



Development of microcredential modules and serious games to support interprofessional education for Medical Laboratory Technologists

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- Master in Computer Engineering, Universidade Federal do Ceará, Brazil.
- Computer Science PhD candidate, Ontario Tech University, Canada.
- Former Assistant Professor, Digital Systems and Media, Universidade Federal do Ceará, Brazil.
- Current research studies includes virtual simulation, serious games, no-code authoring, learning management systems, interprofessional education, experiential learning.

Brenda Gamble

- Associate Professor & Program Director, Bachelor of Health Administration and Allied Health Sciences Programs, Faculty of Health Sciences, Ontario Tech University
- Member, Advancement in Dementia Care Centre steering committee & executive committee member and theme lead Work Environments & Retention, for the Canadian Health Workforce Network.
- Chair of the CSMLS REB.
- Former MLT, with experience in hospital, private laboratories and public health.
- Current research studies include digital educational tools for interprofessional collaborative practice, role of MLT's on primary healthcare teams, exergames for people living with Dementia and their care givers & the investigation of the lived experiences of Canadian homeless female Veterans.



Outline

1. What are micro-credentials?
2. Overview of the project: Interprofessional education (IPE) micro-credentials for medical laboratory (ML) learners?
3. What was the development frame used to build the IPE micro-credentials?
4. What does the IPE micro-credential experience entail?



What are Micro-credentials?

- Collaboration between an accredited educational institution and employer/industry identify, create, and review workplace relevant training that is of value to the learner and the employer or industry sector
- Demonstrate that depth, rather than breadth, of a specific skill or area of focus, and
- Learners are assessed to ensure that new skills and competencies have been gained.

Sources: Colleges & Institutes Canada (CiCan) (2021). The Status of Micro-credentials in Canadian Colleges and Institutes: Environmental Scan Report. <https://www.collegesinstitutes.ca/policyfocus/micro-credentials/>

eCampusOntario (2020). Micro-credential Principles and Framework. <https://www.ecampusontario.ca/wp-content/uploads/2020/11/Micro-credentials-en1.pdf>

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2021). Defining micro-credentials: Opportunities and challenges in shaping the educational landscape. <https://en.unesco.org/news/>



Micro-credential Definition

“A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards. The proof is contained in a certified document that lists the name of the holder, the achieved learning outcomes, the assessment method, the awarding body and, where applicable, the qualifications framework level and the credits gained. Micro-credentials are owned by the learner, can be shared, are portable and may be combined into larger credentials or qualifications. They are underpinned by quality assurance following agreed standard.”

Source: Futures, H. S., Andersen, T., & Larsen, K. N. (2020). A European Approach to Micro-credentials: Output of the Micro-credentials Higher Education Consultation Group. European Union. <https://education.ec.europa.eu/sites/default/files/document-library-docs/european-approach-micro-credentials-higher-education-consultation-group-output-final-report.pdf>



Is this definition useful?

Encourages uptake of micro-credentials

However, challenges do exist in defining a common definition

- micro-credentials are being offered by institutions outside of education,
- across diverse jurisdictions,
- differing approaches to public education policy and implementing structures,
- in Canada, post secondary in Universities and Colleges education is a provincial responsibility, and
- the variation in the missions and practices of post-secondary education

There is a way forward

Micro-credentials are

- Shorter learning experiences
- Credit or non-credit
- Industry focused
- Designed and developed with industry

Micro-credentials are not

- Delivered in traditional face to face format
- Traditional courses that tend to cover an array of topics and subject areas

Micro-credentials: Virtual interprofessional education for Medical Laboratory (ML) learners

Objective: Build six digital micro-credential to support interprofessional education for medical laboratory learners

Skills: Role clarification, Team functioning, Interprofessional communication, Interprofessional conflict resolution, Collaborative leadership and Cultural humility

Funding: Ministry of Colleges and Universities, and the Ministry of Labour, Training and Skills Development

Industry partners: AlphaLabs, Canadian Society of Medical Laboratory Science, Centennial College, College of Medical Laboratory Technologists of Ontario, Department of Pathology and Laboratory Medicine at Mount Sinai Hospital, Laboratory Department Thunder Bay Regional Health Sciences Centre, Laboratory Medicine Program at University Health Network, Lakeridge Health, Simulation Canada

Team at Ontario Tech (Faculty of Health Sciences and Faculty of Business and Information Technology): Experts in content, instructional design, education theory, gamification, computer science, creative writing, and HQP



Development Framework



Design-Based Research

Involves developing solutions to real life problems by engaging in iterative design phases and cycles to generate new knowledge and to improve educational practices.



Development Framework



Design

Develop (or revise) instructional tools based on theories of learning to address the learning problem.

What did we do?

- **Technology:** We identified a learning management system (GEN) and gaming system to mount the MC course.
- **Pedagogy:** We identified elaboration theory as a guiding instructional theory.



Development Framework



Test

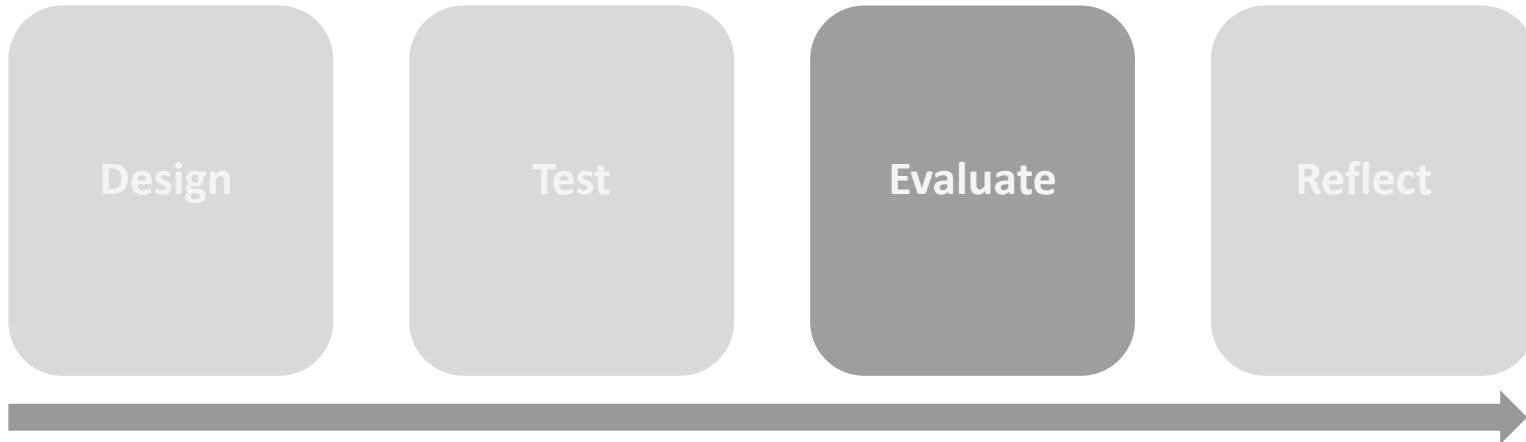
Implement the instructional tools continually, revising as necessary.

What did we do?

- **Lab:** We used our graduate students to test the MC.
- **Practice:** We used the MC with MSc students to test it before deployment.



Development Framework



Evaluate

Analyze learning and the fit with learning environment to evaluate the tool.

What did we do?

- Preparation for testing with practicing MLTs.



Development Framework



Reflect

Critique the tool and the implementation process; critique design methods/principles.

What did we do?

- Focus groups with the team:
 - *Process:* Stop, Start, Change, Continue
 - *Elaboration theory:* How well did we adhere to the theory?

Introducing the HQP



Brenda Barth



Sandy Abdo



Andrei Torres



Brent Cowan



Samyah Siraj



Krystina Clarke



Michael Short



Academic Team at Ontario Tech University

Brenda Gamble (Faculty of Health Sciences)

Lavern Bourne (Medical Laboratory Sciences Program)

Adam Dubrowski (Canada Research Chair in Health-Care Simulation)

Bill Kapralos (Faculty of Business and Information Technology)

Evelyn Moreau (Medical Laboratory Sciences Program)

Building Blocks

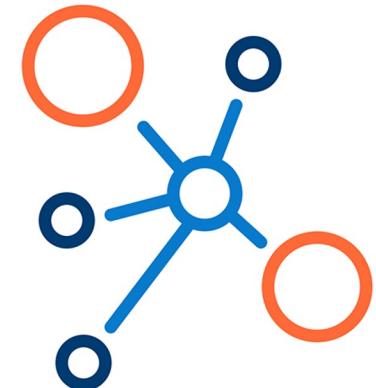
GEN: Gamified Educational Network

Moirai: No-code Serious Game
Authoring Platform

Building Blocks

GEN: Gamified Educational Network

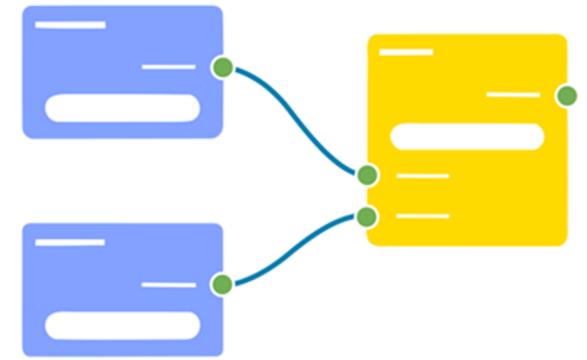
- Learning management system.
- Relies on principles of active observational practice, sharing of videos, and peer-to-peer, expert facilitated feedback.
- Applies gamification elements to keep learners motivated.
- 8 studies, some in partnership with Université de Montréal and the City of Oshawa.
- 20 publications.



Building Blocks

Moirai: No-Code Serious Game Authoring Platform

- Focused on dialogue-based serious games.
- Two parts: an editor and a player.
- Editor developed using a no-code approach and diagram-based interface.
- Player created for WebGL platform, able to run on regular web browsers.
- 2 eCampus Ontario grants in partnership with York University.
- 8 publications.



The Result



Micro-Credential Modules

Modules

[Why does IPE matter for MLTs?](#)

Status: Completed

[Module 1 - Role Clarification](#)

Status: Completed

[Module 2 - Interprofessional Communication](#)

Status: Completed

[Module 3 - Team Functioning](#)

Status: Completed

[Module 4 - Collaborative Leadership](#)

Status: Completed

[Module 5 - Interprofessional Conflict Resolution](#)

Status: Completed

[Module 6 - Cultural Humility and Indigenous Peoples](#)

Status: Completed



Micro-Credential Modules (Student View)



[Why does IPE matter for MLTs?](#)

Status: **Not started**

Module 1 - Role Clarification

Status: **Requirement must be met first: Why does IPE matter for MLTs?**

Module 2 - Interprofessional Communication

Status: **Requirement must be met first: Module 1 - Role Clarification**

Module 3 - Team Functioning

Status: **Requirement must be met first: Module 2 - Interprofessional Communication**

Module 4 - Collaborative Leadership

Status: **Requirement must be met first: Module 3 - Team Functioning**

Module 5 - Interprofessional Conflict Resolution

Status: **Requirement must be met first: Module 4 - Collaborative Leadership**

Module 6 - Cultural Humility and Indigenous Peoples

Status: **Requirement must be met first: Module 5 - Interprofessional Conflict Resolution**



Cultural Humility and Indigenous Peoples Module (Student View)

Module 6 - Cultural Humility and Indigenous People

Sections
Information
Pre-assessment
Introduction
Learning Objective..1
Activity
Learning Objective..2
Activity
Learning Objective..3
Activity
Simulation Game
Post-assessment
Debriefing Appointment
Self-Debriefing
Peer Discussion

Information

Module Details

Description

By the end of this training module, learners will develop the necessary skills to:

1. To better understand the concepts of cultural humility and Indigenous peoples. This will allow the learners to become aware and open to the experiences involving culture and in particular Indigenous peoples.
2. To understand how the Truth & Reconciliation in 2008 influences the health of Indigenous communities. This will be done by having the learners read two articles and reflect on how cultural humility affects real-life interactions with Indigenous peoples.
3. To hear about a unique personal experience with Indigenous peoples and how practicing cultural humility positively affects relationships.

♥ Scoreboard

Discussions: 0

👤 Leaderboard

Discussion likes: #0

checkbox Module Progress

Sections completed: 0 / 13

Comments: 0

Comments: #0

Discussions participation: 0 / 1

Quizzes: 0

Quizzes: #0

Quizzes answered: 0 / 6

[Next section](#)

Cultural Humility and Indigenous Peoples Module (Student View)

Module 6 - Cultural Humility and Indigenous People

Sections
Information
Pre-assessment
Introduction
Learning Objective 1 Requirement must be met Activity first: Activity
Learning Objective 2
Activity
Learning Objective 3
Activity
Simulation Game
Post-assessment
Debriefing Appointment
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Leaderboard

Discussion likes: #0

Module Progress

Sections completed: 0 / 13

Comments: 0

Comments: #0

Discussions participation: 0 / 1

Quizzes: 0

Quizzes: #0

Quizzes answered: 0 / 6

[Next section](#)

Cultural Humility and Indigenous Peoples Module

Pre-assessment

Quizzes/Surveys

[Pre-assessment](#)

To do

[Previous section](#)

[Next section](#)

4 - Inuit Nunangat, which means "the place where Inuit live" consists of:

✓ Correct

- a. Nunavut
- b. Inuvialuit, Nunavik, Nunatsiavut and Nunavut
- c. Nunatsiavut and Nunavut
- d. Inuvialuit, Nunavik and Nunatsiavut

Feedback: Inuit Nunangat, which means "the place where Inuit live" consists of: Inuvialuit, Nunavik, Nunatsiavut and Nunavut



10 - What is diversity?

Multiple answers are correct.

✗ Incorrect

- a. Diversity needs to be taken into consideration when we are trying to be equitable. ✓
- b. Diversity does not impact how we interact with others. ✓
- c. Diversity includes educational background, work experience, and even personality traits. ✓
- d. A variety of differences/elements people bring with them, when they come together. ✗

Feedback: "Diversity" refers to both an obvious fact of human life—namely, that there are many different kinds of people—and the idea that this diversity drives cultural, economic, and social vitality and innovation. Indeed, decades of research suggest that intolerance hurts our well-being—and that individuals thrive when they are able to exhibit an openness and embrace the diversity of the world.

8 - Cultural Humility and Cultural Competence are the same.

✓ Correct

- a. True
- b. False

Feedback: Cultural humility involves understanding the complexity of identities — that even in sameness there is difference — and that a clinician will never be fully competent about the evolving and dynamic nature of a patient's experiences. Cultural competence bears two main problems: It suggests that there is categorical knowledge a person could attain about a group of people, which leads to stereotyping and bias, and it denotes that there is an endpoint to becoming fully culturally competent.

Cultural Humility and Indigenous Peoples Module

Introduction Video

Cultural Humility & Indigenous Peoples

Intro to Module 6



0:00 / 4:50



Cultural Humility and Indigenous Peoples Module

Learning Objective 1

MODULE 6

CULTURAL HUMILITY

LEARNING OBJECTIVE 1: Understanding the concepts of Cultural Humility and Indigenous Peoples.



OntarioTech UNIVERSITY

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1 of 31 < Next >



Cultural Humility and Indigenous Peoples Module

Activity

Knowledge Check:

With this quiz, we will evaluate your knowledge on the definitions and goals of role clarification. All answers are required and your score will be shown at the end of the quiz. To pass this knowledge check, you need to score 80%. You will be able to re-take this quiz as many times as you like.

Instructions: From the multiple choice options, pick the **BEST** answer to the question

Quizzes/Surveys

[Learning Objective 1: Formative Feedback](#)

To do

Attempts left: 99





Cultural Humility and Indigenous Peoples Module

Activity / Learning Objective 1: Formative Feedback Result

Result

Thank you for your submission.

Your submission

1 - Lived experiences do not influence interactions among healthcare providers and their patients.

a. True ✓
b. False ✓

2 - Systemic racism is more difficult to establish, however it can have a greater impact on disadvantaged individuals and/or groups.

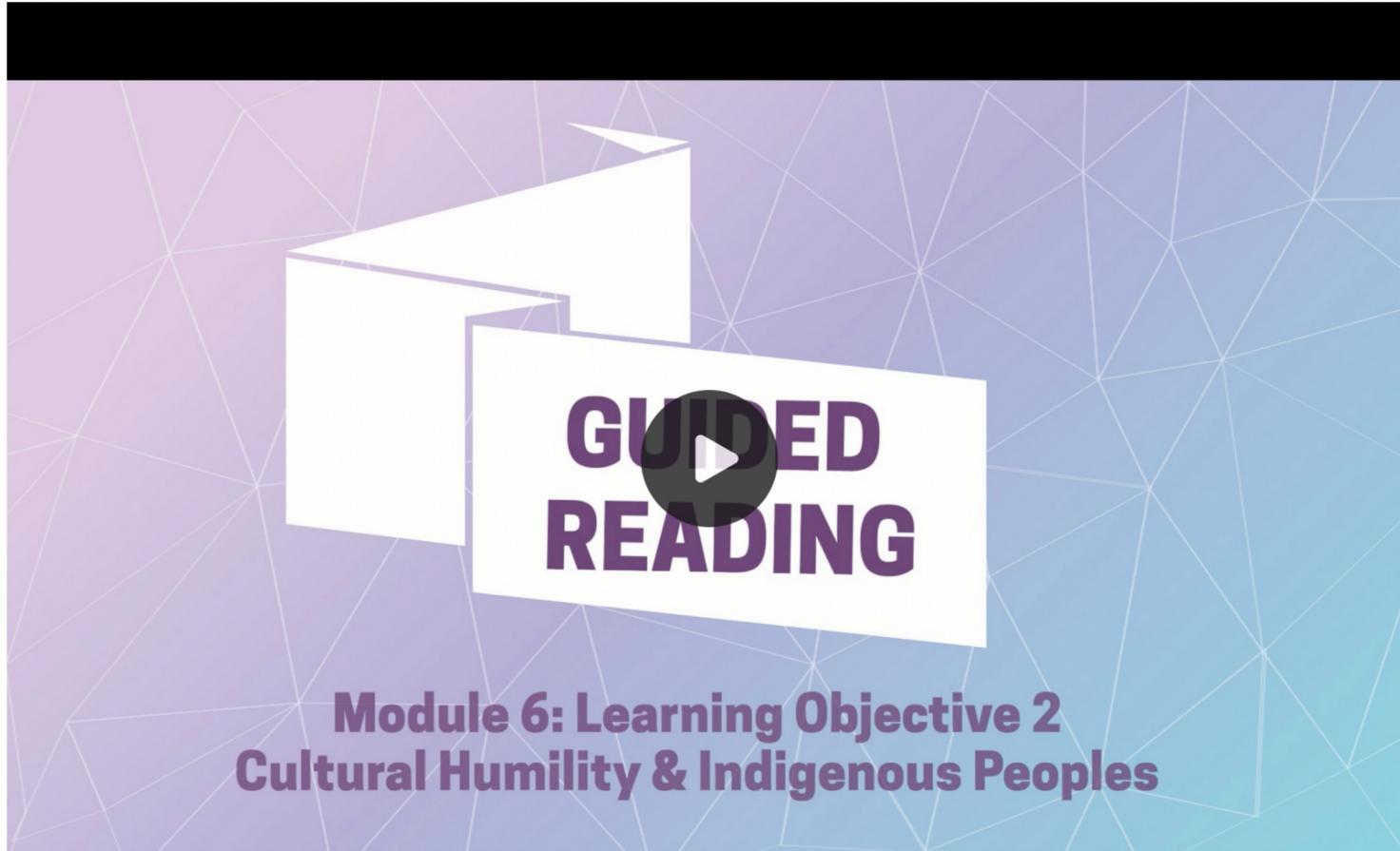
a. True ✓
b. False ✓

3 - If you are referencing a specific group, it is generally considered not necessary to use the term that specifically denotes which peoples you are referring to.

a. True ✓
b. False ✓

Cultural Humility and Indigenous People Module

Learning Objective 2



Cultural Humility and Indigenous Peoples Module

INTERNATIONAL JOURNAL OF INDIGENOUS HEALTH

Primary Research

Educating Medical Students’ “Hearts and Minds”: A Humanities-Informed Cultural Immersion Program in Indigenous Experiential Community Learning

Sarah de Leeuw, Roseann Larstone, Bryndel Fell, Nicole Cross, Margo Greenwood, Katriona Auerbach, Julie Sutherland

[Download PDF](#)

First Nations, Inuit and Métis health: Considerations for Canadian health leaders in the wake of the Truth and Reconc

The screenshot shows a digital journal page from the "INTERNATIONAL JOURNAL OF INDIGENOUS HEALTH". The article title is "Educating Medical Students’ “Hearts and Minds”: A Humanities-Informed Cultural Immersion Program in Indigenous Experiential Community Learning" by Sarah de Leeuw, Roseann Larstone, Bryndel Fell, Nicole Cross, Margo Greenwood, Katriona Auerbach, and Julie Sutherland. A "Download PDF" button is visible. Below the article, a smaller section discusses "First Nations, Inuit and Métis health: Considerations for Canadian health leaders in the wake of the Truth and Reconciliation Commission of Canada report" by Mary McNally and Debbie Martin. This section includes a "REFLECTIONS ON HEALTHCARE LEADERSHIP ETHICS" header, the journal logo for the Canadian College of Health Leaders, and copyright information for Healthcare Management Forum, Vol. 30(2), 2017, pp. 117-122, published by SAGE.

REFLECTIONS ON HEALTHCARE LEADERSHIP ETHICS

**First Nations, Inuit and Métis health:
Considerations for Canadian health leaders
in the wake of the Truth and Reconciliation
Commission of Canada report**

Mary McNally, DDS, MA^{1,2} and Debbie Martin, PhD³

CANADIAN COLLEGE OF
HEALTH LEADERS
COLLEGE CANADIEN DES
LEADERS EN SANTE

Healthcare Management Forum
2017, Vol. 30(2) 117-122
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SAGE

Cultural Humility and Indigenous Peoples Module

Based on:

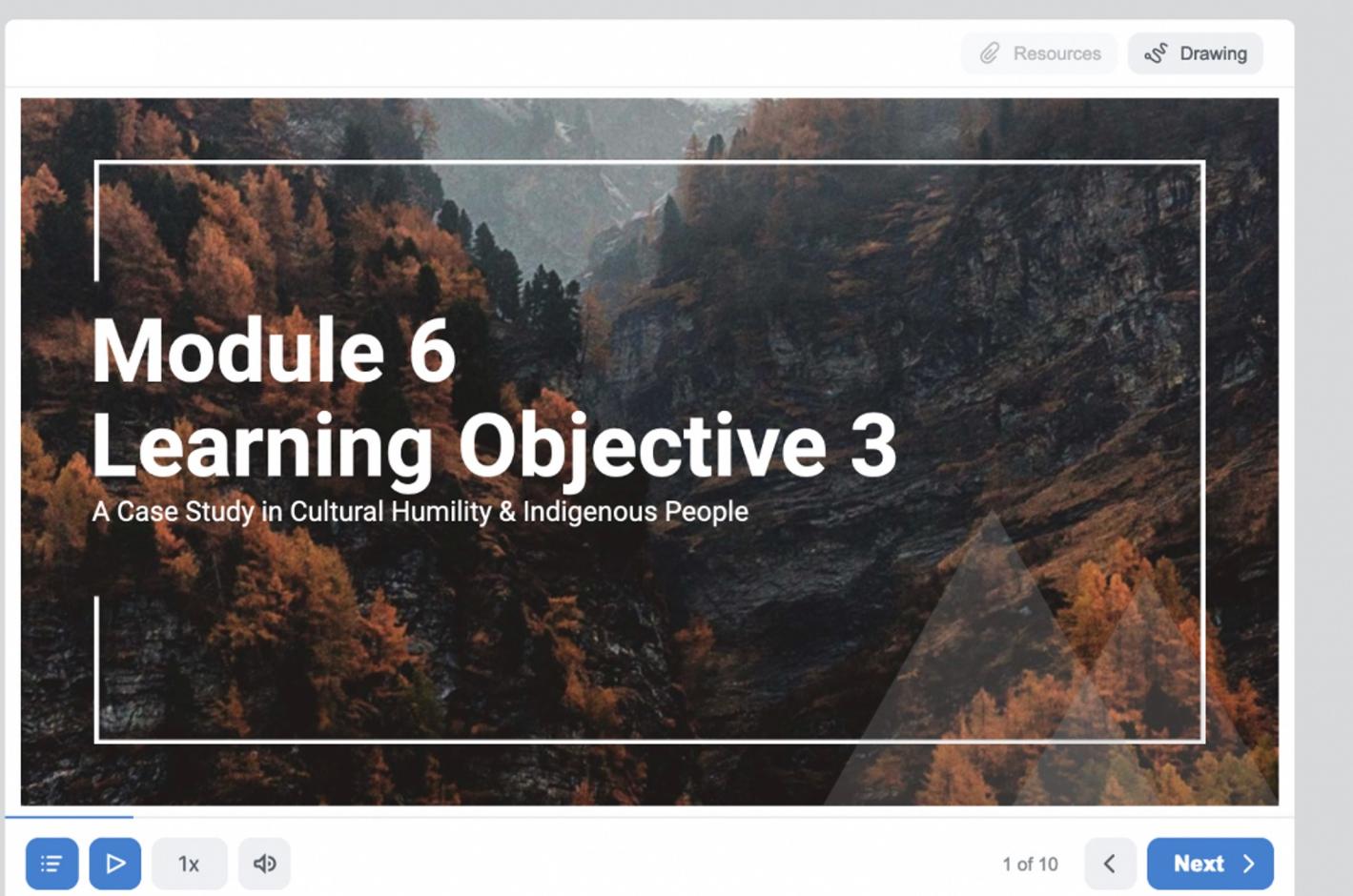
1. *Educating Medical Students' "Hearts and Minds": A Humanities-Informed Cultural Immersion Program in Indigenous Experiential Community Learning* by Sarah de Leeuw, Roseann Larstone, Bryndel Fell, Nicole Cross, Margo Greenwood, Katriona Auerbach, Julie Sutherland
2. *First Nations, Inuit and Métis health: Considerations for Canadian health leaders in the wake of the Truth and Reconciliation Commission of Canada report* by Mary McNally and Debbie Martin

Guided Reading - Formative Feedback

Terms	Feedback
≡ personal	# 1: decrease ✓
≡ Increase	# 2: systemic ✓
≡ corporate	
≡ unfounded	
≡ engaging	
≡ observing	
≡ express	# 3: clinical ✗
≡ biases	# 4: uniqueness ✗
≡ unknown	# 5: outcomes ✓
≡ misunderstandings	
≡ esteem	
≡ motivation	
≡ consequences	
≡ respecting	

Cultural Humility and Indigenous Peoples Module

Learning Objective 3



The slide features a landscape photograph of a mountainous area with dense forests in autumn colors. Overlaid on the image is a white rectangular box containing the title text. At the top right of the slide are two buttons: "Resources" and "Drawing". At the bottom are navigation icons for back, forward, and search, along with a progress indicator showing "1 of 10" and a "Next" button.

Module 6 Learning Objective 3

A Case Study in Cultural Humility & Indigenous People

1 of 10 < **Next** >

Cultural Humility and Indigenous Peoples Module

Activity

Quizzes/Surveys

[Learning Objective 3 Activity](#)

To do

[Previous section](#)

[Next section](#)

1 - How did this MLT practice cultural humility? (Choose all that apply)

- a. By gathering information prior to her work placement in Iqaluit. ✓
- b. Listening to other technologists' experiences. ✗
- c. By realizing that any culture comes with positive and negative characteristics. ✓
- d. Appreciating the Inuit's way of keeping their culture alive and the pride they have in their culture. ✗

Feedback: Option b may include stereotyping and racism, as we are not sure what the other employees said about the community and the people.

2 - The Inuit people have mental health issues and substance abuse. This statement is an example of _____?

- a. Stereotyping ✓
- b. Discrimination
- c. Racism
- d. Fact





Cultural Humility and Indigenous Peoples Module

Simulation Game

Welcome to the Simulation Game section of the module!

By clicking on "**Start Activity**" below, a new tab will open in your browser. Click on "[Launch course](#)" to be directed to the game. It is recommended to use a recent version of Chrome or Firefox to get the best experience and to complete this activity efficiently.

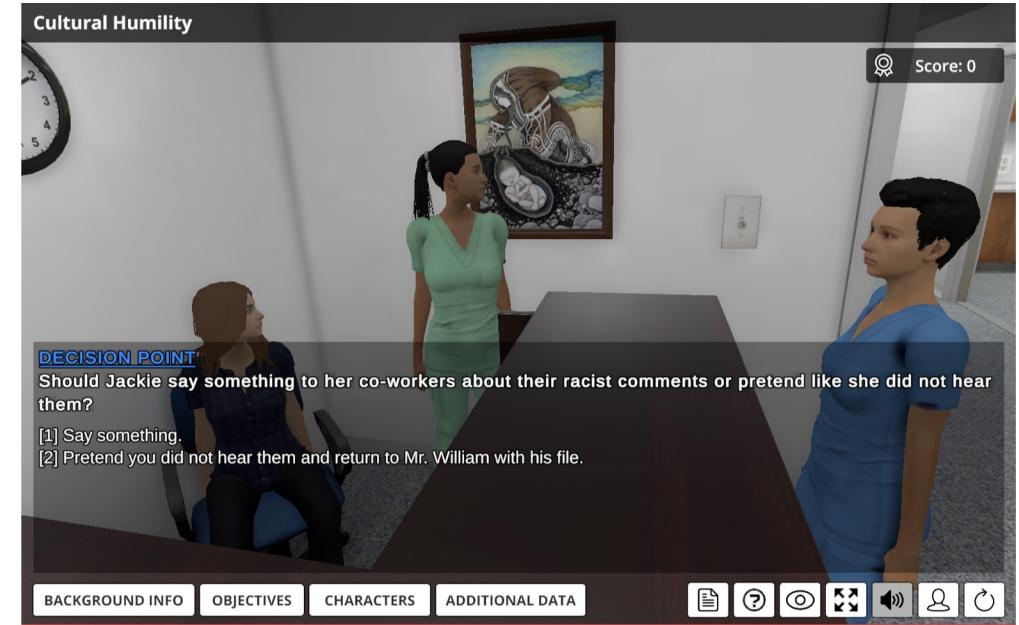
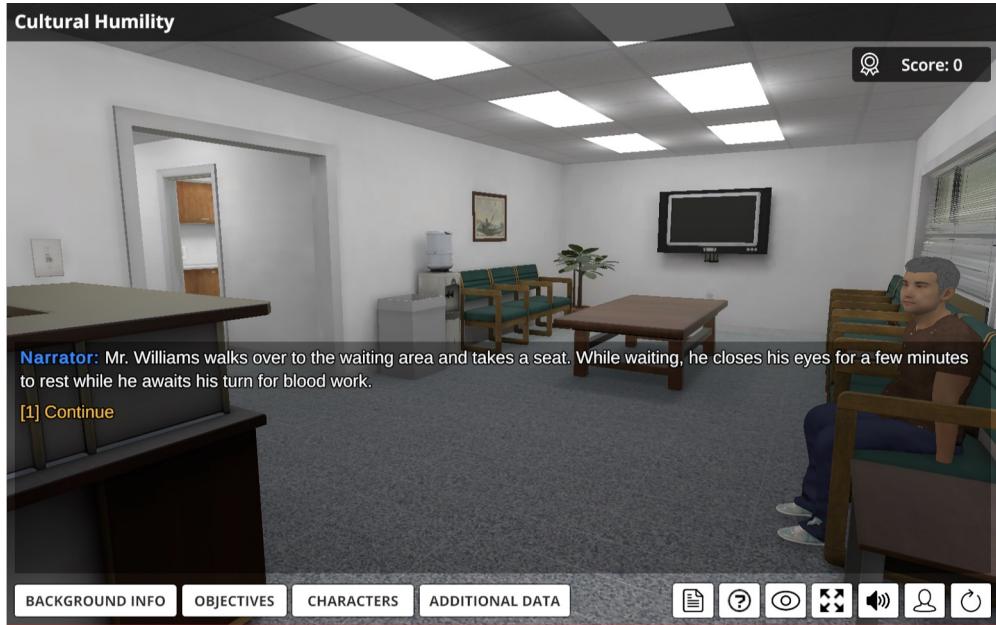
Once you are done, **close the game page** and you will be directed back to this page to continue the remaining sections of the module.

Enjoy the Game!

<p>Cultural Humility Simulation Game</p> <p>Attempts: None</p> <p>Start activity</p>	<p>Not started</p>
--	--------------------



Cultural Humility and Indigenous Peoples Module



The "End of Scenario" screen displays the following information:

Congratulations
You have reached the end of the scenario:
Cultural Humility

Score
Your final score percentage is **67%**
Raw score: 2
Maximum score possible: 3
Minimum score possible: 0

A green button on the right side of the screen features a silver trophy icon and the text "Silver Trophy".

At the bottom of the screen are two buttons: "PLAY AGAIN" and "OPEN DIALOGUE LOG".



Cultural Humility and Indigenous Peoples Module

Post-assessment

Quizzes/Surveys

[Post-assessment](#)

To do

[Previous section](#)

[Next section](#)

Post-assessment / Post-assessment

Questions

[Previous](#) 2 of 12 [Next](#)

1 - Cultural Humility and Cultural Competence are the same.

- a. True
- b. False

[Exit quiz](#)

⊕ mc.maxsimgen.com

Please answer the question.

OK





Cultural Humility and Indigenous Peoples Module

Debriefing Appointment / Debriefing Appointment sign-up

Questions

Name:

Your answer:

Email:

Your answer:

Phone Number:

Your answer:

[Submit answers](#)

[Exit quiz](#)





Cultural Humility and Indigenous Peoples Module

Self-Debriefing / Self-Debriefing Questions

Questions

What could the developers add to the game scenario to improve your learning?

For subsequent interactive games for a similar scenario, how would you change the game (technical components) to be even more useful to your learning? In subsequent interactive games, what would you do differently as the participant to make the experience more helpful to your own learning?

Your answer:

Cultural humility when working in Indigenous communities is all about self-reflection and self-critique whereby the individual not only learns about another's culture, but also starts with an examination of her/his own beliefs and cultural identities.

Did you find that the game scenario helped you to understand the important need for you to practice cultural humility? If yes, at what points during the game did you identify the need for practicing cultural humility? How would that have affected the wellbeing of Mr. Williams? If no, how could the content developers for the game scenario have improved upon incorporating cultural humility into the game?

Your answer:

Cultural Humility and Indigenous Peoples Module

This discussion board will **NOT** be monitored by the facilitator.

Its purpose is for you to communicate with your fellow peers and aid one another with any questions or concerns.

Discussion boards



Create new



[Q&A Discussion Board](#)

To do

Created on: March 11, 2022, 6:16 p.m.

By: Andrei Torres

Comments: 0

[Peer Discussion](#) / New discussion

New discussion

Discussion board name*

The max length for the discussion board name is 100.

Description*

The max length for the discussion board description is 400.



Live Demonstration

Q & A



Peer-reviewed Publications

- Gamble B., Dubrowski A., Torres A., & Short, M. (August 12, 2022) Virtual interprofessional education to support Medical Laboratory Technologists participation in interprofessional collaborative practice within integrated healthcare models. *Healthcare Management Forum*, 2023;36(1):21-25. Advance online publication. [doi:10.1177/08404704221114961](https://doi.org/10.1177/08404704221114961)
- Gamble B., Graham, L., Goulding, H., Moreau, E., & Barth, B. (April 24, 2021) Simulation Interventions for the Classroom to Support the Acquisition of Interprofessional Competencies. *Cureus*, 13(4): e14662. [doi:10.7759/cureus.14662](https://doi.org/10.7759/cureus.14662)
- Gamble, B., Bourne, L., & Deber, R. (2014). Accountability through Regulation in Ontario's Medical Laboratory Sector. *Healthcare Policy | Politiques De Santé*, 10(SP), 67-78. [doi:10.12927/hcpol.2014.23917](https://doi.org/10.12927/hcpol.2014.23917)

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Team
Primary Care
TRAINING FOR TRANSFORMATION

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in
this study



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Thank you