A hybrid model for apprenticeship education through a partnership between Sault College and Durham College

Opportunity

Durham College in Oshawa established a partnership with Sault College in Sault Ste Marie to deliver the Industrial Mechanic (Millwright) (IMM) apprenticeship program to northern and remote communities. A hybrid model was developed in which Durham College provides the theoretical content online and Sault College provides the face-to-face shop experience.

Innovation

The self-directed and self-paced online learning, combined with the flexible scheduling of the lab/shop practical experience, provide an innovative learning opportunity for apprentices in the IMM program.

In apprenticeship programs, employers support the certification of their employees through a combination of formal education and on-the-job experience. Through this college partnership, IMM apprentices enrol at Durham College and receive the theory through interactive and engaging online learning. They attend Sault College for the practical components, which are offered at flexible times to suit both student and employer requirements.

The online program is also available to students at Durham College who then attend Durham College for the practical courses; there are often five or six streams with different student cohorts enrolled at the same time to provide maximum learner flexibility.

The three levels of the IMM program offer a number of online theory courses which stress practical applications of the learning integrated with the lab/shop component. Each online course is uniquely designed to optimize student learning and best convey the essential information and applications. For example, a Level 1 course in IMM Drawings and Schematics is structured into units with a study schedule laid out so students know when they will be tested on what content and what they need to know before attending the lab/shop sessions. The online resources include references to the text book and activities featuring free learning objects (LOs), combining online content, activities, and assessment for student learning structured around specific learning objectives, from Wisconsin Online. The course units include obligatory quizzes that provide immediate feedback and grading for the students. Other courses do not use a textbook but supply all the resources online.

The online instructors at Durham College have also built some of their own learning objects to replicate the machines and systems that apprentices work on in the shop and workplaces. For example, the Fluid Power Trainer learning object can be

manipulated in the same manner as the actual equipment, but with the online version the apprentice can try and retry until reaching a level of expertise at his/her own pace.

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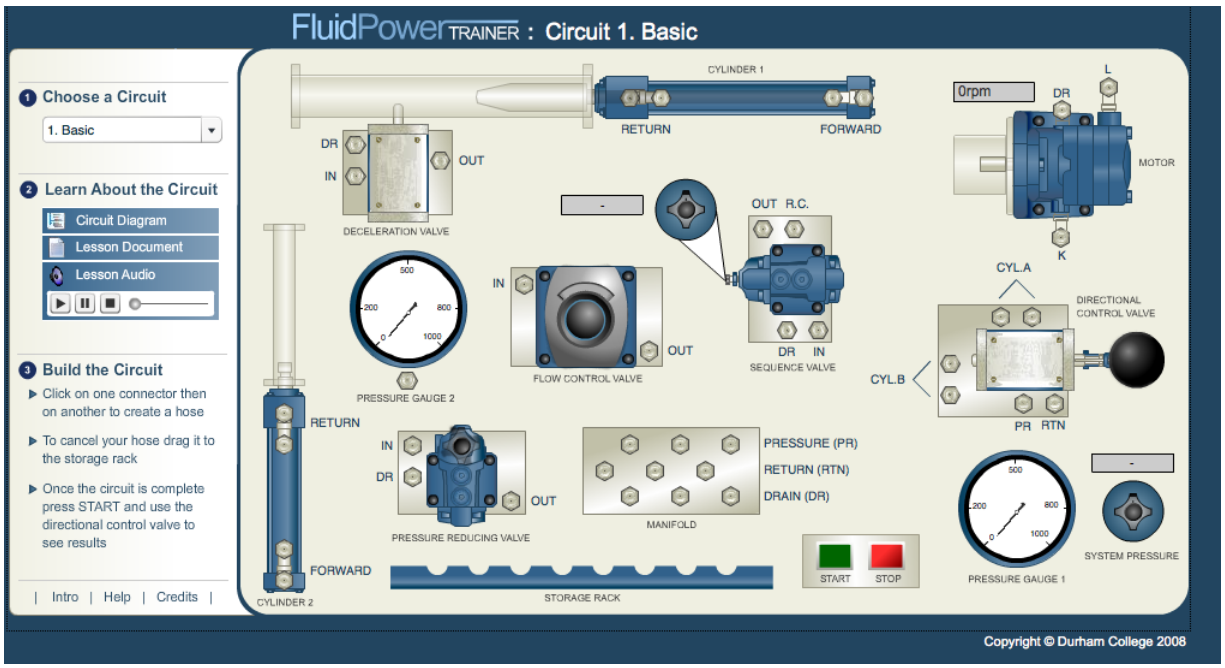

The Fluid Power Trainer learning object

Another Durham-built LO is the Metrology Trainer which presents measuring tools used across a number of trades. On their first day in shop, students spend eight hours learning these tools. Using the LO, they can now do this learning in preparation for the time they spend in the shop. The LO presents detailed labelling of tool parts and information on their care and use – designed in response to student learning needs and questions as revealed in the shop. Each of the learning objects includes activities and quizzes, which are for student self-assessment only and not part of the final grade, in which the students manipulate the tools and record measurements.

Some of the online resources used in the IMM apprenticeship program are also integrated in the Mechanical Techniques – Industrial online program which is a post-secondary program offered in preparation for the IMM apprenticeship. Durham College has also partnered with the Construction Millwrights Union Local 2309 to provide hybrid learning for their members with online theory and weekly practical training at Durham. In return, the Union has supplied the College with equipment that can be used in a variety of programs.

Outcomes and Benefits

Apprentices usually study the theory in face-to-face classroom settings one day a week over 35 weeks or in a more compressed 8 to 10 week bloc of time. The online program is accessible to students who cannot attend full-time, proving a valuable alternative for both apprentices and employers. Student retention and completion levels in the online program are very high.

Students may also be able to complete the program more quickly as they have control over the pace at which they cover the theoretical learning and the shop scheduling is more flexible.

The online testing allows the instructors to track the results and offer support where necessary. For example, the online instructors work closely with the shop instructors and recommend areas for emphasis in shop training based on test results. The students also have instant access to their results.

The online courses are available through OntarioLearn - a consortium of 22 Ontario community colleges that partner to develop and deliver online courses, currently offering more than 900 courses each semester - and so are accessible to students at other colleges in Ontario. If an apprentice at any participating college fails one course in the IMM program, it can be made up by taking the Durham course online and so the student does not fall behind in the training.

Through the partnership with Durham, Sault College is able to run classes with smaller sizes as the costs are lower. Sault offers the IMM program to a smaller cohort of students, providing a more robust learning environment and reflecting the shop infrastructure capacity of the College.

The online resources can be used to reinforce the learning and practice in traditional lecture-based IMM programs as well, especially through the manipulation of the learning objects. The LOs are also applicable to many apprenticeship and skilled trade programs.

Use of online learning resources can result in the optimal use of shop time by having the apprentices and other students learn to identify, understand the applications of, and appreciate the safety measures for the tools they will be using before they come to the shop sessions. They are then able to start their practical experience at more advanced levels.

Challenges and Enhancements

The initial student response to the prospect of online learning was marked by concern, particularly the reduction in personal contact. This has been lessening as students gain

fluency in Internet usage. Online office hours and contact through e-mail and telephone have also reduced the sense of being alone.

Durham College now provides a more robust infrastructure and support for online learning, so that the emphasis moves from developing the information technology to the learning materials.

Until employers and government see the results of online learning, there is still some reluctance to recognize its viability as an alternative to classroom-based training for apprentices. This can mean they hesitate to buy seats in online programs and so instructors and colleges are less likely to support the development of online learning. More exposure to the benefits of successful online programs is necessary.

Potential

More learning objects will be developed in areas, such as shaft alignment, in which the apprentices can benefit from online learning in identification of tools and procedures and safety issues in preparation for more efficient and effective learning in the shop.

The learning objects created at Durham College currently have built-in quizzes that provide feedback to the individual learner. The goal is to track the results of those quizzes through the learning management system and integrate them into formal assessment.

Durham College has received funding through the Higher Education Quality Council of Ontario to research two questions:

- What factors influence the retention and completion rates of apprentices in the IMM program with the Durham-Sault College collaboration?
- What are the differences in student satisfaction and engagement amongst the various modes of delivery of IMM apprenticeship programs offered at Durham College?

Quantitative and qualitative data will be collected over the next three years, involving students, employers, student advisors, and union representatives.

Clair Cornish, the Coordinator of IMM Flexible Delivery and Professor in the School of Skilled Trades, Apprenticeship and Renewable Technology, would like to see Durham work with other colleges to create online courses for other theory-heavy programs in apprenticeship areas, including electrical, mechanical, machining, automotive, and plumbing. The money saved by the colleges through this joint venture could be used for enhancement of shop facilities and acquisition of the latest equipment. More partnerships with unions and industry to supply specific online training would also benefit apprentices, skilled trade workers, unions, and employers.

For Further Information

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