

Canada's Colleges and Institutes: Transitioning to a Culture of Green Innovation

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For

Colleges and Institutes Canada
(CICan)



Green Transitions

Meeting demands for green skills and green jobs through institutional:

- Initiatives
- Strategies
- Approaches

What are we learning? What are the challenges?

☐ Re-thinking green skills

☐ Innovating in program design

Leveraging community-based applied research



Characteristics of Skill Types

Specialised green technical skills

Job specific, 'new', or adapted; few in number; often time-sensitive, or time-limited.

Local & traditional knowledge

Broad-based green technical skills

Common across multiple jobs, occupational areas, industries & sectors.

Transitioning
Green-er skills

Adaptation of existing vocational skills to include more sustainable practices & processes. Large skill cluster. Significant in repositioning <u>all</u> vocational programs.

Modifications may be incremental.

Sustainability literacy

Skills for sustainability (generic, work-place)

'General education'
(breadth courses)

outside the vocational area

A Green Skills Typology

- Key 'skills for the 21st C workplace'.
- Align with 'generic', 'essential' or 'soft skills'.
- Future-oriented; 'career capital'.
- Build graduate attributes such as resilience
 & adaptability in an unpredictable world.
- Require 'deep learning'.



Examples of Skill Types

Specialised technical skills

Local & traditional knowledge

Broad-based technical skills

Transitioning skills

Sustainability
literacy

Skills for sustainability

- How natural systems function
- Ethics and values
- Motivating sustainability behaviour and consumption
- Technological and economic relationships to sustainability

(Second Nature)

A Green Skills Typology

- Installation of Photo-Voltaic panels
- De-commissioning of wind turbines
- Design of geothermal systems
- Product life-cycle assessment
- Waste reduction and management
- Energy conservation and management
- Business: green procurement; corporate social responsibility; carbon accounting
- Construction: materials selection; life cycle analysis; building reclamation
- Culinary arts: local sourcing; food preservation;
 selection/use of energy efficient appliances
- Enterprise skills; innovation and creativity
- Capacity to solve complex problems
- Systems-thinking
- Ethical/moral decision-making
- Assessing consequences of one's actions



Programs 'siloed' or 'stand

Meets needs of traditional

respond to changing skills

Terminal qualification;

limited academic &

workplace mobility

Conventional delivery

occupational scope

school leaver

needs

Limited capacity to

Greening of TVET Program Design

Traditional TVET Programs	Design of Transitioning & Future G-TVET Programs
Job specific, or limited in	 Provides entry to emergent, diversifying, or evolving

fields (cross-sectoral, cross-disciplinary)

• 'Occupational fusion' and new combinations of skills

'Occupational fusion' and new combinations of skills

Program clusters or hubs - common curriculum (e.g.

alone'; career paths STEM); career matrices

Single point of entry/exit Multiple points of entry and exit

Promotes workforce mobility (re-skilling, up-skilling, multi-skilling, re-entry to workforce)

Responsive to time-sensitive/time-limited skills needs.

Effective industry/sector advising; currency of LMI
 Posponsive CA & qualifications frameworks

Responsive QA & qualifications frameworks.

Includes 'stackable credentials', 'up-skilling' (bridge programs, certifications, modules); transferable credits and new academic pathways.

Flexible and responsive program delivery.

Changing strategies for teaching and learning.



Faculty engagement

Campus greening

Student entrepreneurship

Applications:

- green/clean technologies
- energy renewables
- environmental goods/ services
- water science
- green resource extraction
- green manufacturing

Curriculum innovation, curriculum greening & new program development

Innovation in

teaching &

learning

Student engagement

Applied projects

Work-integrated learning

Applied Research

> **Community** engagement

Small-to-medium sized-enterprises Industry & sector

Localisation

Responds to regional, economic, environmental. & community needs

Uses local & traditional knowledge

Builds infrastructure

Stimulates local economy

Scalable & transferable outcomes

Processes:

- Incubation
- Product development
- Testing & validation
- Commercialization

Partnerships

Public-Private

Research networks

> **University-**College

Centres of research excellence