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# Teaching Green Skills

What Actions Are Post-Secondary Institutions Taking?

Issue briefing | August 14, 2024



**Future Skills Centre** Centre des **Compétences futures**

The Future Skills Centre – Centre des Compétences futures (FSC-CCF) is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead.

The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint, and The Conference Board of Canada.

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# Key findings

- Post-secondary institutions (PSIs) teach green skills primarily through specialized programs and courses (e.g., environmental science and climate justice).
- PSIs also often aim to embed green skills teaching across all programs, including those not conventionally associated with green skills training (e.g., history and math).
- Beyond the classroom, PSIs offer informal opportunities for students to learn and practise green skills, such as through clubs and other student-led activities.
- Many PSIs have committed to sustainability frameworks (e.g., the United Nations' Sustainable Development Goals), but they encounter resource constraints, administrative obstacles, and a limited number of advocates driving change. These pose challenges to teaching green skills effectively.
- There is a need for improved collaboration between employers and PSIs to ensure that current and future demand for green skills can be met.

# Recommendations

The demand for green skills is projected to grow over the coming decades. PSIs that wish to contribute to the green transition can consider implementing the following practices:

- Establish an ongoing dialogue with employers to ensure green skills training is applicable to industry needs. This can be accomplished by leveraging existing structures, such as program advisory boards and career services, to ensure that the perspectives of employers in green industries are represented. PSIs can also inform employers about potential skills needs that they may not be aware of.
- Weave sustainability themes into all academic streams and administrative sectors of an institution in a “whole institution approach” to better coordinate initiatives related to green skills development.
- Introduce mandates for green skills training and supports to promote green skills teaching across all programs.
- Reimagine teaching approaches to emphasize practical experience and flexible learning models.

# The role of post-secondary on the path to net-zero

The federal government has committed to having the country achieve net-zero emissions by 2050.<sup>1</sup> Post-secondary institutions (PSIs) play a key role in helping Canada reach this goal because they equip students with the skills and know-how needed to transition to a more sustainable economy.<sup>2</sup> These multi-faceted competencies are broadly considered to be green skills.

Green skills are defined as “the knowledge, abilities, values and attitudes needed to live in, develop and support a resource-efficient society.”<sup>3</sup> They range from specific technical skills that enable the use of green technologies (e.g., solar panel installation) to general environmental awareness that promotes sustainable decision-making (e.g., developing corporate sustainability strategies).<sup>4</sup> An even broader definition also includes “disruptive thinking, political agency and coalition building” as key competencies needed for the green transition.<sup>5</sup>

Given the importance of higher education in the net-zero mission and the projected growth in demand for green skills,<sup>6</sup> we sought to understand the following: What actions are post-secondary institutions taking to equip students with these skills?

To answer this question, we interviewed 41 post-secondary leaders and educators specializing in green skills training in higher education.

1 Galvez, “A Short Guide.”

2 Colleges and Institutes Canada, *Canada’s Colleges and Institutes*; Times Higher Education, “The Race to Net Zero”; Colleges Ontario, *Moving to Net Zero*; and Atiq and others, *Jobs and Skills*.

3 Arthur, “What Are Green Skills?”

4 Willige, “Green Job Vacancies.”

5 United Nations Educational, Scientific and Cultural Organization, *Greening Curriculum Guidance*.

6 Sonmez, Thomson, and Gresch, *Green Occupation Pathways*; Vanzella Yang and Yang, *Hiring Green*; and Reiter, “The Green Skills Imperative.”

# How are PSIs supporting green skills acquisition?

## Learning in the classroom

Formally incorporating green skills training into the classroom was seen by educators as a critical step. Most respondents said green skills are being taught in specific programs such as environmental science and climate justice. However, a majority also mentioned green skills training in disciplines outside of traditional environmental fields, like history and math. This reflects the goal of many institutions to broadly incorporate green skills across the curriculum, recognizing the importance of developing these competencies among all students.

“Whether it’s economics, business, or law: sustainability is an integrated part of everything that we do. People often see green skills in a very narrow way.... But it’s really everything. And it really should be embedded in absolutely everything.”

– Interview participant



## Beyond the classroom

Most participants identified student clubs—which allow students to explore and engage in activities outside the pressures of formal coursework—as key components of green skills education in their institutions. These student clubs typically focus on environmental activism, knowledge mobilization, and the promotion of environmentally conscious lifestyles. A few participants mentioned that such clubs are among the biggest and most active on campus.

Almost half of interviewees reported that experiential learning opportunities can also be valuable avenues for acquiring these skills. They mentioned that co-op programs with industry partners offering green jobs and hands-on capstone projects related to sustainability give students the opportunity to apply and expand upon what they learn in class.

“I think a big piece of it has to be experiential learning. Just pure classroom courses are great, but they’re mostly teaching students how to solve sustainability problems in principle. And it’s actually not that hard to solve them, and we kind of know what we have to do. The hard thing is actually doing it. And so experiential learning—working with practitioners in the world or on campus that have real budget constraints and real political battles and real, you know, jurisdictional limits—that’s very valuable.”

– Interview participant

## Institutional commitments to sustainability principles and guidelines

Green skills training in classrooms is often part of broader organizational initiatives aimed at promoting sustainability. Over half of interviewees mentioned that their institutions have internal sustainability goals and key performance indicators, which include counting the courses that include sustainability concepts, gauging faculty interest in teaching these kinds of skills, and measuring student exposure to green skills training.

Many participants highlighted institutional commitments to international sustainability frameworks, including the United Nations' Sustainable Development Goals (SDGs); the Sustainability Tracking, Assessment & Rating System (STARS); and the Principles for Responsible Management Education (PRME) as important initiatives that help institutions track their progress in meeting targets and compare their performance with other PSIs.



“We’re working on [integrating] sustainability through the PRME principles and the Sustainable Development Goals through all our curricula. We’re moving away from standalone courses, recognizing that the research suggests the most effective way of teaching this stuff is to be weaving it through everything that we do.”

– Interview participant

## Beyond green skills: Sustainability mindsets

Some interviewees mentioned the idea of a “sustainability mindset” – the awareness needed to prioritize actions and decisions that balance environmental, social, and economic considerations. Interviewees stated that their institutions supported not only technical or occupational green skills training, but also the development of a broader environmental consciousness among students.

Cultivating a sustainability mindset is consistent with the United Nations' Education for Sustainable Development framework.<sup>7</sup> This mindset also has clear connections with federal government initiatives to foster environmental literacy.<sup>8</sup>

<sup>7</sup> Council of Ministers of Education, Canada, *Education for Sustainable Development*.

<sup>8</sup> Environment and Climate Change Canada, *Toward a National Framework*.

# What are the challenges in teaching green skills?

## No motivation and different opinions

“Getting faculty on board can be a challenge. There’s some faculty that have been teaching their courses for 10, 20, or 30 years, and it’s clear that the content hasn’t changed much.”

– Interview participant

Instructors sometimes lack motivation and incentives to integrate green skills training into their classrooms, as noted by many interviewees. In addition, opinions among faculty on the importance and definition of green skills can vary widely. This lack of readiness is a common issue identified in previous research and highlights the need for high-quality professional development in education for sustainable development.<sup>9</sup>

In universities, this problem is further complicated by the fact that faculty have academic freedom. Introducing mandates for green skills training, which could be an important push for instructors to change how they teach courses, can create a conflict with this established principle.<sup>10</sup>

When few individuals are motivated to spearhead efforts and many are resisting jumping aboard, initiatives to integrate green skills across the post-secondary curriculum can be difficult to roll out.

<sup>9</sup> United Nations Educational, Scientific and Cultural Organization, *Teachers Have Their Say*.

<sup>10</sup> Hogan and Trotter, “Academic Freedom.”

## Red tape

“There’s an inertia in the way we teach our courses and the curriculum. So, we tend to make changes slowly and gradually.”

– Interview participant

PSIs often have complex governance structures because of the size of the institutions and the unique relationship between administrators and instructors. Curricular and program changes can require lengthy approval processes, while industry needs and best practices in green skills training may change rapidly. Many interviewees noted that their institutions struggle to be dynamic and to rapidly adapt to growing demands for green skills.

We heard several times that institutions need to find ways to cut the red tape to ensure that programs, policies, and curricula stay in step with industry needs and technological innovation.

“People are resistant to change. Yet, the sector is changing quickly and our world of work is changing quickly.”

– Interview participant



## Lack of resources and funds

All participants mentioned lack of funding and resources as a key barrier to teaching green skills. Interviewees reported that high-quality teaching materials—crucial for both theoretical and practical learning—are costly to acquire.

In addition, we heard that implementing institution-wide green skills instruction requires specialists in green skills or sustainability, a resource that many institutions lack. These constraints can hold back the effective delivery of green skills education, which demands a variety of teaching methods and approaches given the multi-faceted nature of these competencies.

# Recommendations

How can post-secondary institutions promote green skills training to prepare the future workforce?

## Understand how PSIs can work with industry

PSIs wishing to ensure their training is applicable to industry needs can benefit from an ongoing dialogue with employers. PSIs can communicate what green skills training they offer and obtain feedback on what skills industry leaders need and how they see their skills demands evolving.

This conversation must be a two-way street, as PSIs can inform industry leaders on potential skills and competencies that employers may need in the green economy. The needs and perspectives of communities should also be represented in this discussion.

PSIs can leverage existing structures such as program advisory boards, career services, instructors working in industry, and applied industry partners to strengthen the connections between the world of study and the world of work.

## Enhance opportunities for work-integrated learning

Some participants noted that work-integrated learning in green jobs can be especially helpful in supporting this collaborative approach. Work-integrated learning is an educational approach that combines academic studies with practical work experience. In addition to fostering engagement between employers and PSIs, it can allow students to apply their skills on the job, expand their professional networks, and enhance their employability in green occupations after graduation.

## Weave green skills into everything

PSIs can weave green skills discussions into all academic streams and sectors of an institution using a "whole institution approach",<sup>11</sup> which "entails embedding teaching and learning for sustainable development not only within the curriculum but also within the whole learning environment, encompassing governance, campus management, stakeholder engagement, and community involvement."<sup>12</sup> Doing so will help to better coordinate initiatives related to green skills training, ensuring that all students acquire green skills and environmental consciousness.

Having dedicated leaders or champions for sustainability, as well as reward systems, can be especially helpful in supporting program development and training methods for green skills education.

## Introduce green skills training mandates and supports

PSIs that have not done so already should consider adopting sustainability frameworks or implement mandates. Doing so would better enable them to integrate green skills across programs and courses and establish tracking mechanisms to monitor progress and reach.

Mandates and reporting are more effective when coupled with supports and incentives. For instance, establishing a funding pool dedicated to setting up research labs that help deliver cutting-edge green skills training and investing in high-quality learning material can help both instructors and learners. Offering professional development stipends and time for faculty and staff interested in enhancing their knowledge of green skills can also increase the depth and breadth of expertise within institutions.

Actions and resources put forth by leadership can help PSIs advance mandates that champion the integration of green skills training into the fabric of their organizations.

## Reimagine teaching approaches

PSIs that want to deliver cutting-edge green skills training may benefit from re-envisioning their teaching approaches, which could potentially be co-developed with students and youth.

For instance, emphasizing hands-on learning, partnerships with industry, and real-world problem-solving can foster innovation and practical expertise. Additionally, adopting digital tools and flexible learning models can improve accessibility and engagement. This shift is important not only to prepare a workforce adept in green skills but also to drive systemic change toward a more sustainable and resilient future.

<sup>11</sup> Holst, Grund, and Brock, "Whole Institution Approach."

<sup>12</sup> United Nations Educational, Scientific and Cultural Organization, "Whole School."

## Appendix A

# Methodology

### Aggregate terms used in this briefing

**Table 1**  
Aggregate terms used in this briefing  
(per cent)

Aggregate terms	Percentage
Some	20–29
Many	30–40
Almost half	41–49
Half	50
Most/majority/over half	Over 50

Source: The Conference Board of Canada.

### Ethics

Since the project involved interviews only with professionals working in their field and covered topics related only to their work, ethics approval was not required. However, all interviewees gave informed consent and were guaranteed confidentiality.

### Interview recruitment

The research team sent email invitations to potential interviewees over a three-month period (April to July 2023). In total, 201 individuals were contacted for participation in the study. Of these, 41 participated. The response rate was 20 per cent.

To build the recruitment list, we generated contacts from:

- two executive networks run by The Conference Board of Canada (the Council of University Executives and the Canadian Council of College Futures);
- the Conference Board's marketing mailing lists (51 contacts generated, all of whom were contacted for participation in the study – only participants that met the inclusion criteria for participation in the study were contacted);
- invitations from our Research Advisory Board members to relevant members of their networks to participate (four contacts generated, all of whom were contacted for participation in the study);
- Internet searches (340 contacts generated);
- recommendations from interview participants for others who might be interested in participating and would offer different perspectives (three contacts generated).

### Target interviews by subpopulation

We sought participants from universities, colleges, and polytechnics across Canada. The target number of participants from each province was proportional to its population relative to the overall Canadian population. We sought out at least 20 participants from colleges/polytechnics and 20 participants from universities. See “Interview demographics” for the breakdown of participants by province and gender.

### Identifying expert individuals

To gain deeper contextual knowledge on how Canadian PSIs can promote green skills in future graduates, we held 41 one-on-one interviews with post-secondary leaders/educators who are knowledgeable about sustainability in higher education. These included individuals from public universities, colleges, and polytechnics across Canada.

### Qualitative analysis

The research team conducted virtual interviews between May and July 2023. Interviews lasted approximately one hour. Interviews were recorded and transcribed, yielding 224 pages (105,117 words) of text.

Interviews were coded and analyzed using NVivo software. Coding themes were first developed based on the research questions and literature review, followed by an exploratory examination within interviews. Inter-rater reliability was measured using kappa's statistic. The kappa coefficient was 0.82. Themes were examined based on how frequently they were noted as well as the intensity of the observation.

### Semi-structured interview questions

The interview guide was developed based on existing literature and in conjunction with our Research Advisory Board (see "Acknowledgements"). Sample interview questions include the following:

1. How are green skills currently incorporated into *formal* teaching and instruction within your institution?
2. What *informal* opportunities currently exist for students to learn green skills within your institution?
3. Are there opportunities for *faculty* at your institution to learn more about how to teach green skills to their students?
4. In your opinion, what are the most effective methods for teaching green skills in post-secondary institutions?
5. Do you think that employer or industry needs should be taken more into consideration when designing programming for teaching green skills in post-secondary education?
6. In your opinion, what are some challenges and/or barriers to teaching green skills within post-secondary education?
7. What advice do you have for other institutions who are looking to incorporate more opportunities for teaching green skills into their programming?

### Interview demographics

**Table 2**

Interview participant demographics  
(per cent)

Province	Number of participants	Percentage
Alberta	5	12.2
British Columbia	5	12.2
New Brunswick	1	2.44
Newfoundland and Labrador	2	4.88
Nova Scotia	2	4.88
Ontario	23	56.1
Quebec	1	2.44
Saskatchewan	2	4.88
Total	41	100

  

Assumed gender	Number of participants	Percentage
Men	19	46.34
Women	22	53.66
Total	41	100

Note: Respondents were not asked to indicate their gender. Data on gender are based on researchers' observations of respondents' presentation and characteristics.  
Source: The Conference Board of Canada.

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