Bridging the Digital Skills Gap

November 2, 2021

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Building Capacity in the Digital Economy

A project partnership between UVic Co-op and Career, UVic Continuing Studies and Canada’s Digital Technology Supercluster
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① Start presenting to display the joining instructions on this slide.
Getting to know each other

Employers

Austin Sawyer, Tidal Medical
Graham Truax, Innovation Island
Gunjan Syal, Go Emerald
Irene Guglielmi, Gov BC
Ivan Rincon, Gov BC
Jayesh Vekariya, Joni
Stuart Restall, Gov BC
Tamalyn McKean, Gov BC
Tim Brow, Gov BC

Students

Ariya Eini, 3 yr, Civil
Emmanuel Ayodele, 4 yr, Electrical
Gavin Angman, 3 yr, Electrical
Justin McKay, 3 yr, Mechanical

Project Team

Patricia Maedel, Project Manager
Tara Coulter, Employment Development Officer, Engineering and Computer Science Co-op and Career
Meeta Khurana, Associate Director, Engineering and Computer Science Co-op and Career
Andrea Giles, Executive Director, UVic Co-op Education and Career Services
Ash Moosavi, Coordinator, Business, Science, Technology, UVCS

CO-OP + CAREER
Project Overview

UVic has partnered with Canada’s Digital Technology Supercluster to address the digital skills gap and issues related to equity, diversity and inclusion in engineering and computer science sectors.

3 phases:

1. **Literature review:**
   
   “The digital skills gap between new graduates from engineering and computer science and industry expectations”

   “Issues and challenges faced by underrepresented groups in engineering and computer science industries”

2. **Student and co-op employer survey**
   
   • 500 student respondents
   • 180 co-op employer respondents

3. **Five different Focus groups**
   
   ✓ Identifying the digital skills gap x 2
   ✓ Equity, Diversity and Inclusion
   ✓ Bridging the Skills Gap
   ❑ Industry and PSI Collaboration
Understanding the Digital Skills Gap

- 78% of employers are experiencing or expect to experience a digital skills gap.

- Many factors driving the gap – rapidly changing technology, changing demographics, global trends.

- How do equity, diversity, and inclusion fit into the equation?
In-Demand Skills from Literature Review

**Hard skills**
- Coding and programming – Java, C++ etc
- Ability to create and work with API – application programming interface
- Ability to work with and manage cloud platforms

**Soft skills and competencies**
- Active listening, critical thinking, social perceptiveness, complex problem solving

**Emergent skills**
- Skills growing in importance: adaptability, collaboration, and self learning

**Hybrid skills**
- An increasing need where a hard skill and a soft skill are combined to create a new competency – understanding digital culture
What we have learned

February 2021 – Literature Review

Digital skills gap between new graduates from engineering and computer science and industry expectations

Digital Literacy
"[ability to] use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills"\(^{19}\)

Digital Competency
"ability to use technology but also involves understanding of privacy and security, role of Information and Communications Technology (ICT) in society, and complex cognitive skills and ethical knowledge, given the evolving nature of technologies"\(^{19,20}\)

Digital Skills
"range of abilities to use digital devices, communication applications, and networks to access and manage information"\(^{15}\)
Survey Data – what is missing

**Students:**
1. Communication skills
2. Foundational skills and knowledge
3. Hands-on skills embedded in assignments & projects
4. Business management

- Communications skills distinct priority
- 2. and 3. very close

**Employers:**
1. Communication skills
2. Real world experience
3. Foundational skills and knowledge
4. Professionalism

Margins between 1. – 3. were very close

Technical communication & report writing, speaking/presenting, **active listening**, simplifying complex ideas

Working across cultures, **active listening**, use different communication methods, customer/team interface, plain language communications
Any questions or comments?
Factors Contributing to the Skills Gap

Q2. Factors contributing to the skills gap

- Job applicants do not have the right skills: 24%, 20%, 24%, 17%, 24%
- Planning for and/or paying for employee upskilling or reskilling: 29%, 29%, 27%, 28%, 23%
- Difficulty keeping up with rapidly evolving technology: 18%, 9%, 23%, 28%, 23%
- Trends that may be impacting emerging technologies, i.e., sustainability, artificial intelligence, climate change, etc.: 6%, 11%, 24%, 24%, 39%
- Lack of training available for new technologies: 24%, 18%, 18%, 18%, 26%
- Loss of skilled staff: 23%, 19%, 13%, 21%, 23%
- New post-secondary graduates do not have necessary skills: 20%, 14%, 14%, 17%, 34%
- Not enough graduates to meet demand: 0%, 17%, 17%, 28%, 33%

Enterprise (above 1000 employees) - Large (251-500 employees) - Medium (51-250 employees) - Micro firm (less than 10 employees) - Small (11-50 employees)
How employers are currently addressing the gap

Q3. What steps has your organization taken or plan to take to address the skills gap?

- Hiring: 89%
- Building skills internally: 96%
- Contracting out work: 67%
- Redeploying existing resources/employees: 72%
- Laying off employees: 9%

Yes
Expectations on learning new technologies

**Q9. If, upon graduation, you discover you do not have the appropriate skills employers are seeking, how would you improve your employability?**

- Teach myself the skills: 74%
- Take additional courses: 8%
- Accept jobs outside my field: 6%
- I do not know: 8%
- Other: 4%

**Q12. How do employees in your company learn new technologies?**

- The company provides training on company time: 67%
- Employees learn new technologies on their own, but the company pays for it: 22%
- Employees learn new technologies on their own time and at their cost: 7%
- I don’t know: 3%

**Q17. After graduation, how do you expect your future employer will help you learn new technologies?**

- I expect the employer to provide training on company time: 46%
- I expect to learn on my own time but expect the company to pay for the training: 25%
- I expect I will have to do it on my own time at my own expense: 15%
- I don’t know: 14%
Discussion
sharing perspectives and expectations on how to bridge the gap

Students:
What can employers do to help bridge the gap either during your co-op work terms or upon graduation in terms of addressing missing skills?

Employers:
What can students do to help bridge the gap either during their co-op work terms or upon graduation in terms of addressing missing skills?

How do you think EDI fit into this?
Financial Mgmt Solutions

INTERNET OF THINGS

New Technology

Cybersecurity

Cloud Computing

Machine Learning

Data Analysis

Business Process Solutions

ARTIFICIAL INTELLIGENCE

Looking Ahead 1 – 3 years...
Q 9. What types of micro-credential skills programming or courses would be most valuable to your company and employees?

- **Technical (hard) skills**: 57%
  - Cloud computing
  - Amazon AWS or GCP certifications
  - Programming in C# and JS
  - Real-world AI
  - Machine Learning
  - Agile technology
  - Data analytics
  - Technical writing
  - Source code management tools

- **Professional (soft) skills**: 15%
  - Management skills
  - Leadership training
  - Project management

- **Other**: 28%
  - Disruptive strategy
  - Problem solving
  - Critical thinking
  - System thinking
  - Confidence building
Discussion: How can UVic support bridging the gap?

UVic Continuing Studies

- Professional training and continuing studies
- What can we offer (and how?) that would make a difference?

- In academic programs
- In co-op programs
- Where and how should missing skills be addressed?
- Which soft skills can be taught and which are best learned through experience?
Was the information shared in this session useful?
Was the discussion in this session useful?
How can we improve on future focus groups?