public Education Institutions	14
5. Comparison Chart	23

Abbreviations and Acronyms

AAMVA	
ANPRM	Advanced notice of proposed rulemaking
CBI	Computer based instruction
CDL	Certified driver's license
CFTC	Center de formation en transport de Charlesbourg
CFTR	Centre de formation du transport routier Saint- Jérôme
CHEA	Council for higher education accreditation
CMV	Commercial motor vehicle
CTHRC	Canadian Trucking Human Resources Council
CSTIMS	Commercial skills test information management system
ED	U.S. Department of Education
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GAO	Government Accountability Office
ISTEA	Intermodal Surface Transportation Efficiency Act
LCV	Longer combination vehicles
MAP-21	Moving Ahead for Progress in the 21 st Century
NOS	National Occupation Standards
NPRM	Notice of proposed rulemaking
OOIDA	Owner-Operator Independent Drivers Association
PTDI	Professional Driving Institute
PTDIA	Professional Driving Institute of America
R&T	Research and technology

Introduction

Currently, there are no federal or state requirements that tractor-trailer drivers receive formal training as a condition for licensing and there are no minimum federal standards governing the training that may be provided. This situation exists even though driver error has been and continues to be cited as the major cause of truck accidents.¹

According to FMCSA's Report to Congress on the Large Truck Crash Causation Study published in 2006, driver error was found to play a role in approximately 87 percent of crashes involving commercial motor vehicles (CMVs) where the truck was identified as the critical reason for a crash.²

A legal basis for truck driver training has been established since 1935, but there are still no federal or state requirements for CMV drivers to receive formal training. However, Congress has recommended driver-training requirements for CMV operators in the new transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21). In Section 32304(c), "the Secretary shall issue final regulations establishing minimum entry-level training requirements for an individual operating a commercial motor vehicle" (pg 394).

The Owner-Operator Independent Driver Association (OOIDA) has been a strong advocate of the Federal government in their attempts to develop and mandate minimum driver training requirements for entry-level drivers, and it is OOIDA's firm belief that these requirements will improve highway safety for all motorists, including both private and commercial segments.

Background

In 1995, the Office of Motor Carriers (what is now FMCSA) published a study assessing the entry-level training of U.S. drivers of commercial motor vehicles (CMVs). The study concluded neither heavy truck nor motor coach drivers receive adequate entry-level training. In addition to the 1995 report, the Federal Motor Carrier Safety Administration (FMCSA) completed a Research and Technology (R&T) study called "Driver, Vehicle, and Roadside Strategies for 2010" that cited "inadequate and infrequent training" of CMV drivers was one of five high-priority safety problem areas. Thus, the adequacy of driver skills and knowledge is an issue of concern.³

The justification for a proposal for mandated entry-level driver training has its origin and authority in the Motor Carrier Act of 1935 that states, "The Secretary of Transportation may prescribe requirements for – (1) qualifications and maximum hours of service of employees of, and safety of operation and equipment of, a motor carrier; and (2) qualifications and maximum hours of service of employees of,

¹ *Truck Safety: Information on Driver Training*, United States General Accounting Office (Aug 1989), pg. 1.

² "Comments of the Owner-Operator Independent Drivers Association, Inc. In Response To A Notice of Proposed Rulemaking," OOIDA (March 2008), pg. 4.

³ Ronald R. Knipling et al., *Synthesis 1: Effective Commercial Truck and Bus Safety Management Techniques*, Transportation Research Board (2003), pg. 14.

and standards of equipment of, a motor private carrier, when needed to promote safety of operation” [49 U.S.C. 3502(b)].

More recently, authority was given in the Motor Carrier Safety Act of 1984, which requires the Secretary of Transportation to prescribe minimum safety standards for CMVs, which included requiring vehicles are maintained, equipped, loaded and operated safely; responsibilities imposed on operators do not impair their ability to operate safely; physical condition of operators is adequate to operate vehicles safely and; operation of the CMV does not have a deleterious effect on the physical condition of operators.⁴

The proposal for entry-level training is based primarily on 49 U.S.C. 31136(a)(1), requiring regulations to ensure that CMVs are “operated safely,” and secondarily on section 31136(a)(2), where untrained entry-level drivers might be given responsibilities that exceed their ability to operate CMVs safely.⁵

Further precedent was set under section 4007(a)(2) of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), where it provides, “The Secretary shall commence a rulemaking proceeding on the need to require training of all entry level drivers of commercial motor vehicles” (Public Law 102-240, December 18, 1991, 105 Stat. 1914, 2151). In the Commercial Motor Vehicle Safety Act of 1986, the CDL program defines a CMV as a vehicle taking part in interstate commerce.

FMCSA published a final rule of Advance Notice of Proposed Rulemaking (ANPRM) on May 21, 2004. However, three parties petitioned the DC Circuit for review of the rule. The court determined that FMCSA failed to consider important aspects of an adequate entry-level training program and did not provide a cost and benefit analysis. Instead, the court only adopted entry-level driver training requirements on four subject matter areas, including driver qualifications, hours of service, driver wellness, and whistle blower protection.

The 1995 study by the Office of Motor Carriers, entitled “Assessing the Adequacy of Commercial Motor Vehicle Driver Training” cited, “it appears the present level of training adequacy is not likely to improve due to the actions of the private sectors themselves (pg 7).”

In 2007, FMCSA attempted to take the matter into their own hands and published a Notice of Proposed Rulemaking (NPRM) called “Minimum Training Requirements for Entry-Level Commercial Motor Vehicle Operators.” In the NPRM, FMCSA laid out specifics on entry-level driver training minimum hours and course curriculum, trainer qualifications, and school accreditation along with a cost and benefit analysis. However, CMV driver training was not mandated.

Once again, Congress has recommended driver-training requirements for CMV operators in the new transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21). In Section 32304(c), “the

⁴ “Minimum Training Requirements for Entry-Level Commercial Motor Vehicle Operators,” FMCSA (Dec 2007), pg. 2.

⁵ Ibid.

Secretary shall issue final regulations establishing minimum entry-level training requirements for an individual operating a commercial motor vehicle” (pg 394).

The Reasoning For Truck Driver Training

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) mandated that the Federal Highway Administration (FHWA) report to Congress on the effectiveness of private sector efforts to ensure adequate training of entry-level drivers of CMVs.⁶ In response, the FHWA published “Assessing the Adequacy of Commercial Motor Vehicle Driver Training” in 1995 (the Adequacy Report).

The study focused on the adequacy of training for entry-level drivers in three private sectors, which included heavy trucks, motorcoaches and school buses. The Adequacy Report concluded none of the three private sectors was effectively providing adequate training.⁷

Table 1: Summary of Training Adequacy Findings for Motor Carriers

	Heavy Trucks	Motorcoaches	School Buses
% of motor carriers hiring entry-level drivers that provide formal training for them	21.6	62.5	71.2
% of motor carriers sampled whose formal training was judged as adequate	37.5	29.6	33.3
Estimate of the percent of motor carriers hiring entry-level drivers that provide adequate training	8.1	18.5	23.7

The Adequacy Report believed that driver training was beneficial. However, the report found no evidence of a relationship between adequacy of the training and the frequency of accidents even though the report discovered the entry-level driver training inadequate.⁸

Though the statement appears contradictory, the Adequacy Report stated that while training is a necessary condition for the reduction of accidents, it is not a sufficient condition, and something more has to be done in order for training to have its effect. The “something more” the FHWA mentioned was formal training for CMV drivers to assure that all the necessary knowledge and skills are covered, and utilizing a structure that will maximize the chance of learning.⁹

The only current U.S. measurement of driver proficiency is the Commercial Driver License (CDL). Applicants for the license do not have to complete any formal training. They simply have to pass all

⁶ R. L. Dueker, *Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report Volume 1: Executive Summary*, FHWA (July 1995), pg. 1.

⁷ *Ibid*, pg. 2.

⁸ *Ibid*, pg. 10.

⁹ *Ibid*, pg. 7-24.

components of the test, which only consists of knowledge in vehicle inspection, basic skills, and the road test. The CDL test is a necessary step in becoming a professional driver; however, it is not a sufficient one.¹⁰

FMCSA published a NPRM in 2007 with the intent to mandate entry-level driver training for CMV drivers and set minimum hours and course curriculum to enhance safety. The Agency stated the successful completion of the training required by the NPRM would ensure that an applicant for a CDL had acquired essential knowledge and skills, based on classroom and behind the wheel training, to safely operate a CMV.¹¹

The Agency also mentioned a lack of research findings indicating a relationship between driver training and safety in the NPRM, but FMCSA still believed that mandating driver-training requirements would improve safety.¹² According to the NPRM's cost-benefit analysis, the proposed rule would prevent 97 fatal crashes.

In 2006, FMCSA visited the training facilities of Delaware Technical and Community College, Schneider National, Inc., National Tractor Trailer School, Inc., and The SAGE Corp. All of the training entities agreed the current knowledge and skills testing required for a CDL does not negate the need for training. They also agreed that training should be a prerequisite for a CDL.¹³

OOIDA Comments

For many decades, OOIDA has been extremely active in efforts to establish standards for entry-level CMV drivers, including being a strong proponent of Federal government attempts to develop and mandate minimum driver training and licensing requirements. OOIDA sponsored the provision in section 4007(a)(2) of ISTEA, which detailed, "The Secretary shall commence a rulemaking proceeding on the need to require training of all entry level drivers of commercial motor vehicles" (Public Law 102-240, December 18, 1991, 105 Stat. 1914, 2151).

In addition, OOIDA participated in the development of the "Model Curriculum for Training Tractor-Trailer Drivers published by FHWA in 1985, encouraged FHWA's implementation of the CDL Program, and was a founding member of the Professional Truck Driving Institute of America (PTDIA), along with advocating for a graduated drivers license program.

Based upon its continuing and firm belief that minimum training requirements for entry-level drivers will improve highway safety for all motorists, including both private and commercial. OOIDA supported FMCSA's NPRM in 2007 to establish minimum training requirements that require specified amount of

¹⁰ John F. Brock et al., *Synthesis 13: Effectiveness of Commercial Motor Vehicle Driver Training Curricula and Delivery Methods*, Transportation Research Board (2007), pg. 21

¹¹ "Minimum Training Requirements," pg. 1-7.

¹² *Ibid*, pg. 6

¹³ *Ibid*, pg. 7

behind the wheel training for entry-level drivers, the accreditation of training programs to ensure effectiveness, and relevant qualification standards for driver-instructors.¹⁴

OOIDA is especially supportive of behind-the-wheel training. According to FMCSA's Report to Congress on the Large Truck Crash Causation Study published in 2006, driver error was found to play a role in approximately 87 percent of crashes involving CMVs where the truck was identified as the critical reason for a crash.¹⁵

FMCSA released its original Advanced Notice of Proposed Rulemaking (ANPRM) on entry-level truck driver training in 2004. However, the agency only adopted entry-level driver training requirements on four subject matter areas unrelated to hands-on operation of a CMV, including driver qualifications, hours of service, driver wellness, and whistle blower protection. The agency failed to include behind-the-wheel training, or even training in the classroom. In 2005, the DC Circuit held that the agency was arbitrary and capricious in promulgating the 2004 rule because it ignored an important conclusion of its own Adequacy Report, that behind-the-wheel training is essential.¹⁶

Behind-the-wheel driver training not only improves driver learning, but according to top truck and bus company professionals improves job performance as well. "Drivers in training want to do their jobs better, get promoted, receive raises, and generally be the best professional drivers they can be...The more hand-on experiences they have, the better they will learn. This approach also keeps interest and motivation high" (*Driver Training and Development Resource Guide*, Driver Training and Development Alliance, pg 58).

FMCSA proposed in the NPRM that the trainer provider or program must be accredited by an agency recognized by the U.S. Department of Education (ED) or by the Council for Higher Education Accreditation (CHEA). OOIDA continues to support the requirement of accreditation of training institutions.

Presently, there are no federal restrictions on the facilities that offer driver-training programs, nor are there any requirements imposed on the programs that are offered. This void has resulted in offerings ranging from rigorous semester or month-long programs that require more than 120 hours of training to programs that claim to get a driver ready for his CDL test and to take to the road in only a few hours.¹⁷

The Interstate Truck Driving School in Minnesota (Interstate) represents what many schools located across the country are offering. Interstate currently offers programs as short as 90 minutes, stating, "Remember, the sooner you pass the road test, the sooner you can be out there driving!" (See <http://www.interstatedriving.com/trucktraining/training-programs/>) Interstate offers a "Contractor's Special Class A Program" which includes only 2 hours of in-truck training. Also offered is the "Standard

¹⁴ "Comments of the Owner-Operator Independent Drivers Association, Inc.," pg. 2-3

¹⁵ Ibid, pg. 4

¹⁶ "Minimum Training Requirements," pg. 2

¹⁷ "Comments of the Owner-Operator Independent Drivers Association, Inc.," pg. 11

Class A CDL Program” that consists of merely 16 total hours of training compared to the minimum of 120 hours proposed by the NPRM.

In addition, other driver training programs have been connected to fraudulent schemes to provide “easy” CDL test and licenses to driver trainees. Mustafa Redzic, owner of Bansa Truck Driving School in St. Louis, MO, was convicted on multiple charges involving bribery and fraud. The scheme provided easy tests to hundreds of students applying for CDLs in 2008.¹⁸

Issuance of fraudulent CDLs is a nationwide problem. The United States Department of Transportation, Office of Inspector General released a report in May 2002 stating that suspected criminal activity had been identified in at least 16 jurisdiction CDL programs. In Illinois alone, nine deaths could be directly traced to crashes involving commercial drivers that fraudulently received their CDLs.¹⁹

The development of a national certification program for all training facilities and programs is absolutely critical. OOIDA supports FMCSA’s proposal for an accreditation requirement in the attempt to thwart all misconduct and fraud in training programs, thereby eliminating insufficiently trained drivers and improving safety for all motorists.

FMCSA also proposed in the NPRM that instructors teaching at accredited institutions must meet basic requirements. According to the “Commercial Truck and Bus Safety Synthesis 5,” the single most important component of an effective training program is a qualified trainer.²⁰ OOIDA is a strong supporter of training the trainer and agrees with the NPRM.

OOIDA believes a truck-driving instructor must have a different skill set to ensure they are effective lecturers, whether it be teaching in the classroom or teaching behind-the-wheel. An instructor needs to be able to both design and deliver appropriate lesson plans, communicate effectively with students; and elicit evaluate, and use feedback from students.

To ensure that instructors have the relevant skills and knowledge necessary to teach trucking-related subjects, FMCSA proposed that qualified instructors must have completed the portion of the driver-training course they intend to teach or its equivalent. The instructor must also be employed at an accredited training institution and meet all state requirements for a vocational instructor. The skills instructors in particular need to have a CDL and the necessary endorsements to operate the vehicle for which training is being provided and have at least two years of experience in driving a CMV class vehicle.²¹

¹⁸ “Truck driving school owner convicted of bribery, fraud,” St. Louis Business Journal, <http://www.bizjournals.com/stlouis/stories/2008/03/31/daily70.html?page=all> (accessed October 17, 2012).

¹⁹ American Association of Motor Vehicle Administrators, *Commercial Driver’s License Third Party Testing Anti-Fraud System Phase II – Prototype, Pilot Testing and Evaluation*, FMCSA (Nov 2007), pg. iv.

²⁰ Staplin et al., *Synthesis 5: Training of Commercial Motor Vehicle Drivers*, Transportation Research Board (2004), pg. 8.

²¹ “Comments of the Owner-Operator Independent Drivers Association, Inc.,” pg. 17-18.

Driver Training

Currently, there are no federal or state requirements that tractor-trailer drivers receive formal training as a condition for licensing and no minimum federal standards governing any training that may be provided. This situation exists even though driver error has been and continues to be cited as the major cause of truck accidents.²²

There are three main sources available for formal truck driver training, including private truck driver training schools, public education institutions, and in-house motor carrier training programs. Though there are no federal or state requirements for training, some schools may volunteer to be accredited by various organizations such as the Professional Truck Driving Institute (PTDI)²³, which as of 2012 has 58 schools across 20 states and one Canadian province.

In response to the ISTEA request for effectiveness of truck driver training, FHWA published, "Assessing the Adequacy of Commercial Motor Vehicle Driver Training" in 1995 (the Adequacy Report). The study focused on three private sectors, which included heavy trucks, motorcoaches and school buses, and whether the training for entry-level drivers was adequate. The Adequacy Report concluded none of the three private sectors was effectively providing adequate training.²⁴

The study concluded that the two most adequate training programs for truck driver training were the FHWA Model Curriculum and the PTDIA (what is now called PTDI). In fact, the Adequacy Report stated the PTDIA curriculum had a safety impact on the trucking industry that went far beyond the 34 certified schools reviewed in the report. According to the Adequacy Report, PTDIA may have been the single most safety factor at work in the industry.²⁵

FMCSA believes that the FHWA Model Curriculum, the PTDI Curriculum, the Model Curriculum for Training Motorcoach Drivers, and the NHTSA School Bus Driver Instructional Program represent the basis for training adequacy (Commercial Truck and Bus Safety Synthesis 5, pg 8).

In 1976, the Federal Highway Administration (FHWA) published an ANPRM concerning a recommended practice for training commercial vehicle (CMV) drivers. The ANPRM was completed to reduce accidents through improved tractor-trailer driver skills by improving truck driver training programs by standardizing curriculum content and duration; specifying minimum requirements for types of training materials, vehicles and facilities used; and specifying the qualifications of instructors. FHWA recommended these practices because of the following:²⁶

²² *Truck Safety: Information on Driver Training*, pg. 1

²³ *Ibid*, pg. 3.

²⁴ *Assessing the Adequacy: Volume I*, pg. 2.

²⁵ *Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report Volume II: Technical Overview*,

FHWA (July 1995), pg. 20.

²⁶ *Truck Safety*, pg. 3-4.

- FHWA accident data indicated CMV drivers had more accidents during their first few months of employment
- Studies of truck driver training schools showed a wide disparity in safety aspects of training
- Generally accepted training standards or minimums were lacking

Nine years after the ANPRM, FHWA released its Model Curriculum for Training Tractor-Trailer Drivers. The standard prescribed a minimum 320-hour course stretching across 8 weeks. The curriculum contained 86.5 hours of classroom instruction, 117.5 hours of range instruction, and 116 hours of on-street instruction spread out in 49 topics. In addition, the course recommended at least 38.5 hours and 1,000 miles of behind-the-wheel training.

The Professional Truck Driver Institute of America (PTDIA) was founded as a nonprofit organization in 1985 with the intention to advance truck driver training, proficiency, safety and professionalism to the highest standards possible. PTDIA established a certification standard with which to conduct voluntary evaluations of truck driver training programs based on program-specific criteria.²⁷

In 1997, the Truckload Carriers Association assumed management of PTDIA, which then became PTDI. PTDI's course curriculum standard consists of a minimum 148-hour course including 44 hours of behind-the-wheel training. The curriculum contains 104 hours of classroom instruction, 32 hours of range instruction, and 12 hours of on-street instruction stretched across 26 topics related to truck driver training. The Driver Training and Development alliance recommends potential drivers to attend truck driver training programs certified by PTDI.

Table 2: Minimum Curriculum Standards for Truck Driving School by FHWA and PTDI

Criteria	FHWA	PTDI
Hours		
Total	320 hours	148 hours
Class	86.5 hours	104 hours
Range	117.5 hours	32 hours
On-street	116.0 hours	12 hours
Student/Teacher Ratio		
Class	12:1	30:1
Range	6:1	3:1
On-street	3:1	3:1
Behind the Wheel		
Hours	38.5 hours	44
Miles	1,000 miles	n/a
Content (topics)	49	26

When attempting to assess the effectiveness of truck driver training in the private sector, the Adequacy Report asked 38 individuals in the trucking industry what an adequate training program should include.

²⁷ Ibid, pg. 2.

Twenty-two of them responded that the program should conform to the FHWA Model Curriculum or the PTDIA standard.²⁸ However, there are other training programs from which to gain perspective.

The U.S. Government Accountability Office (GAO), previously called the General Accounting Office, examined 24 private training schools and 12 public education institutions that offered tractor-trailer driver training. The GAO report found a wide variance in the truck driver training curriculum, hours of instruction, types of instruction, and fees. In private schools, the total hours of on-site training ranged from 150 to 340 hours and behind-the-wheel training ranged from 16 to 180 hours. The total hours of on-site training offered at public institutions ranged from 150 to 610 hours, with four schools offering 320 hours or more in training. Furthermore, the number of hours students spent behind-the-wheel training ranged from 14 to 142 hours. Ultimately, the GAO report recommended FHWA to reconsider minimum federal standards for formal training.²⁹

Table 3: Minimum Curriculum Standards for Private Truck Driving Schools

Criteria	A	E	G	O	X
Hours					
Total	150 hrs	216 hrs	300 hrs	304 hrs	340 hrs
Class	42.5 hrs	65 hrs	80 hrs	130 hrs	152 hrs
Range	57.25 hrs	65 hrs	40 hrs	74 hrs	36 hrs
On-street	50.25 hrs	86 hrs	180 hrs	100 hrs	152 hrs
Student/Teacher Ratio					
Class	25:1	30:1	35:1	32:1	20:1
Range	8:1	10:1	6:1	9:1	15:1
On-street	3:1	2:1	4:1	3:1	3:1
Behind the Wheel					
Hours	42 hrs	170 hrs	25 hrs	165 hrs	16 hrs
Tuition and Fees*	\$5,564	\$7,784	\$6,558	\$10,664	\$6,669
Cost per hour*	\$37	\$36	\$22	\$35	\$20

*Adjusted for inflation

Table 4: Minimum Curriculum Standards for Public Education Institutions

Criteria	A	C	F	I	L
Hours					
Total	150 hrs	180 hrs	270 hrs	320 hrs	610 hrs
Class	12 hrs	38 hrs	51 hrs	160 hrs	48 hrs
Range	12 hrs	122 hrs	114 hrs	80 hrs	72 hrs
On-street	126 hrs	20 hrs	105 hrs	80 hrs	490 hrs
Student/Teacher Ratio					
Class	4:1	6:1	20:1	12:1	15:1
Range	3:1	2:1	2:1	4:1	4:1
On-street	3:1	2:1	2:1	3:1	4:1
Behind the Wheel					

²⁸ *Assessing the Adequacy: Volume I*, pg. 26.

²⁹ *Truck Safety*, pg. 1-20.

Hours	40-50 hrs	14 hrs	142 hrs	43 hrs	30 hrs
Tuition and Fees*	\$1,393	\$464	\$578	\$3,084	\$1,397

*Adjusted for inflation

Foreign Approach to Training

Training programs offered in the United States, such as FHWA Model Curriculum and the PTDI Standard, are not nearly as extensive as truck driver training programs offered in foreign countries, with some schools providing 700 hours of training. In France, for example, the curriculum can cover up to 2 years depending on the student's experience and knowledge.³⁰

Similar to PTDI's accreditation of voluntary truck driver training programs, Canada's Environmental Careers Organization has developed National Occupational Standards (NOS). NOS are competencies required to perform successfully in a particular occupation. They are a set of statements describing the standard acceptable skills and knowledge requirements of professionals. NOS are considered benchmarks against which people of a particular profession measure their level of performance and competency.³¹

The "Earning Your Wheels Class 1A" program offered by JVI Provincial Transportation and Safety Academy (JVI) is Canada's only entry-level driver training program that meets NOS, and in many provinces, it is the only program that qualifies students for government financial aid. Potential drivers must complete a comprehensive 12-week program that is designed not only to train an individual to obtain their Class 1A license, but to also cultivate a professional attitude in students by emphasizing knowledge, attitudes and abilities.³²

The course is provided exclusively through the Canadian Trucking Human Resources Council (CTHRC) accredited truck driver training institutes. The first 8 weeks of the course consists of in-school training of 120 hours minimum in the classroom and 85 hours behind the wheel. The next 4 weeks contains supervised workplace experience with a carrier, this includes 100 hours behind the wheel.

Before a potential driver can even begin the "Earning Your Wheels" program, they must meet certain prerequisites, including:

- Meet provincial age requirement (21 years)
- Hold a grade 10 certificate or demonstrate grade equivalency
- Hold a class 5 license for a minimum of 2 years
- Proved a current driver's abstract
- A recent provincial medical form with vision test included

³⁰ *Synthesis Program* 5, pg. 8.

³¹ "National Occupational Standards," Environmental Careers Organization Canada, <http://www.eco.ca/public/services/research/national-occupational-standards/371/> (accessed October 18, 2012).

³² "Earning Your Wheels Class 1A," JVI Provincial Transportation and Safety Academy, <http://www.jvidrivertraining.com/ownwheels.html> (accessed October 18, 2012).

- Criminal search required
- Successfully pass Test of Workplace Essential Skills (TOWES) test

A potential driver must also conduct a pre-enrollment interview/counseling session, which includes a discussion relating to suitability for a career in the industry, and the pros and cons of the truck driver's life style.³³

In the Canadian province of Quebec, there are only two designated public training centers offering CMV driver training in the province. The two centers are Centre de formation du transport routier Saint-Jérôme (CFTR) and Center de formation en transport de Charlesbourg (CFTC). Students who successfully complete their course at one of these institutions will graduate with a vocational diploma in truck driving issued by the Quebec Department of Education, Research and Sport.

When CFTR was first established in 1976, it took in about 100 students per year and only had 12 trucks in its driver training fleet. Today CFTR is known as the top ranking institution in the province, graduating more than 800 students per year with over 250 makes and models of tractor-trailers in its training fleet.³⁴

The CFTR truck driver-training program provides 615 hours, or 5 months, of instruction. The course consists of 200 hours of classroom instruction and 415 hours of practice. The first two weeks take place in the classroom, at that point, students will obtain a beginners license. During the following two weeks, the students begin to drive the CMV while gathering knowledge and skills such as, load Securement, backing up, pulling a variety of loads, and city driving. Students must first demonstrate their driving skills by delivering local loads. At the end of the course, students will have a 2-week practicum and will deliver loads for both the government and for schools.

A new European Union Directive created the Driver Certificate in Professional Competence (Driver CPC) for professional truck and bus drivers. Its purpose is to set and maintain high standards of safety and driving among drivers of trucks and buses across Europe.³⁵

According to the Driver CPC, for a truck driver to be a professional (i.e. drive and are paid for it) one must undertake Driver CPC training. In order to obtain a Driver CPC, a driver must complete periodic training that consists of one 7-hour block of training per year for five years. The program does not involve a driving test or assessment, but instead is designed to help truck drivers improve their knowledge and skills to make sure they are drivers of the highest professional standard.

A truck driver will receive their Driver CPC Card after completing the five years of periodic training. However, the driver must complete the periodic training within the five-year timeframe or they will not be able for the Card, thereby they will not be allowed to drive professionally. In addition, the periodic

³³ Ibid.

³⁴ "Let's Roll with the CFTR," Centre de formation du transport routier Saint-Jérôme, <http://www.formationcfr.com/spip.php?rubrique7> (accessed October 18, 2012).

³⁵ "Haulage CPC," CPC Wise, http://www.cpcwise.ie/haulage_CPC.html (accessed October 18, 2012).

training must still be completed every year after receiving the Driver CPC card in order to keep it valid. The Driver CPC is designed to create better, safer, and more professional drivers, along with environmental and economic benefits.³⁶

Longer Combination Vehicles

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) began the first real push for mandating driver training, which asked the Secretary General to commence a rulemaking proceeding on the need to require training of all entry-level drivers of CMVs.

Since ISTEA, there have been two NPRMs, in 2004 and 2007, to recommend a standardization of truck driver-training programs. More recently, the United States Congress recommended driver-training requirements for CMV operators in the new transportation bill, MAP-21.

Although a legal basis for truck driver training has been established, there are still no federal or state requirements for commercial motor vehicle (CMV) drivers to receive formal training as a condition for licensing and no minimum federal standards governing any training that is provided. However, there is a precedent for driver training.

Title 49 CFR Part 380 – *Special Training Requirements* went in to effect on November 1, 2011, and ruled that a commercial driver may not drive a longer combination vehicle (LCV) unless he first takes a special training program.³⁷

The regulation created training program requirements, stating the course for the driver of LCV Doubles or Triples must be distinct and tailored to address their unique operating and handling characteristics. Each course must include the minimum topics of instruction, including behind-the-wheel training designed to provide an opportunity to develop the skills outlined under the Proficiency Development unit of the training program.³⁸

In addition, the rule required qualifications for the instructors as well. Only a skills instructor may administer the behind-the-wheel training involving the operation of an LCV. A classroom instructor may administer only instruction that does not involve the operation of an LCV.³⁹

Issuance of Fraudulent CDLs

Issuance of fraudulent Commercial Driver Licenses (CDL) is a nationwide problem. The United States Department of Transportation, Office of Inspector General released a report in May 2002 stating that suspected criminal activity had been identified in at least 16 jurisdiction CDL programs. Large-scale fraud has been identified in the CDL programs of Florida, Georgia, Illinois, and North Carolina. In Illinois

³⁶ Ibid.

³⁷ "Special Training Requirements," Title 49 Code of Federal Regulations, Pt. 380.

³⁸ Ibid.

³⁹ Ibid.

alone, nine deaths could be directly traced to crashes involving commercial drivers that fraudulently received their CDLs.⁴⁰

The requiring of truck driver training as a condition to obtain a CDL opens the possibility of fraud and misconduct at training institutions and with instructors. Some driver training programs have already been connected to fraudulent schemes to provide “easy” CDL tests and licenses to driver trainees. Mustafa Redzic, owner of Bansa Truck Driving School in St. Louis, MO, was convicted on multiple charges involving a bribery and fraud scheme to provide easy tests to hundreds of students applying for CDLs in 2008.⁴¹

More recently, the Great Truckers Driving School located out of Detroit lost its ability to provide driving instruction in Michigan. Authorities in Michigan shut down the school for encouraging students to apply for CDLs with fake documents.⁴²

The development of a national certification program for all training facilities and programs is absolutely critical. Any training provider or program needs to be accredited by an agency recognized by the U.S. Department of Education (ED) or by the Council for Higher Education Accreditation (CHEA). In 2007, FMCSA proposed an accreditation of training institutions in their notice of proposed rulemaking (NPRM), stating that eleven organizations have been recognized by ED and CHEA to accredit truck-driver training programs or schools.

OOIDA supports a proposal for an accreditation requirement in the attempt to thwart all misconduct and fraud in training programs, thereby eliminating insufficiently trained drivers and improving safety for all motorists. However, testers conduct fraudulent CDL schemes as well as training institutions. A tester for a West Plains, MO, driving school was sentenced in 2008 for his role in a conspiracy to provide Somali and Bosnian nationals with CDLs that they did not earn.⁴³

In addition to accreditation to prevent fraud, a system needs to be implemented to detect fraud in instructors. Training the trainer is a good first step to stamp out any misconduct. The NPRM proposed a list of qualifications an instructor must have in order to teach driver skills in the classroom and behind the wheel. However, more is needed, such as requiring instructors to go through a recertification process to ensure the instructor is operating at the highest professional standard.

In the attempt to combat CDL fraud, the American Association of Motor Vehicle Administrators (AAMVA) proposed each State’s Motor Vehicle Agency (MVA) adopt a new anti-fraud system in 2007. AAMVA suggested a number of measures to cut down on the opportunities of fraud and developed the

⁴⁰ *Commercial Driver’s License Third Party Testing*, pg. iv.

⁴¹ “Truck driving school owner convicted of bribery, fraud.”

⁴² Charlie Morasch, “Michigan: Trucking school ‘encouraged’ illegal documentation,” Land Line Magazine, <http://www.landlinemag.com/Story.aspx?StoryID=24028> (accessed October 19, 2012).

⁴³ “Tester at West Plains, MO, driving school sentenced for fraud,” Land Line Magazine, <http://www.landlinemag.com/Story.aspx?StoryId=16767> (accessed October 19, 2012).

Commercial Skills Test Information Management System (CSTIMS). The CSTIMS runs on the Internet and is centered on the users involved with CDL skills testing and associated testing information.⁴⁴

CSTIMS processes the information flow from all aspects of the Jurisdiction and Third Party Testers, which includes test schedules, test results, audits of testers, and sanctions imposed on testers. This system could be applied to truck-driver training programs and instructors to weed out any potential fraud.

Computer Based Instruction and Simulators

FMCSA released a NPRM called “Minimum Training Requirements for Entry-Level Commercial Motor Vehicle Operators,” which detailed entry-level driver training minimum hours and course curriculum, trainer qualifications, and school accreditation. However, there are a few different instructional methods for truck-driver training, including computer based instruction (CBI) and simulators.

Computers provide ways to exploit human learning capabilities and improve human performance. CBI can be more interesting than conventional instruction; it can be more engaging, more entertaining, more individualized, and more exciting. Nevertheless, if the instructional program is not well designed, if the students’ needs are not met, if incorrect or incomplete content is presented, and if student performance is not measured, then all that the computer does is provide efficient means for bad instruction.⁴⁵

The power of computers to instruct can be significant. CBI can provide graphics, video, and sound and can adapt the pace, mode, and content of an instructional program to meet the learning needs of each student. Studies have shown that the proper application of CBI can lead to a 33 percent increase in the amount of material learned, effectively reducing the time needed for instruction.⁴⁶

For a CBI program for commercial motor vehicles to be effective, it must meet certain characteristics, which include the following:⁴⁷

- Interactive learning – students should actively effect the operation of the training program
- Student enter and exit as needed – the program should allow for flexibility
- Easy to use – the challenge of the program needs to come from the content, not from the operation of the CBI itself
- Visually rich – CBI teaching safe driving performance needs to have a rich and realistic visual component
- Can be customized to include company policies, vehicles, and drivers – training should contain elements of culture as well as regulations and driving fundamentals

⁴⁴ *Commercial Driver’s License Third Party Testing*, pg. 5.

⁴⁵ *Synthesis 13*, pg. 7.

⁴⁶ *Ibid*, pg. 7.

⁴⁷ *Ibid*, pg. 16-17.

- High retention by students – need to adequately define the expected learning outcome of the CBI
- Information collected on a common database – proper documentation of students' achievements
- Student set their own pace – CBI needs to allow students to learn at their own pace
- Criteria testing – each student needs to meet the standards defined in the instructional package
- Model consistency – if a lesson is being provided on “space management of a tractor-trailer,” the CVI must provide visual displays showing what space management is

According to Schneider National, when they started implementing CBI training, Schneider saw an increase in graduation rate, a decrease in average time to going on the job, and saw a 0-to-90 day accident rate decrease from 31% to 10%. Schneider also estimates that for each 1-day reduction in training time, it saved \$7 million annually. However, CBI's contribution to traffic safety has not been systematically studied.⁴⁸

Some simulators are considered training devices but most are not. A true simulation is an instructional method that requires students to interact with specific events based on the real-world situations. Simulators help students apply decision-making processes that could be used in a real-life scenario, note that one can have a simulation without a simulator device. Training simulators are appearing in some schools but most in the trucking industry and private training schools do not have the money to pay for these tools.⁴⁹

The TRB's Transit Cooperative Research Program Report 72 “Simulators and Bus Safety: Guidelines for Acquiring and Using Transit Bus Operator Driving Simulators” concluded that transit bus operator training could be improved with selective use of simulators. The report looked at three different applications of simulator technology including:⁵⁰

1. Open-loop Video – the most popular method of driver training. It uses open-loop video to display traffic and other instruction information. This device is non-interactive and is designed to test specific bus operator activities
2. Low-end Simulator – is a model board system. The device contains a miniature camera in a small model of a bus that physically moves about on a small terrain board. The system demonstrates basic maneuvering of transit buses in typical urban areas.
3. Mid-range Simulator – uses realistic audio and video to deliver a fuller replication of the driving experience. The device provides high fidelity simulation of actual driving situations that trainees are likely to encounter

The report noted that the use of simulators decreased the trainee dropout rate by 35% for an agency using the mid-level simulator, decreased student failure rates by 50% in an agency that uses the open

⁴⁸ Ibid, pg. 16-18.

⁴⁹ Ibid, pg. 8.

⁵⁰ Ibid, pg. 18.

loop and the low-end simulators, and decreased the collision rate by 10% in an agency using a combination of open-loop and low-end simulators. The use of simulation reduced training time in one agency from 19 days to 17 days by replacing classroom bus training with simulator training.⁵¹

Simulator training can help teach specific techniques to a greater effect than what can be taught in classroom, such as defensive driving. Simulators can also provide opportunity for students to experience hazardous situations without putting the students at risk, which reinforces proper driving habits and allows the instructor to gauge reaction time, eye-hand coordination, and driving skills.⁵²

Unfortunately, simulators are considerably expensive. The Texas Motor Transportation Institute purchased a high-end simulator for \$1 million. The system allows drivers to experience dangerous situations such as a veering car, a tire blowout, or dense fog. The association rent out the simulator system to experienced truck drivers for \$1,000 per day.⁵³

Driving simulators may become an important enhancement for safe driver training. However, because simulators cannot capture real-life terrain and vehicle dynamics, the optimal blend of simulator, computer, and behind-the-wheel training is recommended. The NPRM acknowledged that FMCSA encourages the use of simulators and CBI, but does not recommend the substitution of simulator training for the minimum hours of behind-the-wheel training.⁵⁴

Training Requirements in Other Professions

Similar to the trucking industry, the field of aviation is very diverse. There are many different certificates, also called licenses, that one can obtain to become a pilot. Those include a recreational pilot certificate, private pilot certificate, and commercial pilot certificate. Each comes with their own challenges, limitations, and requirements. However, no matter what type of pilot someone wants to become, everyone has to start at the same level.

All pilots begin as student pilots. In order to receive a student pilot certificate, one must:⁵⁵

- Be at least 16 years old (14 years old for operating a glider or balloon)
- Hold at least a third class medical certificate
- Be able to read, speak, write, and understand the English language

In general, a student pilot is not allowed to operate an aircraft in solo flight unless the student has met the requirements for aeronautical knowledge, pre-solo flight training, and maneuvers and procedures for pre-solo flight training and in a single-engine airplane (or in whatever their aircraft might be).⁵⁶

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid, pg. 18-19.

⁵⁴ "Minimum Training Requirements," pg. 8.

⁵⁵ "How Do I Become A Pilot?" Flight Training, <http://flighttraining.aopa.org/learntofly/welcome/index.html> (accessed October 23, 2012).

A student pilot must demonstrate the necessary aeronautical knowledge in a variety of subjects such as aerodynamics, flight characteristics and operational limitations for the make and model of air craft to be flown, what weather to avoid, FAA regulations, principles of navigation, aero medical factors, stall/spin awareness, and National Transportation and Safety Board incident/accident reporting requirements. To pass the knowledge test, FAA requires a student receive a grade of 70 percent or better.⁵⁷

In addition, at the conclusion of the test, the instructor must review all incorrect answers with the student before authorizing the student to conduct a solo flight.⁵⁸ Before a student is able to operate an aircraft in solo flight, they must receive an endorsement from an authorized instructor on their student pilot certificate for the specific make and model aircraft to be flown. The student must also receive an endorsement in their logbook by the instructor who administered the training within 90 days preceding the date of the flight. Furthermore, a student pilot cannot conduct their solo flight at night unless they have received the proper endorsement.⁵⁹

Medical certificates (medicals) are required for all pilots and must be in personal possession or easily accessible in the aircraft. There are three kinds of medicals including first, second, and third class, each have their own requirements, duration, and privileges. The greater a pilots responsibility and the more passengers they carry, the higher the class of medical needed. A first class medical certificate is only valid for six calendar months, while a third class is valid for 36 months if the pilot is under the age of 40, or 24 months if the pilot is 40 or older.⁶⁰

After successfully obtaining a student pilot license, there are two primary certificates for a pilot to receive. A pilot can receive either a recreational certificate or a private certificate, both of which have similar requirements. To be eligible for a recreational pilot certificate or private pilot certificate, a pilot must:

- Be at least 17 years of age
- Be able to read, speak, write, and understand the English language
- Receive a logbook endorsement from an authorized instructor who –
 - Conducted the training or reviewed the applicant's home study on aeronautical knowledge
 - Certified that the applicant is prepared for the required knowledge test
- Pass the required knowledge test on aeronautical knowledge
- Receive flight training and a log book endorsement from an authorized instructor who –
 - Conducted the training on the areas of operation that apply to the aircraft category and class rating sought

⁵⁶ "Solo requirements for student pilots," Title 14 Code of Federal Regulations, Pt. 61.87.

⁵⁷ "How Do I."

⁵⁸ "Solo requirements."

⁵⁹ Ibid.

⁶⁰ "How Do I."

- Certified that the applicant is prepared for the required practical test
- Meet the aeronautical experience requirements that apply to the aircraft category and class rating sought
- Pass the practical test on the areas of operation that apply to the aircraft category and class rating
- Comply with the sections that apply to the aircraft category and class rating
- Hold either a student pilot certificate or sport pilot certificate (or in the case of a private pilot certificate, hold a recreational pilot certificate)

Table 5: Comparison Chart

Flight Experience (Part 61)	Recreational Certificate minimum hours	Private Certificate minimum hours
Total Hours	30	40
Dual	15	20
Cross Country	2 (within 25 nautical miles)	3 (50 nm or more)
Solo	3	10
Cross Country	0	5
Night Flight	0	3
Instrument Flight	0	3
Flight Test Prep	3	3
Limitations		
Passengers	1	No limit
Engines	1	1*
Seats	4	No limit
Horsepower	180	200*
Altitude	10,000	18,000
Airspace	Class G & E only	No Class A
Night Flying	-	Yes
Business Related	-	Yes
Flight w/o Ref to Ground	-	Yes
Outside the U.S.	-	Yes
Charity	-	Yes
Towing	-	Yes

*indicates a limitation may be removed with additional training and/or endorsement

In order to acquire a commercial pilot certificate, one must first hold at least a private pilot license. Additional requirements include aeronautical knowledge that relates to commercial pilot flight operations, flight proficiency that applies to the aircraft category and class rating sought, and the appropriate amount of aeronautical experience (250 hours of flight times as a pilot), which includes:

- 100 hours in powered aircraft, 50 of which must be in air planes
- 100 hours of pilot-in-command flight time, which includes at least –
 - 50 hours in airplanes, and
 - 50 hours in cross-country flight of which at least 10 hours must be in airplanes

- 20 hours of training on the areas of operation that includes –
 - Ten hours of instrument training, of which 5 hours must be in a single-engine airplane
 - Ten hours of training in an airplane that has a retractable landing gear, flaps, and controllable pitch propeller
 - One 2-hour cross country flight in the daytime across more than 100 nautical miles from original point of departure
 - One 2-hour cross country flight in the nighttime across more than 100 nautical miles from original point of departure
 - Three hours in a single-engine airplane with an authorized instructor in preparation for the practical test
- Ten hours of solo flight time or 10 hours of flight time performing the duties of pilot in command
 - One cross-country flight of not less than 200 nautical miles total distance, with landings at a minimum of three points
 - 5 hours in visual flight rules conditions with 10 takeoffs and 10 landings at an airport with an operating control tower

Perhaps the most important component of the pilot training process is the authorized instructors. Instructors, similar to potential pilots, must receive the appropriate certificate, such as a flight or ground instructor license. To be eligible for a flight instructor, a person must:

- Be at least 18 years of age
- Be able to read, write, and understand the English language
- Hold either a commercial pilot certificate or airline transport pilot certificate with –
 - An aircraft category and class rating that is appropriate to the flight instructor rating sought, and
 - An instrument rating, or privileges on that person's pilot certificate that are appropriate to the flight instructor rating sought, if applying for example, for a single-engine class rating
- Receive a logbook endorsement from an authorized instructor on the fundamentals of instructing the required knowledge test
- Pass a knowledge test
- Pass knowledge test on the aeronautical knowledge areas
- Receive a logbook endorsement from an authorized instructor on the areas of operating that are appropriate to the flight instructor rating sought
- Pass the required practical test

It is important to note that a flight instructor is limited to the hours of training they can deliver, along with acquiring the proper type rating for training in an aircraft. In addition, a flight instructor must renew their certification every 2 years by passing a practical test or submitting a completed and signed application with the FAA and satisfactorily completing one of the following:

- A record of training students showing that, during the preceding 24 calendar months, the flight instructor has endorsed at least 5 students for a practical test for a certificate or rating and at least 80 percent of those students passed on their first attempt
- A record showing that, within the preceding 24 calendar months, the flight instructor as served as a company check pilot, chief flight instructor, company check airman, or flight instructor
- A graduation certificate showing that, within the preceding 3 calendar months, the person as successfully completed an approved flight instructor refresher course
- A record showing that, within the preceding 12 months of application, the flight instructor passes an official U.S. Armed Forces military instructor pilot proficiency check

A ground instructor must:

- Be at least 18 years of age
- Be able to read, write, and understand the English language
- Pass a knowledge test on the fundamentals of instructing, including
 - The learning process
 - Elements of effective teaching
 - Student evaluation and testing
 - Course development
 - Lesson planning,
 - And classroom training techniques
- Pass a knowledge test on the aeronautical knowledge areas in
 - For a basic ground instructor rating
 - For an advanced ground instructor rating
 - For an instrument ground instructor rating

A ground instructor certificate is not valid unless the holder can show that within 12 calendar months, they acted as ground instructor, acted as a flight instructor, completed an approved flight instructor refresher course (with graduation certificate from the course), or an endorsement from an authorized instructor certifying that the person has demonstrated the appropriate knowledge.

Bibliography

- Administrators, A. A. (2007). *Commercial Driver's License Third Party Testing Anti-Fraud System Phase II - Prototype, Pilot Testing and Evaluation*. Washington DC: FMCSA.
- (1995). *Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report Volume II: Technical Overview*. Federal Highway Administration.
- Brock, J. F., McFann, J., Inderbitzen, R. E., & Bergoffen, G. (2007). *Synthesis 13: Effectiveness of Commercial Motor Vehicle Driver Training Curricula and Delivery Methods*. Transportation Research Board.
- Dueker, R. L. (1995). *Assessing the Adequacy of Commercial Motor Vehicle Driver Training: Final Report Volume 1: Executive Summary*. Federal Highway Administration.
- Earning Your Wheels Class 1A*. (2009). Retrieved October 18, 2012, from JVI Provincial Transportation and Safety Academy: <http://www.jvidrivertraining.com/ownwheels.html>
- FMCSA. (2007). *Minimum Training Requirements for Entry-Level Commercial Motor Vehicle Operators*. Federal Motor Carrier Safety Administration.
- GAO. (1989). *Truck Safety: Information on Driver Training*. United States General Accounting Office.
- How Do I Become A Pilot*. (n.d.). Retrieved October 23, 2012, from Flight Training: <http://flighttraining.aopa.org/learntofly/welcome/index.html>
- Knipling, R. R., Hickman, J. S., & Bergoffen, G. (2003). *Synthesis 1: Effective Commercial Truck and Bus Safety Management Techniques*. Transportation Research Board.
- Land Line Staff. (2008, November 18). *Tester at West Plains, MO, driving school sentenced for fraud*. Retrieved October 19, 2012, from Land Line Magazine: <http://www.landlinemag.com/Story.aspx?StoryId=16767#.VJBbYlfQepo>
- Let's Roll with the CFTR*. (2010). Retrieved October 18, 2012, from Centre de formation du transport routier Saint-Jérôme: <http://www.formationcftr.com/spip.php?rubrique7>
- Morasch, C. (2012, August 15). *Michigan: Trucking school 'encouraged' illegal documentation*. Retrieved October 19, 2012, from Land Line Magazine: <http://www.landlinemag.com/Story.aspx?StoryID=24028#.VJBbT4fQepo>
- National Occupational Standards*. (2012). Retrieved October 18, 2012, from Environmental Careers Organization Canada: <http://www.eco.ca/public/services/research/national-occupational-standards/371/>
- Shapiro, C. (2008). *Comments of the Owner-Operator Independent Drivers Association, Inc. In Response to a Notice of Proposed Rulemaking Docket No. FMCSA-2007-27748*. OOIDA.

Staplin, L., Lococo, K. H., Decina, L. E., & Bergoffen, G. (2004). *Synthesis 5: Training of Commercial Motor Vehicle Drivers*. Transportation Research Board.

Truck driving school owner convicted of bribery, fraud. (2008, April 3). Retrieved October 17, 2012, from St. Louis Business Journal:

<http://www.bizjournals.com/stlouis/stories/2008/03/31/daily70.html?page=all>