



**IDT400x Instructional Design and Technology: Instructional Design
Course Evaluation and Capstone Project**

**Capstone Project
eLearning of Beginner Driver Education in Ontario**

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USMx IDT 400x Instructional Design Course Evaluation & Capstone Submission Capstone Project: Published Online MicroLesson

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Access to the LMS

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Executive summary

The eBDE101 [eLearning Beginner Driver Education] is developed in preparation for the application for approval of digital delivery of beginner driver education (BDE) in Ontario, Canada. The Ministry of Transportation of Ontario (MTO), the department that is charged with the regulation of driving schools and the licensing of drivers in the province, had issued a set of draft guidelines and requirements for such digital delivery. It's designed to offer an alternative to exiting driver education programs currently delivered only through physical classroom sessions.

I made a submission in November, 2018 lobbying for eLearning, using a [proposal](#) I prepared as part of my studies at the Harvard Derek Bok Center for Teaching and Learning. My submission added me to the list of stakeholders in the project, leading to meetings with the Ministry of Transportation and the policy advisor charged with the project.

In the draft guidelines released in February, 2019, MTO clearly stated that the eLearning curriculum can only be delivered by existing licensed driving schools in Ontario. I am the owner of iPass Driving School and the school is also one of 15 members of the CAA Approved Driving School Network in Ontario.

Currently, CAA ADSN schools offer classroom curriculum written by CAA and AAA. CAA, in driver training since 1935, announced in June that it will terminate the driver education program on December 1, 2019. CAA is in the process of allowing existing driving schools to "white label" the *CAA How to Drive* curriculum for submission as alternate classroom curriculum.

Since my University of Maryland IDT 400x was already underway when this was announced, I offered to allow other CAA ADSN schools to have access and use my eLearning curriculum when it is approved through a newly formed eBDE Associated Driving School Network. So far, seven out of the 15 existing driving schools have expressed interests in using the new curriculum. They also request that a parallel PowerPoint-based classroom curriculum should also be offered.

When I enrolled for IDT 400x, I had obtained written permission from CAA ADSN to use contents in the *CAA How to Drive* curriculum as resource materials. The copyright issues are mostly covered by this

authorization. Although my MicroLesson has the *CAA How to Drive* footprint, much of the data and content have been updated to reflect current numbers and legislations. Many of the rubrics and methods used in the original curriculum have also been replaced with artifacts more aligned with modern eLearning.

One of the issues is the project is now more than an academic exercise, but a project that has urgent needs with tight deadlines. Also, half way through the course, I have to incorporate a parallel classroom curriculum option. A group of driving school operators are counting on me to ride through the transition or de-branding from the Canadian Automobile Association.

The online course I am submitting is eLearning Beginner Driver Education (eBDE). Government guidelines require the classroom portion to be at least 30 hours plus 10 hours of in-car sessions. To fit it into the size of this capstone, I have broken up the classroom session into Parts 1 and 2. Part 1 of the course will be submitted as the MicroLesson for this submission.

Learning theories

In the syllabus, IDT 400x recommends that this capstone course – although not mandatory – to have the prerequisite of the 100, 200 and 200 courses. Unfortunately, I have not gone through those courses yet. I hope I can apply some of the pedagogical theories I learned at the Harvard Derek Bok Center as well as analytic skills I learned through data science courses through the Harvard Extension School. I have verified certifications on the courses.

Here are some of the implied learning theories used throughout the course:

Dual-process theories of cognition: When students learn the new skill of driving a car, performing it is an active process in which the students analyze and are acutely aware of every movement they make. Part of this analytical process also mean that learners think carefully about why they are doing what they are doing, to understand how these individual steps fit together as a comprehensive whole. However, as students' ability improve, performing the skill stopped being a cognitively-demanding process, instead becoming more intuitive. As they continue to master the skill, they can perform other, at times more intellectually demanding, tasks simultaneously. Due to their knowledge of this skill or process being unconscious, students can for example, solve an unrelated complex traffic situation

These theories are blended into the learning of the course through non-graded formative assessments and interactive assignments.

Memory management through storage and retrieval methods: Drivers assess traffic situation mainly through some of these methods:

1. Visual encoding (how something looks);
2. Acoustic encoding (how something sounds);
3. Semantic encoding (what something means); and
4. Tactile encoding (how something feels).

These methods are explored in the course through the use of media, lectures, discussions and activities.

Storage refers to how, where, how much, and how long encoded information is retained within the memory system. The modal model of memory (storage) highlights the existence of two types of memory: short-term and long-term memory. Encoded information is first stored in short-term memory (STM) and then, if need be, transferred to long-term memory (LTM).

In the course, I particularly use the method of chunking to help students store and recall complex tasks in observation, converting STM into LTM. Two particular visual skills utilizing chunking are M-L-R-L (Aggressive Visual Check) on approach every intersection and MSB (Mirror, Signal and Blindspot) check when directional changes are needed.

Behaviorism vs constructivism in driver education: Both of these basic theories in education are used in the course. Naturally, one would have thought most student drivers are intrinsically motivated because they want to get behind the wheels soon. The biggest behaviorism reward is when they get their driver's licenses and some of the penalties in behaviorism for driving is being cited for a traffic offence or damaging their cars in crashes.

However, though teaching young drivers, we will soon discover that some of the learners are not intrinsically motivated. They are enrolled because their parents or insurance company make them do so. Their motivation is mainly extrinsic.

Jean Piaget, a philosopher and natural scientist, believed that children needed to play an active role in their learning in order to develop and to create knowledge about the world. Although Piaget's focus was on the cognitive development of children, his proposed stages of that development have had a profound impact on our understanding of how children's ability to learn changes across the lifespan (Schacter, Gilbert, Wegner, and Nock, 2014).

Many new drivers are learning how to drive at age 16, it's still within the radar Piaget's theories. In the course, assignments are used to encourage students to explore the topics such as the future of driving and social responsibilities through the use of the forum and a teen-parent car use agreement.

Piaget's constructivism has had a notable impact on teaching approaches. Instead of viewing the learner as a passive consumer of knowledge, Piaget's model encourages teachers to alter their methods of instruction to foster active learner engagement (Schacter et al, 2014). Piaget's constructivism posits that knowledge is constructed by individuals, based on their own experiences of the world.

Syllabus

Course name: eBDE 101 Part 1

Objectives: To prepare students for the Ontario G2 driver licence examination and to train a safe road user for the Ontario highway system.

Who can take this course: Ontario residents who are at least 16 years of age and have a G1 Driver's licence. Candidates approaching the age of 16 or in the process of acquiring a G1 licence can also enroll, but may not graduate until these requirements are fulfilled. Learners must have basic English language and computer skills to navigate through the course.

Authority: This is a Ministry of Ontario (MTO) approved Beginner Driver Education eLearning program. Schools offering this course are licensed under the Ontario Highway Traffic Act..

Schedule and duration: The course is offered asynchronously, meaning a candidate can start anytime and can progress at their own pace within **two months** of the start of the course. Learners requiring extra time may request an extension upon paying extra access fees to the learning system.

Beginner Driver Education: This is Part 1 of a three-part course, Part 2 will be a continuation of this course and Part 3 is the in-car driving sessions to be delivered by a licensed in-car instructors of one of our designated local driving schools.

Tuition: \$200 plus HST Parts 1 and 2. Part 3 varies depend on local market situation. You will know and be able to compare pricing when you choose a designated driving school at the beginning of the registration process.

Student participation: Students are encouraged to participate in the several online forums during the course to discuss and share their views with peers relevant to the topics. Use of abusive and rude languages are strictly prohibited.

Graduation: You must have a combined 70 per cent score for both Parts 1 and 2. You also have to achieve a separate 70 per cent for part 3. Upon graduation of each part, you will be issued a certificate of achievement. And when all three are completed, your information in the driver's history data base will be upgraded to show completion of driver education.

About the instructor: Carmel C. Tse is a licensed Ontario classroom driving instructor. He holds a teaching certificate from the Harvard Derek Bok Center for Teaching and Learning. He also has post-graduate certificates on cyber security and data science from Harvard University. He is currently pursuing a MicroMasters certificate from the University of Maryland on instructional design and technology.

Syllabus: eBDE 101 Part 1 Course Content (15 hours)

ORIENTATION [1 HOURS]

- Welcome
- Demo Lesson
- Learning outcome
- Identity verification [Success or failure][10 marks]
- eBDE Code of Ethics [You must accept to continue]
- iTrauma Video: If you are angry, you shouldn't be driving
- Forum: Share your traumatic experience
- Pre-course survey
- Forum: How to work through this course

MODULE 1 [3.5 HOURS]

- Learning outcome
- Module 1 Video 1 AAA Risk mitigation
- Lecture 1 Unit 1 Risk mitigation
- Module 1 Quiz 1
- Assignment: Teen-Parent Agreement [Graded 10 marks]
- Forum: My dream car
- Module 1 Video 2 AAA Knowing your vehicle
- Lecture 1 Unit 2 Knowing your vehicle
- Module 1 Quiz 2

MODULE 2 [3.5 HOURS]

- Learning outcome
- Module 2 Video 1 Natural laws and driving
- Lecture 2 Unit 1 Vehicle space needs and natural laws
- Module 2 Quiz 1
- Assignment: Media research [Graded 10 marks]
- Forum: Footwear and driving
- Module 2 Video 2 Circle Check
- Lecture 2 Unit 2 Starting, steering and stopping
- Module 2 Quiz 2
- Mid-point course feedback

MODULE 3 [3.5 HOURS]

- Learning outcome
- Podcast: Why don't you move the "Deer" sign?
- Module 3 Video 1 AAA Traffic control devices
- Lecture 3 Unit 1 Traffic control devices
- Module 3 Quiz 1
- Module 3 Video 2 OPP on Speeding
- Assignment: Road Trip Planning [Graded 10 points]
- Forum: Traffic laws
- Lecture 3 Unit 2 Traffic laws in Ontario
- Module 3 Video 3 Move Over Law in Ontario
- Activity: Ontario Demerit Points
- Activity quiz: Ontario demerit point system [Graded 10 marks]

MODULE 4 [2.5 HOURS]

- Learning outcome
- Module 4 Video: AAA Vision and perception
- Lecture 4 Vision and perception
- Module 4 Quiz 1
- Forum: Shades. Can I wear them at the road test?
- Whiz or nerd: Drivers of tomorrow [Graded 10 marks]
- Activity: Intersection observation [Non-graded]

PART 1 SUMMARY [1 HOUR]

- Part 1 Exam [Graded 40 points]
- Exit evaluation

DOWNLOAD YOUR CERTIFICATE WHEN YOU GRADUATE

Design strategies

The curriculum has the benefit of the presence an existing *CAA How to Drive curriculum* designed in 2009. However, many data and legislations have since been updated and this is the time to do a major overhaul.

While designing the online curriculum, we also have to take into consideration schools who still want the traditional classroom curriculum. With this in mind, while we adopt the strategy of digital first, we still have to publish a PowerPoint curriculum for traditional use. The aim is to make the two catalogs very similar in appearance, so as to make future transition easier for the reluctant schools.

The lessons are designed and organized in modules, using authoring tools such as Adobe Captivate, Microsoft PowerPoint, Adobe Photoshop, Adobe Premiere and Adobe Acrobat. Not only the presentations have to be visually pleasing and easy to use, they also have to follow stringent appearance guidelines issued by MTO.

Choice of authoring software

The Adobe authoring tools are favored over the Articulate suites on grounds of the cross-platform nature of the operating system. We are also already licensed to use the Adobe Creative Suites, although Captivate is a separate subscription.

Choice of learning management system

I studied and compared different LMS based on features, functionalities, how easy it is for other teaching staff to use (we will have many local schools joining), cyber security, cloud bandwidth, scalability, compatibility with Adobe products and most important affordability.

I compared Google Classroom, Canvas, Litmos, Adobe Captivate Prime, Moodle, TalentLMS and LatitudeLearning.

Google Classroom, although almost free, is very dominating, including requirements such as the use of GMAIL as the corporate email domain. Many of the documents created are also native Google SaaS, meaning future migration to another system will be difficult if not impossible.

Canvas and Litmos are very good, but the pricings are prohibitive.

Adobe Captivate Prime, although best to integrate with Adobe Captivate and moderate per seat subscription cost, requires volume commitment. As a plus, it is stored on the Amazon cloud.

Open sourced Moodle is almost free, except that it's not SaaS (Software as a Service) based, meaning that there will have to be hardware investment and upgrades to our SQL servers.

We choose TalentLMS for this capstone as it has a free subscription for the first 100 active users and after that the per seat monthly costs are quite affordable. It also very easy to configure and the bandwidth is excellent. Downside is it needs third-party multi-factor authentication (MFA) services.

LatitudeLearning is being seriously considered because it offers much stronger administrative features such as MFA and sub-domain services. MFA is one of the requirements of MTO. Downside is it's a little more sophisticated and requires much more planning than 8 weeks to configure. It offers an excellent

free certification program for administrator. We may consider switching to Latitude when we deploy the course for public consumption.

Hybrid content creation

Since there is a fair chance to migrate our assets, I have decided to use a hybrid approach to manage the content. While most of the course materials will be written and published as SCORM (Sharable Content Object Reference Model) files, certain administrative and grading functions will be configured and reside natively on the TalentLMS. Videos are mostly stored on YouTube for its ability to provide closed caption services. For speed purposes, videos are stored outside of the SCORM files,

We use TalentLMS native features for administrative functions such as user profiles, grading functions, graded assignments, surveys, and summative graded exams will be handled directly by the LMS. This will easily avoid discrepancies in grading interfaces.

Lectures, non-graded formative quizzes and assignments are created and published as SCORM files. They are uploaded to the LMS for access This will not only allow for portability but allow us to explore advanced learning features offered by SCORM formats.

Marketing of the course

CAA and the 14 other driving schools in the CAA ADSN network are watching how this project unfolds as they want help to manage the imminent change, but may not know how to best do it.

The next stage for me is to submit Parts 1 and 2 of the course for regulatory approval when the eLearning path opens up and then bring the course to market.

I also look forward to completing IDT 100, 200 and 200 with a hope I can be admitted to the full USM masters program for instructional design and technology.

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