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

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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
A Green Skills Typology

- **Local & traditional knowledge**
- **Sustainability literacy**
- **Skills for sustainability (generic, work-place)**
- **Transitioning Green-er skills**
- **Broad-based green technical skills**
- **Specialised green technical skills**

**Characteristics of Skill Types**

- **Job specific, ‘new’, or adapted; few in number; often time-sensitive, or time-limited.**
- **Common across multiple jobs, occupational areas, industries & sectors.**
- **Adaptation of existing vocational skills to include more sustainable practices & processes. Large skill cluster. Significant in re-positioning all vocational programs. Modifications may be incremental.**

- 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’.

‘General education’ (breadth courses) *outside* the vocational area
Examples of Skill Types

- 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

A Green Skills Typology

Local & traditional knowledge

Sustainability literacy

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

Specialised technical skills

Broad-based technical skills

Transitioning skills

Skills for sustainability

(Second Nature)
## Greening of TVET Program Design

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<tr>
<th>Traditional TVET Programs</th>
<th>Design of Transitioning &amp; Future G-TVET Programs</th>
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| Job specific, or limited in occupational scope | ▪ Provides entry to emergent, diversifying, or evolving fields (cross-sectoral, cross-disciplinary)  
▪ ‘Occupational fusion’ and new combinations of skills |
| Programs ‘siloed’ or ‘stand alone’; career paths | Program clusters or hubs - common curriculum (e.g. STEM); career matrices |
| Single point of entry/exit | Multiple points of entry and exit |
| Meets needs of traditional school leaver | Promotes workforce mobility (re-skilling, up-skilling, multi-skilling, re-entry to workforce) |
| Limited capacity to respond to changing skills needs | ▪ Responsive to time-sensitive/time-limited skills needs.  
▪ Effective industry/sector advising; currency of LMI  
▪ Responsive QA & qualifications frameworks. |
| Terminal qualification; limited *academic* & *workplace* mobility | Includes ‘stackable credentials’, ‘up-skilling’ (bridge programs, certifications, modules); transferable credits and new academic pathways. |
| Conventional delivery | Flexible and responsive program delivery.  
Changing strategies for teaching and learning. |
Uses local & traditional knowledge

Localisation

Responds to regional, economic, environmental, & community needs

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

Builds infrastructure

Stimulates local economy

Processes:
- Incubation
- Product development
- Testing & validation
- Commercialization

Scalable & transferable outcomes

Community engagement

Innovation in teaching & learning

Applied projects

Work-integrated learning

Partnerships

Industry & sector

Public-Private

Centres of research excellence

Small-to-medium sized-enterprises

Research networks

University-College

Student engagement

Applied entrepreneurship

Campus greening

Faculty engagement

Applied Research