Contact North Teaching in the Digital Age Webinar Series Tuesday, 10 March, 2020



1. Leveraging Online Learning to Develop New Skills

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Overview

Aim of series:

- Discuss issues raised in Teaching in a Digital Age
- Draw on your experiences in addressing these and related issues

This webinar:

• How can online learning be used to develop 21st century skills?



Overview: this webinar

Part 1:

• What skills and why? + short discussion

Part 2:

• What we know about teaching skills + short discussion

Part 3: **examples** of use of technology for skills development Part 4: **open questions and discussion**







Demands of a digital economy

Changing workforce; new work and new knowledge/skills Report from RBC based on analysis of new job postings (LinkedIn)

Impact of automation and AI on jobs and work

There is a future for jobs; but we're not preparing learners properly





What are 21st century skills?

Conference Board of Canada (1993):

- communication skills
- independent learning
- ethics/responsibility
- teamwork and flexibility
- thinking skills (critical thinking, problem-solving, creativity)
- IT skills embedded in subject area
- knowledge management



A small start-up in automative design

Skills most in demand



Projected Job Openings (2018-2021)

Skills least in demand



Royal Bank of Canada 'Humans Wanted'



very important important less important

not required

Putting learners first

NOT just about meeting employers' needs Transversal skills for job mobility Empowering learners to manage own lives by controlling 'everyday' technology How?



Impact of digitalization on teaching and learning

AI will deliver AND assess content acquisition; teach 'declarative' knowledge Key **instructor** roles:

- Curriculum/course design
- Individual learner support (esp. for skills development)
- Technology integration
- Qualitative assessment





Impact of digitalization on teaching and learning

Students' role:

- find, evaluate, apply content
- develop skills
- provide digital evidence of learning (e.g. e-portfolios)
- become digitally literate
 Institutional role:
- offer recognised qualifications
- academic quality assurance
- data security and privacy

From







Questions: the importance of skills development

- 1. Is the distinction between skills and content useful?
- 2. Do you agree that instructors should give more emphasis to skills development and less to teaching content?
- 3. What do you see as the main challenges in teaching skills in higher education?
- 4. Other issues/questions about content vs skills?



What we know about skills development

Content = facts, ideas, principles: 'knowing' Skills = understanding, analysing, evaluating, applying: 'doing'

Both necessary in today's society BUT: content has been the traditional priority





What we know about skills development

We know a lot about how to teach skills:

- Context-specific
- Learners need lots of practice
- Small steps initially
- Regular feedback from expert
 Develop over a lifetime rather than one course





Skills development

- Implications for curriculum design
- What do we add to a lifelong skill from year 1 to Year 4? HEQCO study: not much Curriculum mapping: Dalhousie University



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Questions

Are there better/different ways to develop thinking skills? How do you match different teaching methods to different skills? (e.g.

- online collaborative learning?
- competency-based learning?
- experiential learning?

How do you increase the level of competence in a specific skill throughout a program?





Using online learning for skills development: four examples

Contact North's Pockets of Innovation

- Simon Fraser University: scientific argumentation
- Loyalist College: border services protocols
- Ryerson University: law practice
 Bristol University: intuitive thinking in science









Example: scientific argumentation

Teaching scientific argumentation

Simon Fraser University biological sciences: Prof. Joan Sharp

Students expect a 'right' answer for every scientific question

Poor skills at scientific argumentation

Simple web-based tool



Scientific argumentation



Scientific argumentation

Image:	es%20should%20be%20killed%20to%20protect%20endangered%20woodland%20caribou%2 C Reader
IIII Under The Influence SALG Kalpna Protect What You Love How Wolvesnge Rivers Bird Yal Dialetic Map Prot	hoo Nick Lane C-51 Doug Homer HHMI Miss Manners 2014 All Maps Ting >>> rotype
+	+
	3 There is no guarantee that wolf culling will have the same impact in every environment in Canada, it will be meaningless if the population of caribou don't rise after the culling of wolves.
	+ Supports In a study conducted by Hervieux he observed the caribou population in two different environments and how wolf culling had an impact in the two environments.
	He looked at the data from Little smoky wolf population and Redrock prairie creek to see what effect the culling had on the caribou. He found that although in the little smoky wolf population, the caribou numbers increased, in redneck prairie the numbers of caribou continued to decline steadily.
	↑ +
Add Pro Reason	Add Con Reason

The extinction of the caribou is a major problem today. On the one hand, it can be argued that we should act immediately and it may seem as though wolf culling is the only option. On the other hand, you have to wonder why we have any right to interfere with nature.

In the process of killing the wolves we may protect the caribout but endanger

Example: border services protocols

Loyalist College, Ontario trains Canada Border Guards

Built a 'virtual' border post and a virtual car

Class split in two: agents and travellers; one car has drugs

Teaches correct protocols/ procedures

Learning improved by 38% over classroom teaching



Example: law practice

Ryerson University, Toronto Partnership with Ontario Bar Association

Lawyers as mentors: 4 months practicum + 14 weeks online

'Virtual' law firm with real cases to manage: 4 students + lawyer



Example: intuitive thinking in chemistry

Bristol University, UK

Graduate students need intuitive thinking to generate hypotheses

Use of virtual reality dynamic module of complex chemical molecules

Students can 'physically' change components of molecule and watch reaction



Questions

Are you assessing 21st century skills? How?

What best practices are you/your institution using to develop/assess thinking skills?

How important is digital literacy within your subject area? How can you embed this in your teaching?

What role can technology play in developing and assessing **thinking** skills? Other questions and discussion on skills development



