

J I P E

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Innovation in
Polytechnic
Education

Volume 2A · December 2019

Special Issue:
Proceedings of the
Polytechnics Canada 2019
Annual Showcase:
Disruption in Action

 **HUMBER
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Table of Contents

-
- 3 Foreword**
Marie Bilodeau
Polytechnics Canada
-
- 4 Guest Editorial**
Sarah Watts-Rynard
Polytechnics Canada
-
- 6 Keynote Addresses**
Marie Bilodeau
Polytechnics Canada
-
- 9 Training Across Realities**
Russell Foubert & Justin St-Maurice
Conestoga College Institute of Technology & Applied Learning
-
- 14 Gaming as a Form of Experiential Learning: Career Ready Project—Bloom Virtual Village**
Deb Bonfield, Pamela Gauci, Dario Guescini, Jackie Tan, Apostolo Zeno
George Brown College of Applied Arts and Technology
-
- 17 Saskatchewan Polytechnic's Academic Model: Disrupting the Status Quo**
Barbara Gustafson
Saskatchewan Polytechnic
-
- 20 Breaking the Mould in Public Safety Education**
Paul Hommersen & Karen Lints
Sheridan College Institute of Technology and Advanced Learning
-
- 24 Submissions**

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Foreword

Marie Bilodeau

Polytechnics Canada

Polytechnic institutions are ideal partners for disruption and transformation. They offer industry-relevant programs, equipment and facilities that prepare learners for the workplace, support mid-career workers updating their skills and help solve real-world innovation and productivity challenges.

In May of 2019, Polytechnics Canada hosted its Annual Showcase at the Kwantlen Polytechnic University campus, to share the results of a brainstorming session that began with the question, How are polytechnics disrupting post-secondary education in Canada?

The result was a program that reflected diverse and innovative initiatives across campuses: cultural shifts, reimagined classrooms and curricula, light-filled innovation spaces and business partnerships all designed to prepare today's learners for tomorrow's workplaces. Included in this special issue of JIPE are abstracts from four of those presentations, as well as insights provided by our two keynotes, to provide a glimpse of the innovative ideas discussed.


Join us on May 13-14, 2020 at Fanshawe College in London, Ontario, for further discussions—this time on Know-how partners for a knowledge economy. Keep an eye on www.polytechnicscanada.ca for more information.

About Polytechnics Canada

Polytechnics Canada is the voice of leading research-intensive, publicly funded polytechnics, colleges and institutes of technology. The organization is involved in federal advocacy related to skills and innovation policy, reflecting the strengths of its member institutions.

Author Note

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Canada's Polytechnics Represent Disruption in Action

Sarah Watts-Rynard

Polytechnics Canada

Originally featured on Troy Media

It seems everywhere you look, people are talking about transformation in Canadian workplaces. Robots, driverless cars and Internet-enabled machines are changing the nature of work.

An aging population is putting unprecedented pressure on health-care services and leading to shortages in sectors where retirements are outpacing available young people with the necessary skills.

The world around us is in a state of constant reinvention, with new fields, new equipment and new skill requirements emerging at a dizzying pace.

When one is confronted with change of this magnitude, agility becomes critical. It's here that polytechnic institutions shine. They're intimately connected to industry and have a proven ability to respond quickly to emerging requirements. Education is practical, technical and hands-on—and there's little room for complacency. Disruption: embraced.

When disruption is expected and welcomed, interesting things happen. Partnerships are formed across institutions and across borders.

The Humber-Seneca Polytechnic Partnership, for example, establishes transfer pathways between the two institutions' diploma and degree programs, as well as opening the door to shared curriculum and expanded program offerings.

Fanshawe College has established a formal partnership with the Institute of Technology Sligo in

Ireland to conduct collaborative research and exchanges, with projects focused on the medicinal use of honey and concrete additives. Polytechnics Canada's 13 members are working together to mutually recognize student employability skills through shared micro-credentials.

Disruption fuels change at the institution level.

At Algonquin College, faculty and staff are using lean management principles to drive employee engagement and inspire innovation. Daily huddles, visual management and scientific problem-solving have become a part of the college's culture.

At Saskatchewan Polytechnic, program design and quality assurance processes take into account employability skills, work-integrated learning, applied research and Indigenization of curriculum.

Red River College has established a new internal funding program to support interdisciplinary projects at the institution. The Strategic Transformation & Applied Research fund will support initiatives related to academics, applied research and college-wide improvements.


All three examples illustrate how polytechnics are embracing disruption from within.

Disruption is also at work in the classroom, giving students a safe space to make—and learn from—their mistakes while instilling confidence in their skills.

At the Southern Alberta Institute of Technology in Calgary, classes as diverse as radio production, automotive service and power engineering use studios, simulators and industry-grade equipment to put theory into practice.

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Within George Brown's Community Services and Health Science programs, students are designing and implementing simulated field experience models that integrate gaming concepts into the classroom.

Conestoga College is using augmented and virtual reality to prepare students for a world of work that increasingly uses these technologies.

Within its Public Safety program, Sheridan has embraced interdisciplinary learning and a zero-textbook approach designed to enhance the adaptability of students.

Beyond the classroom, polytechnics have become centres for business innovation. Businesses and non-profit organizations alike benefit from facilities, equipment and expertise to drive experimentation and support next-generation product development.

For example, on the British Columbia Institute of Technology campus, their Smart Microgrid Initiative puts solar power to the test. Not only can students and staff power their electric vehicles, but utility companies, technology providers and researchers can experiment with the evolving Smart Grid.

The Northern Alberta Institute of Technology in Edmonton has recently opened a state-of-the-art Productivity and Innovation Centre to help companies evolve and compete. Flexible space can be reconfigured depending on the nature of the requirement.

At Kwantlen Polytechnic University, an 8.1-hectare organic research farm gives growers, researchers and students opportunities to advance organic production practices, develop better crops and produce high-quality seed.

Much like the world of work these institutions' talent pipelines are designed to serve, across the polytechnic community, disruption is a day-to-day reality. By creating an environment that thrives on change and reinvention, polytechnics give students the opportunity to learn both workplace-relevant skills for today and the agility to embrace change as it comes.

Don't take my word for it—one only has to visit a polytechnic campus to see disruption in action.

Keynote Addresses

Marie Bilodeau

Polytechnics Canada

Keynotes were presented by Dr. Joseph Aoun, President of Northeastern University and by Ryan Craig, Managing Partner of University Ventures. Both keynotes focused on the theme of disruption in action and, broadly, how the delivery of post-secondary education must be disrupted to respond to the changing realities of today's labour market.

Dr. Aoun's opening keynote reflected the arguments in his recent book, *Robot-Proof: Higher Education in the Age of Artificial Intelligence*. He touched on the significant changes underway in the global marketplace, including the proliferation of digital technology, automation and artificial intelligence, and spoke to what these changes mean for educators preparing the workforce of the future.

As a member of the audience, I thought Dr. Aoun's keynote left us with three important ideas to take back into our work:

1. The best way to adapt to a future characterized by smart machines is to leverage the value of unique human qualities and skills—something Dr. Aoun called “humanics”—like creativity and mental flexibility. To develop the innate competitive advantages that humans have over machines, he proposed we focus education on three critical literacies: digital literacy, data literacy and human literacy. One of his key suggestions for doing this was to incorporate experiential learning into curriculum whenever possible. In his view, learners who put their knowledge into practice through experiential learning have a sharper suite of human-centric cognitive skills. Putting learners in real-world environments stands to ensure success in labour markets that place a premium on human skills. Northeastern University—where Dr. Aoun is president—has wholly embraced this approach to higher education.

2. Dr. Aoun also spoke of the need for lifelong learning and the opportunity for institutions to open their doors to mid-career workers. As technological disruption becomes pervasive in the labour market, mid-career workers are required to retool and upskill. He proposed that cutting-edge educators will adapt models of teaching and learning to respond to the needs of workers at all stages of their careers. To better serve the lifelong learner population, Dr. Aoun suggested shorter, more flexible and stackable credentials are needed. Leaders in this space will be those who make education more efficient, accounting for previous experience and ensuring it counts in the credentialing process.
3. Dr. Aoun was also a strong advocate for engaging employers in curriculum design, something he suggested ensures that learning reflects current labour market realities. Employers are critical to effective experiential learning and will either be the biggest supporters of or the biggest obstacles to mid-career upskilling. For these initiatives to work within higher education, employers must be fully on board.

It was interesting to reflect on how Canada's polytechnics have already embraced experiential learning, mid-career training and employer engagement as fundamental ingredients in their approach to higher education, particularly given Dr. Aoun's position as a thought leader on innovative higher education in the United States. His keynote finished with a fireside chat with Kwantlen Polytechnic University president Dr. Alan Davis, where the two made noted of these parallels. As Northeastern University expands into Canadian markets like Toronto and Vancouver, the two saw opportunities for partnership and collaboration—another innovative pathway

for educational institutions focusing on future labour market needs.

The closing keynote was delivered by Ryan Craig, who, like Dr. Aoun, focused on how higher education can adapt and respond to disruptions in the labour market. Craig's keynote touched on themes from his latest book, *A New U: Faster + Cheaper Alternatives to College*.

In a world of work where skills needs are evolving quickly, Craig suggested that approaches to higher education need to be reconsidered, especially given the pace of change, the financial and opportunity costs of post-secondary education and challenges around graduate employability. To underline the challenge of employability, Craig highlighted a study from New York's Federal Reserve Bank estimating that 45% of new college graduates in the U.S. are underemployed.

Though many would argue that higher education serves a number of purposes in society, Craig's research suggests that more than 90% of post-secondary students reported employment was their primary motivation in a 2019 survey. In 2000, this number was closer to 50%. As a result, Craig posits that higher education must adapt to better satisfy the needs of both students and employers by better delivering on employability.

The big takeaways from the closing keynote were:

1. An emerging requirement for what Craig calls "faster/cheaper" models of education, such as last-mile training, boot camps and digital apprenticeships. In Craig's view, these models deliver results in an environment of disruption because they are flexible enough to quickly respond to the changing needs of the labour market. By maintaining deep connections to employers, integrating both technical and soft-skill development, and valuing competency over a credential, these models stand to produce talent for the new economy. While they may not replace traditional approaches to higher education anytime soon, Craig suggested models focused on outcomes have the potential to deliver highly employable, next-generation talent.
2. While Craig noted the alignment of polytechnic education with "faster/cheaper" models, he suggested four areas of potential improvement:
 - a. An expanded focus on experiential education, like co-ops, internships and apprenticeships. While experiential learning is central to the polytechnic model, there is room to experiment with and incorporate new approaches as technology and skills expectations evolve.
 - b. Amplification of traditional employer relationships to include intermediaries, like staffing agencies, to ensure the graduate pipeline has alternative pathways to employment. This approach would give both learners and employers exposure to one another without a long-term commitment, providing students with early experience and allowing employers to "try before they buy."
 - c. Experimentation with digital credentials, recognizing that employers are increasingly disenchanted with credentials as a predictor of performance in the workplace. Craig pointed to several prominent multinational firms—Microsoft, Ernst and Young and Google among them—that have dropped the requirement for credentials altogether. As employers make competencies their hiring currency, prospective employees will be required to demonstrate their skills in new ways. Institutions focused on producing employment-ready graduates will have to consider how to make credentials more transparent. In his view, digital credentials move in that direction.
 - d. Lastly, Craig suggested that polytechnics could work more closely with high schools to inform young learners about the broad opportunities available to them and about workplace realities. Career education is often limited by outdated notions about jobs and the skills required to do them. In order to attract young people to high-demand fields like the skilled trades, polytechnics are well-positioned to share information drawn

from their employer relationships and provide a more realistic picture of today's workplaces.

Together, the conference keynotes provided bookends to a conference characterized by sharing best practices in an age of disruption. Both Dr. Aoun and Ryan Craig brought American perspectives to their presentations, allowing delegates to reflect on how Canadian polytechnic education is positioned to respond to emerging disillusionment with traditional post-secondary credentials. The close relationships polytechnics have with employer partners, as well as their flexibility to respond to change and openness to experimentation, will, according to these speakers, be critical advantages in the years ahead.

About Keynote Speakers

Joseph E. Aoun is the President of Northeastern University and author of *Robot-Proof: Higher Education in the Age of Artificial Intelligence*.

Ryan Craig is the Co-Founder & Managing Director of University Ventures and the author of *A New U: Faster + Cheaper Alternatives to College*.



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Training Across Realities

Russell Foubert & Justin St-Maurice

Conestoga College Institute of Technology & Applied Learning

Abstract

Industries of all types are racing to adopt augmented and virtual reality technologies to enhance workplace outcomes. Conestoga College has recognized the disruptive potential of this technology and has embraced it through the creation of its Virtual and Augmented Reality Lab (VARLab). During the 'Training Across Realities' presentation, the VARLab team explored case studies in applied research and curricula, and learned how the capabilities being developed from student talent are being fed back into classroom learning. We offered several VR stations where attendees investigated and tried out our in-house VR Training demos.

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Overview

The creation of Conestoga College's VARLab has enabled students, faculty and college administrators to join forces to expand the talent pipeline with disruptive augmented and virtual reality technologies. Curriculum delivery and research capacity were both advanced through the assignment of co-op students to the lab's numerous projects in 2018-2019. The core tenets of polytechnic

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education were upheld and proven to be a significant source of motivation for the project.

The Training Across Realities presentation at Polytechnics Canada's 2019 Annual Showcase (Foubert & St. Maurice, 2019) described Conestoga's "realities" across the aspects of administration, faculty and student interests by discussing several case studies and key learnings that proved instrumental in launching this new capability centre for the college.

The Positioning of Augmented and Virtual Reality Technologies and Polytechnic Education

It is important to outline the specific factors of augmented, virtual and extended reality technologies that allowed Conestoga to advance its commitment to polytechnic education. Media reports on the exciting and vivid nature of mobile games like Pokémon Go! or the appearance of virtual reality (VR) games like Beat Saber on *The Tonight Show Starring Jimmy Fallon* (National Broadcasting Corporation, 2019) capture the interest of millions and support how popular these technologies have become in the field of entertainment.

What is perhaps less often reported is the significant inroads these technologies are making into workplaces of all types. AR/VR applications can be created to enhance the visualization of new equipment prototypes, allow sales teams to share transformative experiences with a company's

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***Presentation Summary** These brief reports are summaries of the presentations that were given during the annual conference, May 15-16, 2019, in Richmond, B.C.

new products and even allow corporate employees to quickly and more effectively train on new procedures.

Polytechnic institutions and their many industry partners are now seeing augmented and virtual technologies provide new means of immersivity through the exploration of augmented analytics, digital twinning and smart spaces. These sample domains have been identified by Gartner as among the top strategic technology trends (Panetta, 2018) and are examples of key application areas for polytechnic institutions to adapt into their curriculum and research capabilities.



Figure 1. Conestoga VARLab Studies VR for Curriculum Delivery

Curriculum Support and Intentional Skill Development

Conestoga's VARLab team worked throughout 2018 and into 2019 to ensure that efforts taken to bring AR/VR technologies into the college would be supportive of curriculum delivery. A key component in the early stages of the effort was to ensure partnership between the technical leads who could master the hardware and software components of AR/VR projects and the groups with subject-matter expertise and the key use cases for immersive, experiential learning.

The inaugural partnership involved faculty from the School of Health and Life Sciences & the School of Applied Computer Science & IT, partnering several students on co-op work terms in what would become the VARLab. The first project involved students in a multidisciplinary manner—a combination of software developers (Computer Programmer/Analyst and Software

Engineering Technology diplomas) to cover the technical development, and several analysts from the Bachelor of Applied Health Information Science acting as subject-matter experts and domain researchers. The results from this early collaboration produced a Virtual Reality Restaurant Inspector application for the college's Bachelor of Environmental and Public Health program (BEPH).

The VR Restaurant Inspector solution was demonstrated to the audience during the presentation at the 2019 Annual Showcase. In December 2018, the VR Restaurant Inspector was presented to 45 students from the BEPH program. In order to assess the perceptions of the value of such VR training, the upper-year students were surveyed prior to trying the VR solution and then again following their experience. Some of the key findings discussed during the 2019 Annual Showcase were:

- Students were generally quite positive about the experience.
- Very few students encountered more than minor and temporary discomfort.
- Many students saw tremendous value in “practicing skills we had only discussed in class.”
- A reasonable number of students expressed concern about having to become adept “gamers” in order to succeed at the VR trainer or, along similar lines, there was concern that the VR trainer be used as an assessment.
- While there was excitement for the new technology, all but three of the surveyed students had never experienced a virtual reality application before.

Polytechnic education has long offered students effective, experiential learning opportunities, and the immersive nature of AR/VR technologies can now take students and faculty alike much deeper into scenarios that could not be realistically delivered in the past.

Research Partnerships and Talent Development Pipeline

In addition to efforts to explore how AR/VR can impact curriculum development and intentional skills development, the VARLab served as a test bed for the rapid development of prototype VR simulations that

addressed a range of potential needs among the college's many industry partners. Several of these short projects would eventually lead to funded applied research projects in mid-2019:

- Factory Safety Trainer
- MRI Procedure Simulator
- Forklift Safety Inspector
- Police Services Traffic Stop Safety Simulator
- Interactive Case Studies

Additionally, the VARLab provided hardware and software support for student capstone projects across several programs from January to April 2019. A sample of these capstone projects includes:

- AR Remote Assistance for Cannabis Cultivation
- Observation Collection Assistant for Early Childhood Education
- Resiliency/Tonal Analysis Trainer for Early Childhood Education
- AR Policy and Procedure Trainer for Early Childhood Education
- 360 Video Job Interview Coach
- AR Campus Tour for International Students
- VR Procedure Trainer for Medical Cannabis Cultivation

The extent of the VARLab's support for applied research activities was propelled by the efforts of student workers on their co-op work terms or on part-time work-study funded opportunities. This "in-house" approach to deploying talent from within the college's student body to achieve these results is entirely supportive of the polytechnic mandate and has been hailed by Conestoga's industry partners as essential to developing a talent pipeline for graduates who can address the need to develop immersive content for experiential learning in their fields.

Mobilizing Support

During the presentation, the presenters spoke about the tremendous challenge of starting the VARLab and the tremendous support from Conestoga College to do so. The retrospective view provided at the 2019 Annual Showcase was arguably overlooking the problems and risks that

any one group might have experienced on delivering this capability on its own.

The Centre for Smart Manufacturing & Digital Innovation remains the key supporter of the VARLab for developing opportunities to undertake funded research opportunities with industry partners in the field of AR/VR development. On its own, the CSM-DI can face staffing challenges when looking for qualified co-op student labour—some key programs at Conestoga provide co-op students only at the start of May each year. Projects looking to start in November, for example, would typically face delays.

The academic centres of the college, such as the School of Applied Computer Science & IT, might relish the enhancements to curriculum development that the VARLab might bring. Certainly, with a growing number of students and employers asking for access to these tools and technologies, the need was always clear. The justification of the funding model was arguably less clear. With both significant hardware costs and the potential for idle semesters or weeks for that hardware, there was initially some assurance missing from the recommendations to go forward with the VARLab.

Finally, faculty researchers who had compelling projects in the AR/VR space expressed concern about finding funding for the many smaller prototype development opportunities sought by the college's industry partner. Prior to the VARLab's inception, for example, most applied research projects involving faculty researchers and co-op work term student researchers were required to fit a four-month/15-week template, which was not always conducive to various funding agencies. Without the flexibility to undertake several smaller projects within those larger time frames, many of the initiatives would not even have started.

The formation of a working group for AR/VR was critical to successfully resolving these problems. By providing a forum where different stakeholder groups could collaborate, provide and receive support, and share potential opportunities to strengthen the initiative, Conestoga has developed a successful strategy for

deploying a consistent talent pool of co-op student researchers who can be allocated between internal curriculum support projects and funded research projects, with very little turnaround time. The VARLab receives investment from the academic centres of the college and through CSM-DI-driven applied research in a manner that is mutually supportive of curriculum development and expanding the college's capacity for research. Lastly, the students currently involved and those waiting to become involved as they advance through their programs are the ones receiving the lion's share of benefit. They are already becoming sought after by industry and are truly becoming the Highly Qualified Personnel (HQP) we have committed to train as a polytechnic institution.

Summary and Recommendations

A project like Conestoga's VARLab is a key model for any polytechnic institution to consider when looking to address skills development, curriculum support and applied research capacity in the field of AR/VR technologies.

Admittedly, our colleagues at some of the other polytechnics have taken differing approaches that focus, for example, on one or two key industry partners to enable their AR/VR capacity, versus generating the capacity through significant upfront internal investment. Regardless of how different opportunities may come together, the key points the authors feel are significant across all polytechnic institutions are as follows:

- 1) Cultivate wide support within the institution. AR/VR technologies can be applied to many different domains and are becoming increasingly accessible in terms of lowering the hard skills required to experience engaging and immersive educational content. It stands to reason that needs for this technology across, for example, schools of business, health, information technology and trades education can complement each other and are relatively easy to align and merge. Doing so at Conestoga has negated the possibility of investment and resources being spread too thinly.
- 2) Take the multidisciplinary approach to building student project teams for applied research and curriculum-based projects (e.g., capstone projects). This point harkens back to the extremely immersive nature of AR/VR technologies. Software development students are not likely to be well-versed in the nature of the hospitality industry, so partnering them up with hospitality program students will result in much more effective and immersive projects. Additionally, adding students with a focus on graphic design or user experience is another approach that Conestoga's VARLab has shown works quite effectively.
- 3) Move quickly. This point is made with full acknowledgement of the need to constantly manage risk in our large academic institutions. The call to action is clear, however: the talent pipeline is now being built that will provide industry with the HQP needed to develop immersive AR/VR experiences for a wide range of applications. By 2025, much of this technology will be significantly changed and much more pervasive in daily life. Polytechnic institutions must develop their capacity in today's AR/VR technologies to be prepared to support tomorrow's iterations.

September 2019—Update

Since the 2019 Annual Showcase, Conestoga's VARLab has completed a significant Virtual Reality training prototype for a key industry partner under an Ontario Centres of Excellence-funded applied research project. This multi-player VR trainer allows three workers to rehearse the steps to complete automotive parts assembly as members of an assembly team. This and two additional funded applied research projects will soon have the potential to cover over 50% of the staffing costs of the student workforce deployed to the VARLab. The student team, a multidisciplinary group combining software developers, subject matter analysts and 3-D digital artists, now totals 12 individuals, an increase of over 600% from the first year's staffing levels.

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Watch for the next special issue of JIPE coming 2020: Innovation in Sustainable Solutions

This issue will include papers from across Canada that highlight pedagogical approaches within, or the impact of projects or programs focused on sustainable infrastructure and construction, alternative energy, smart cities, or advanced manufacturing. Read about success stories, best practices, evidence of curriculum shifts to accommodate new needs and examples of industry partnering with polytechnics to address their own operational need for talent and innovation.



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Gaming as a Form of Experiential Learning: Career Ready Project—Bloom Virtual Village

Deb Bonfield, Pamela Gauci, Dario Guescini, Jackie Tan, Apostolo Zeno

George Brown College of Applied Arts and Technology

Abstract

George Brown College students, in collaboration with industry partners Baycrest Health Sciences and Microsoft, worked with experts to imagine, design, create, validate and employ simulated field experience models. Under close supervision of George Brown's faculty from two academic divisions, students converted the field placement experience in long-term care into a simulation gaming solution. Upon completion of this initial pilot, George Brown College will begin to integrate the game in several programs in our Centre for Community Services and Health Sciences. Students worked collaboratively to develop a unique digital experiential learning opportunity.

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Introduction

The Career Ready Fund project began in May 2018 and consists of multidisciplinary teams of faculty and students from George Brown College's Community Services and Health Sciences (CSHS) and Centre for Arts, Design & Information Technology (CADIT), in collaboration with Baycrest Health Sciences and Microsoft, with funding provided by the Ministry of Training Colleges and Universities. The task was to create a game that would simulate "real world" situations within a long-term care setting for students while supporting seniors living in and transitioning to long-term care.

The objective of the game is to prepare students in CSHS disciplines for training, placement, and potential work in long-term care or clinical settings. Students will be exposed to a variety of realistic situations encountered in the workplace and, through experiential learning, will be allowed to practise work-related skills. The game is meant to be highly interactive and immersive, as well as preparatory for students entering placement for the first time. It offers live-action decision making and best-practice feedback and resources to enhance the development of skills needed working in long-term care.

The Career Ready Fund project is an example of a multidisciplinary team of students who, by working together, effectively embraced the design process. There was an opportunity to create an innovative and unique

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teaching tool that would be used by future students to better prepare them for their placements. CADIT and CSHS students then conducted extensive research, interviews and site visits to better understand some of the main challenges that are faced in long-term care.

The team became familiar with the current state and needs of long-term care facilities. This, along with extensive brainstorming sessions, began to influence the design process, concepts and direction of the project. The students determined they would create a role-playing game where players experienced being a placement student in a virtual long-term care facility, interacting with characters. Over the course of 14 in-game days, the player learns to communicate through highly curated dialogue and storylines created by students and faculty alike. As players progress through the game, they meet several primary and secondary characters and their interactions/responses influence the course of the game; at the same time, they receive feedback. The result is a fun and interactive teaching tool that provides students with potential scenarios they may encounter during their first field placement, and the opportunity to learn best practices and approaches in dealing with realistic situations.

Below are several key points that further explain what makes this project unique and innovative:

- The Career Ready Fund project focused on solidifying knowledge exchange between interdisciplinary student teams from a number of different backgrounds and disciplines, including nursing, personal support, activation/gerontology, social service, denturism, game design, game art, concept art for entertainment, video design and production and theatre arts.
- The content and design of the game were created by George Brown College students, for future students to use in preparation for entering their field placements.
- Industry partners Microsoft and Baycrest Health Sciences provided an extra layer of expertise and supported the project throughout the process.
- In addition to students, faculty and partners, the team engaged with Simulated Education in

Gerontology Education Simulated Participants—older residents who were sourced as actors and portrayed some of the characters throughout the game and in live-action video scenes. The concept artist team then took the images of these participants and created avatars for each character.

- While the content in this game is specific to placement students in long-term care facilities, we envision this model of role-playing game as applicable to any learning discipline. Bloom Virtual Village was created with modularity in mind. Learning topics can be added or removed as the content is created, adapts and changes.
- Bloom Virtual Village also has a wide range of applications, and while this iteration is specifically tailored for long-term care placement prep, the game can be redesigned and new content can be created that would allow it to be used for a variety of disciplines.
- The entire process has been inclusive, not only for all participants directly involved in creating the game and its content, but as the game has progressed through iterations, many classes of current students, faculty and partners were involved in game demos and focus groups to obtain feedback and ensure that changes were made based on that feedback.
- Bloom Virtual Village includes several game components that were to complement the main content developed.
- The game components include the following:
 - **Learning Outcomes** were written for each scenario, providing student players with a framework for the objectives they will achieve by the end of the game.
 - **Summary Chart (Best Practices)** appears at the end of each in-game topic, focusing on suggested best practices as well as summarizing what the player did well or can improve on, based on their interactions with the game characters.

Resource Library shows examples of various resources and websites that students can access to obtain additional information and reading material on each topic.

Glossary Tab was created to assist the student player in navigating the long-term care setting and the various health care terms.

In summary, the Career Ready project Bloom Virtual Village is an exceptional example of how an a multidisciplinary approach to learning can foster innovation. The process and development of the game enabled our students to interact with industry partners,

and incorporate theory into practice. Bloom Virtual Village provides a non-traditional approach to the way we deliver education. Faculty can present key material and best practices in health care in an immersive and interactive manner. Furthermore, the additional components of the game engage the learner and encourage further research opportunities.

To learn more about the Career Ready project, contact Lori Cranson, George Brown College, Dean of Community Services & Health Sciences at lcranson@georgebrown.ca.

Saskatchewan Polytechnic's Academic Model: Disrupting the Status Quo

Barbara Gustafson

Saskatchewan Polytechnic

Abstract

In 2014, Saskatchewan Polytechnic set out to create a vision for program delivery that would meet the needs of industry and students well into the future while building on existing strengths. Through a highly collaborative process, the Academic Model was created with more than 100 commitments to changing the status quo. Since 2016, the implementation of the Model has moved Saskatchewan Polytechnic forward as a polytechnic: adding employability skills, work-integrated learning, applied research and Indigenization to curriculum, as well as making learning more flexible for students and reinforcing quality assurance in program design. However, disruption comes with some discomfort, and this presentation shared the lessons learned about change management and communication along the way.

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Introduction

During the past five years, one of the most disruptive forces at Saskatchewan Polytechnic has been of its own making: the institutional academic model. Saskatchewan Polytechnic began a review of its implicit academic model in 2014 with a view to create a documented vision and plan to meet the changing needs of students and industry. The result, *Tomorrow's Learning in the Making: Saskatchewan Polytechnic's Academic Model*, was completed and approved in September 2016. Throughout the development process and subsequent implementation of the Academic Model, many lessons were learned regarding change and deliberate disruption that may provide guidance to other polytechnics considering similar projects.

Status quo and need for change

As the development of the Academic Model began in 2014, Saskatchewan Polytechnic was a strong and growing institution. As the sole polytechnic in Saskatchewan and the primary provider of vocational and technical post-secondary education, Saskatchewan Polytechnic has four campuses in the province's major cities and serves more than 26,000 students through 170 programs, including certificates, diplomas and degrees. This success built on concepts anchored in an earlier time, however; to have continued success in the future, change would be required.

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***Presentation Summary** These brief reports are summaries of the presentations that were given during the annual conference, May 15-16, 2019, in Richmond, B.C.

The project charter for the Academic Model explained the challenge:

The current implicit Saskatchewan Polytechnic academic model is based on constructs developed in an era when provincial and institutional mandates and visions were quite different from what they are today. Employer demand for more skilled graduates, technological advances to program delivery options, student demand for access to programming on a where-needed, when-needed basis and for new learning pathways to achieve their career goals require us to re-think and innovate our academic model.

A steering committee, including all academic deans and associate vice-presidents, provided oversight to the project. Two project managers were seconded from faculty positions as primary researchers and writers over an 18-month period. The approach taken for this work was from a strengths perspective, similar to, but not strictly following, Appreciative Inquiry practice.

To inform discussions on what changes would be required, the project managers first reviewed student demographics and industry requirements, on a national, international, and local level. Using this information, they held extensive consultations with senior management, faculty, staff, and students to gather input on how institutional processes could better serve key stakeholders. More than 800 people participated in the multiple rounds of campus consultations. A preliminary discussion paper, followed by a draft academic model, circulated at these meetings and electronically.

The resulting Academic Model was a slim but very carefully considered document. Built upon principles and commitments to the four key stakeholder groups—students, industry, Saskatchewan Polytechnic itself, and society—the Academic Model included five major elements around knowledge and skills for student success; clear and efficient curriculum design; flexible student pathways; instructional excellence; and standardization for academic efficiency. From these five elements, 29 components that provided further detail were developed.

Implementation: Making change happen

Beginning in the fall of 2016, Saskatchewan Polytechnic's Academic Model moved from plan to action. The two faculty members in place at this stage were required to serve as project managers in a more traditional sense, organizing and tracking progress.

As the Academic Model shifted into implementation, it required a key communication change, to move the implied ownership of the model from the small team that had developed and approved it, toward belonging to the entire institution. As well as this change in style of communication, additional messaging was required as ideas became changed expectations and processes.

The 29 components served as the basis of projects to be detailed, developed and completed. Smaller, somewhat simpler, components became the first projects. These included standardizing the passing grade; defining course and term structures; creating or updating foundational documents, including the credential qualification framework; and policy changes.

During the second year of implementation, resources for the overall project lessened, leaving one project manager to continue the work previously done by two. Nevertheless, progress continued with a new curriculum framework created, new quality assurance processes developed, and key aspects of the Academic Model integrated into programs as regular curriculum revisions occurred.

As the implementation phase moved into its third year and beyond, projects involved more complex components of the Academic Model, including Indigenization of curriculum, inclusion of intercultural competencies in both course content and teaching practice, and operation of the new academic council with additional powers of peer review over new program implementation and program revision.

Lessons learned

Disruptive change, whether deliberately undertaken by an institution or forced by external changes, does not happen without some difficulties. In reflecting on the five years of

the Academic Model development and implementation, several lessons were learned:

- Dedicated resources, in the form of two project manager positions, were key to making the development phase successful.
- Beginning with research to support the case for change is necessary, especially when presenting initiatives to an academic audience of faculty.
- Consultation is time-consuming, especially when institutional campuses are more than 500 kilometres apart; however, providing opportunities for input during development is essential to building engagement with the change.
- Enthusiasm from all those closely involved in a project is very valuable. This includes those at the executive sponsor/vice-president level through to the steering committee and project managers.
- Implementation of more basic, simpler projects first allowed for some early wins.
- Moving from development to implementation requires a transition period. Moving quickly from one phase to another resulted in projects not fully planned as they should have been, and lack of clarity regarding roles within the project teams.
- Distributed leadership of multiple, concurrent projects with one project manager leads to projects not being properly supported. Fiscal realities and difficult staffing decisions, unfortunately, may undermine previous work and delay progress.

Breaking the Mould in Public Safety Education

Paul Hommersen & Karen Lints

Sheridan College Institute of Technology and Advanced Learning

Abstract

The pace of change in our world is unprecedented, and Sheridan College looked to break the mould on how public safety education had been done when it came to creating community safety. This included how we perceive community safety, how students could learn to leave a mark and even how they access knowledge. In this presentation, we discussed the importance of interdisciplinary and inter-professional approaches, and how a zero-textbook approach can facilitate student learning and adaptability.

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Introduction

The conversations and perceptions around the topic of community safety in many countries have typically been used as replacement discourse for situational crime prevention (Gilling, 2001). This approach has been viewed as difficult to sustain and ultimately less likely to handle the increasingly interconnected and complex problems our society may encounter (Association of Municipalities of Ontario, 2015; Toronto Police


Transformational Task Force, 2017). Unfortunately, this model has also been reflected and perpetuated in many of our academic institutions. Programs tend to focus on training students on the criminal justice system as an approach to safety, which means that change to a different model of learning may evolve slowly, or not at all. At Sheridan, the bachelor's degree in Community Safety does not solely focus on policing, or even exclusively the criminal justice system. Not to minimize the importance of crime prevention or understanding the criminal justice system, Sheridan's approach stems from a public health perspective that emphasizes safe communities. This model considers multiple perspectives about what safety means, requiring an integrated, holistic and interdisciplinary lens.

For example, the program takes a macro-approach to understanding global events such as war and terrorism, global warming, resource depletion and financial instability. On the micro-level, courses shape our perceptions of safety around issues surrounding refugee and immigrant communities, cybercrime and recruitment techniques by extremist groups. The presentation highlighted four major skill areas needed within the field of community safety: 1) the ability to build partnerships, 2) differentiated service delivery, 3) understanding the need and process of culture change, and 4) increased need for sustainability and affordability (Association

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of Municipalities of Ontario, 2015; Toronto Police Transformational Task Force, 2017).

Sheridan's focus on public health ensures that the concept of who is involved in the definition of community is considered, which continues to be the empirically recommended approach within the field (Abelson et al., 2007; Conklin, Morris, & Nolte, 2015). In the past, state agencies, such as police, have been given the responsibility for ensuring public safety. With an increasingly diverse population, as well as an emphasis on the global community and fiscal responsibility, it is becoming challenging for one agency to do everything. Further, the history of several traditionally marginalized communities, such as First Nations, LGBTQ, immigrants and refugees, etc., have resulted in a distrust of traditional policing methods. An innovative approach that trains community agencies on safety and prepares police departments to work with stakeholders, empowers both groups to build safe societies. It is likewise important to teach police officers how to work with members of the community. Throughout the Community Safety program, students learn about marginalized communities through projects that focus on equity and inclusivity. Ultimately, this makes the students ready for building and maintaining partnerships necessary within the field of community safety.

According to a quotation often attributed to Einstein, "We cannot solve our problems with the same level of thinking that created them." Most criminal justice and public safety programs emphasize a multidisciplinary approach to training, implying that they will teach some courses on psychology, sociology, law, etc. There is a difference between multidisciplinary and interdisciplinary. The multidisciplinary approach is less integrative and can be a temporary or weak combination of contributions from multiple disciplines (Borrego & Newswander, 2010; Committee on Facilitating Interdisciplinary Research, 2004).

At Sheridan, a multidisciplinary approach has led not only to less integrated solutions, but also to the creation of gaps and duplications of service. In our increasingly

globalized and interconnected world, few people can or should work in isolation. Recent generations of college students have tended to be more focused on making a difference and solving complex problems (e.g., poverty, social justice) that will call for increasingly interdisciplinary approaches that work in concert with stakeholders as well as academics from a variety of disciplines (Borrego & Newswander, 2010). This means that, in addition to having courses in sociology, psychology, law, etc., students will have projects that span across classes to facilitate the integration and application of knowledge from various perspectives. It is through this approach that Sheridan seeks to train students on how to look outside their chosen discipline, whether it be police, advocacy, government, in order to integrate safety methods for the application of efficient and inclusive problem-solving. The interdisciplinary approach allows students to address complex problems from a variety of potential career avenues, and ultimately tackle the needs identified as differentiated service delivery.

Another scope of the program is the inclusion of courses in emergency management. Taking a micro-approach to community safety, Sheridan broadens the perceptions of students from simply a crime model to one of emergency preparedness, resiliency, crisis management and incident control. Students have several courses with overlapping assignments requiring them to apply knowledge from the social sciences in handling situations with marginalized or vulnerable communities, such as the evacuation of retirement and long-term care facilities. This expands the scope of students' comprehension and use of differentiated services.

Sheridan places a strong emphasis on research skills development in the program. The intent of this direction is to prepare students to enter a world that requires financial accountability, evidence-based approaches, and an ability to track and evaluate their approach to community safety. Students work with stakeholders to plan and conduct research as well as program evaluation. They design a method to report their research back to

the stakeholders in a way that facilitates discussion with organizational efficiency. While other programs offer some training in basic qualitative methods or basic statistics, this is a unique approach to the field is highly desired by employers.

Sheridan has also sought to engage students through leading and demonstrating the principals of this more community-based and holistic approach. One example discussed during the presentation was methods for increased sustainability and affordability, specifically seeking to remove barriers to accessing course materials by embracing Z-Degree or Z-Cred approach. BCcampus (n.d.) defines a Zed Cred/Z-Degree as “a set of courses in a specific program area that allows a student to earn a credential, such as an associate degree or certificate program, with zero textbook costs by way of using open educational resources and/or free library materials” (BCcampus, n.d.).

Sheridan’s Library and Learning Services partnered with the Community Safety program to provide students with alternative course reading materials that cost zero out of pocket through the use of open educational resources, free library materials and print textbook sets for two mandatory courses. Course materials are available on an electronic course reading service (eCOR) where students can access them directly through Sheridan’s course management system. The eCOR service gives faculty an opportunity to manage, review, and customize readings based on the course outline. Electronic access to content through linking or posting copyright-compliant copies is offered wherever possible. Regardless, library staff review copyright and licensing restrictions and seek permission to use resources for faculty on their behalf. Files on eCOR are accessible to all students and reviewed for screen reader compatibility. This seamless integration of reading materials into Sheridan’s course management system removes cost barriers for students while ensuring content is accessible to all students.

In addition to eCOR, textbook sets were purchased for two elective courses where replacing readings with alternative sources was not feasible. First-year students

who enrolled in these two elective courses received one copy of each textbook to keep for the semester. Copies were collected and then stored in the library for the next cohort of students. According to Ontariocolleges.ca (n.d.), students pay approximately \$1,300.00 on books and other materials per academic year. The partnership between Library and Learning Services and Community Safety provides students an affordable and sustainable approach to course readings.

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Submissions

Please note: For **any type of research paper** (Original Research Article, Brief Report, or Innovation Spotlight), the expectation is that evidence has been systematically gathered, using the appropriate scientific rigour. Accordingly, whether a quantitative or qualitative approach is taken, all manuscripts submitted as **Original Research Articles, Brief Reports, or Innovation Spotlights must** include a “Method” section that describes the empirical approach, and a “Results” section that summarizes the findings. *JIFE* especially encourages submissions that include **multiple forms of evidence** (e.g., collected at multiple points in time, using multiple data collection instruments, and/or from multiple sources).

Original Research Articles

Papers that report on original empirical research with a focus on teaching and learning. Papers may take a qualitative or quantitative approach, but must include an Abstract, Introduction, Method, Results, Discussion, and Reference section, as well as any tables and/or figures.

Research articles should be approximately 5000-8000 words in length.

Brief Reports

These are papers that report on empirical research, but are shorter and more limited in scope. Examples of research that might be presented in this format include results from a pilot study, findings from a study with a small sample size that show promise of a large effect size, research using a simple design and answering a single, specific question, or reports from an early phase of a project that is still ongoing. **These papers** still include Abstract, Introduction, Method, Results, Discussion, and Reference sections, **but are no longer than 2,500 words in length.**

Innovation Spotlight

These are extremely brief contributions that highlight an innovative teaching practice, approach, or tool, and provide accompanying evidence that speaks to the effectiveness of the innovation. Papers should include a very brief review of the most relevant literature to situate the approach, a brief method section, a results section, and a discussion/conclusion section. An Abstract is not required. Papers should be approximately 1,500 words.

Review Papers

These are papers that provide a balanced synopsis of the current literature within a specific area of inquiry. These papers should not only summarize the literature comprehensively, but should also identify outstanding questions and areas for future inquiry. **Review Papers should be approximately 5,000-8,000 words in length.**

Book Reviews

Scholarly reviews of books are occasionally considered for publication, depending on the relevance of the book for the journal readership. These papers should present a brief summary of the book as well as a critical reflection on the book’s strengths and weaknesses. Of critical importance is that the review situates the book within a teaching and learning framework. These papers are no more than 1,500 words in length.

Invited Commentary

Invited commentaries will occasionally be included in the journal, particularly as part of a special issue on a specific teaching and learning topic.

Submissions are accepted on an ongoing basis. Please see jipe.ca for more information on how to submit a manuscript for consideration.



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Table of Contents

Special Issue:

Proceedings of the Polytechnics Canada 2019

Annual Showcase: Disruption in Action

3 Foreword

Marie Bilodeau
Polytechnics Canada

4 Guest Editorial

Sarah Watts-Rynard
Polytechnics Canada

6 Keynote Addresses

Marie Bilodeau
Polytechnics Canada

9 Training Across Realities

Russell Foubert & Justin St-Maurice
Conestoga College Institute of Technology & Applied Learning

14 Gaming as a Form of Experiential Learning: Career Ready

Project—Bloom Virtual Village

Deb Bonfield, Pamela Gauci, Dario Guescini, Jackie Tan, Apostolo Zeno
George Brown College of Applied Arts and Technology

17 Saskatchewan Polytechnic's Academic Model: Disrupting the Status Quo

Barbara Gustafson
Saskatchewan Polytechnic

20 Breaking the Mould in Public Safety Education

Paul Hommersen & Karen Lints
Sheridan College Institute of Technology and Advanced Learning

24 Submissions

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