

Three Ways to Develop Skills for the Fight Against Climate Change

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Like many CEGEP teachers, you may be concerned about the urgency of climate change. Well, this concern is shared by a large portion of the student population. At the college level, where civic awareness is forged, addressing the fight against climate change (FCC) can have a significant impact on civic engagement, the ability of students to protect themselves from the health impacts of climate change, and the acquisition of professional competencies. Because teaching about climate change is relatively new, this article explores three possible approaches to developing FCC competencies at the college level. It also suggests ways to overcome the main barriers that teaching staff face.

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About the INSPQ

The Institut national de santé publique du Québec (INSPQ) is a governmental expertise and reference centre dedicated to improving the health and well-being of Quebecers. Its teams cover a wide range of public health issues, from the natural sciences to laboratory analysis, social sciences and policy development, and carry out monitoring, research and development, knowledge transfer and training to support the authorities and communities concerned. Climate change has long been a major concern for the INSPQ, which has developed a number of training courses on the subject.

The challenge of health and training adaptation

Leading professional organizations in Quebec and internationally recognize that healthcare professionals are at the forefront of meeting the growing needs of populations, and that they can accompany people on their path to a healthy and sustainable lifestyle (ICN, 2018; Lespérance & Macdonald, 2019; OIIQ, 2019 ; OPIQ, 2022 ; Orozco & Roy, 2017). The framework for analyzing the potential impacts of climate change on workers' health and safety allows us to see the scale of change in the world of work from which the examples in **Table 1** are drawn (Adam-Poupart *et al.*, 2012)¹.

Table 1

Examples of health risks by employment sectors affected by climate change

Health risks	Examples of affected sectors
Health and safety risk following exposure of individuals	<ul style="list-style-type: none">• First responders (paramedics, firefighters, clinicians)• Outdoor workers
Changes in practices due to disturbances in ecosystems	<ul style="list-style-type: none">• Fishery• Agriculture• Tourism and outdoor recreation• Forestry
Changes in the socio-economic context due to job losses and the growth of "green" industries	<ul style="list-style-type: none">• Recycling• Construction and urbanism• Energy• Transportation

¹ Readers wishing to discover other sectors affected by climate change can consult the Institut de recherche en santé et sécurité du travail framework (Adam-Poupart *et al.*, 2012) adapted (in French) from Schulte and Chun (2009) [inspq.qc.ca/sante-au-travail/atacc].



The 2022-2027 implementation of the Quebec government's Plan for a Green Economy also recognizes the need to adapt the workforce through training at all levels. In particular, this can be part of a movement towards the greening of curricula (UNESCO-UNEVOC, 2017).

However, the literature on adding a "climate change" lens to initial education identifies three main barriers (Blanchard *et al.*, 2023). First, curricula are overloaded. Second, while pedagogical teams are generally aware of the FCC, they do not feel sufficiently informed about its scientific underpinnings. Third, climate action is often presented or perceived as being about biodiversity or reducing GHG emissions, while the link to certain disciplines such as the social sciences, health or the arts remains less defined.

In addition, many teachers question their own level of knowledge on the subject: aren't they in danger of contributing to misinformation? Shouldn't they bring in an expert? Isn't there a risk of exacerbating students' environmental anxiety, given that 54% of the population reported experiencing eco-anxiety in 2023 (Champagne St-Arnaud *et al.*, 2023)? Many teachers would like to be able to act in support of young adults, who feel ill-equipped and are more likely to experience eco-anxiety symptoms, while showing them that adults don't pass the buck to the next generation (Bruch *et al.*, 2022), but how do we do this? Let's explore the different options available.

Three ways to teach climate change

The INSPQ conducted a systematic narrative review of the literature

to understand how to address the climate crisis in the initial and continuing education of care and social service providers. While 381 articles were identified since 2012, only 81 addressed training, of which only 7 published articles evaluated the impact of the training developed (Alvarez-Nieto *et al.*, 2018; Aronsson *et al.*, 2020; Grose and Richardson, 2016; Keating *et al.*, 2022; Leung *et al.*, 2022; Nguyen *et al.*, 2021; Richardson *et al.*, 2017).

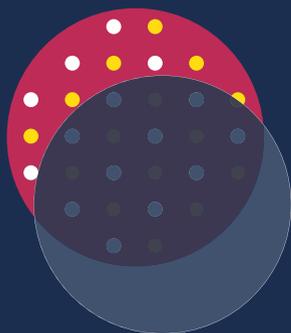
Although the narrative review focused exclusively on the field of health and social services, there are similarities with other disciplines, where it's not so much knowledge of climate science that is needed, but solutions and changes in practice. In occupational safety, for example, whether the heat comes from heat waves or an industrial process, the risks to the health of work teams are the same. However, it will be necessary to raise awareness in organizations that have not felt concerned about this issue in the past.

Rather than adding to other issues, such as the integration of notions of equity, diversity and inclusion, or the indigenization of curricula, the contextualization of certain competencies in the light of the FCC reinforces these issues, since the impacts of climate change are greater for these populations, even though they have contributed the least to it and have fewer levers to protect themselves.

The majority of the identified articles describe the processes or content of university or pre-university courses. Three approaches to teaching climate change emerge: exemplification, integration and inclusion. These

have the potential to intersect, complement each other or represent different steps in a program's or institution's progression toward integrating the issue.

Exemplification



Exemplification uses the FCC as a lens throughout a course on topics or competencies related to common and specific general education (e.g. philosophy, communication, scientific and technological culture, second language). The goal of the course remains the acquisition of the competencies listed in the general course outline. The climate theme contextualizes these objectives in a specific practical application. Therefore, the evaluations do not focus on the FCC.

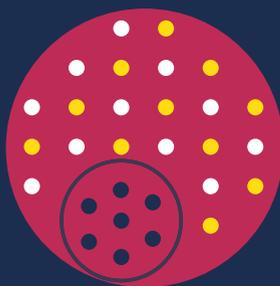
These initiatives are often led by a single teacher, as part of one or more courses under their responsibility. Here are two concrete examples, adapted from the academic literature.

- In a philosophy course, the teacher plans discussions on the perception of humans as being outside and superior to nature, which can lead to economic, social and cultural models that exacerbate the climate crisis. In the context of a nursing-specific competency, the philosophical perspective could lead the class to an ethical reflection on certain types of care that contribute to the deterioration of human health through their significant GHG emissions.

- An ESL course could have the group analyze a speech given at COP28 and prepare an oral argument on the use of fossil fuels.

This approach can significantly increase students' awareness of the climate issue but may be limited in terms of in-depth learning about the FCC, unless the issue is present as a common thread throughout the course. Teachers can tailor exemplification to the interests of their groups, to encourage motivation and engagement. Internships with FCC-related mandates can be included in the exemplification approach.

Integration



The second approach is to add pedagogical activities aimed at acquiring knowledge and competencies specific to the FCC. These may include extracurricular activities on campus, such as conferences, film screenings, debates, participation in civil society activities or involvement in a school's greening process.

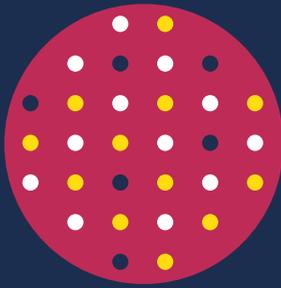
They can also include curricular activities such as adding profiles to certain programs or optional courses. For example, proposing a "Sustainable Health" profile in the 180.Ao Nursing

program would explain how to care for vulnerable people (infants, pregnant women, the elderly, people with chronic illnesses or on medication, etc.) who are experiencing the physical and psychological consequences of climatic hazards, such as heat stroke, acute heat-induced kidney failure, pollen allergies, exacerbation of respiratory or cardiovascular diseases, post-traumatic stress related to climatic emergencies or eco-anxiety. Students could also be trained in biomedical waste management and the implementation of sustainable infection prevention practices. Finally, based on the principles of professional practice regarding personal autonomy, the courses of the profile could be aimed at supporting individuals who wish to maintain or improve their lifestyle habits while respecting planetary limits.

Integration requires the collaboration and consultation of the program team and may require redefining the exit profile. In return for these efforts, the courses developed include learning objectives linked to the FCC, making evaluation possible, which is not the case in the integration approach. This approach also helps to strengthen the students' sense of competence in the face of a crisis that gives rise to a strong sense of powerlessness.

Integration can be initiated by a few professionals, teachers or students. Individuals or organizations outside the CEGEP can also be involved: scientists, environmental organizations, etc.

Inclusion



The final approach is to modify the learning outcomes of a course or program to include elements relevant to the FCC. Inclusion may begin with a single course. To promote deeper learning and transferability of knowledge and competencies, inclusion will eventually be required in multiple courses. **Table 2** provides some examples (Climate Resources for Health Education, 2023).

Table 2 CCL-related objectives included in the health and social services disciplines

Discipline	Initial objective	Examples of FCC-related objectives	Examples of essential content
Inhalation Therapy	Teaching, supervising and administering treatment to people with chronic or acute respiratory disorders	Teaching, supervising and administering treatment to people with chronic or acute respiratory disorders during heat waves, pollution peaks or forest fires Promoting sustainable practices in the care of people with chronic or acute respiratory disorders	<ul style="list-style-type: none"> Understanding the relationship between heat, pollution peaks and the exacerbation of chronic or acute respiratory disorders and their possible consequences (e.g. emergency room visits, death) Teaching adaptive behaviours (e.g., reducing unnecessary outdoor activities, other sources of indoor pollution) Increased monitoring of asthma patients during these periods Linking metered-dose inhalers to GHG emissions and identifying alternatives
Social Work	Assessing a family's needs and resources Carrying out psychosocial interventions	Analyzing a family's needs and resources after a flood Carrying out psychosocial interventions after a forest fire or on the occasion of a commemorative anniversary	<ul style="list-style-type: none"> Knowing the resources available (e.g., financial, psychosocial, food, material) in the event of an extreme weather event Explaining how extreme weather events can lead to the development or exacerbation of various problems (e.g., dependency, domestic violence, impoverishment, loss of autonomy)

Which approach to choose?

Given the small number of projects evaluated, the systematic narrative review could not determine with certainty which of these three approaches is the most effective. However, here is an overview of the elements to consider in relation to each of these approaches.

Method	Benefits	Elements to consider	
Integration	Exemplification	<ul style="list-style-type: none"> Facilitates a first effort Reinforces a attitude of openness and reflexivity Reaches students with varying levels of awareness/knowledge Develops critical thinking and analysis skills Helps to address emotions through the relationships built in the class group Does not require expertise in climate science; expertise in one's own disciplinary practice is sufficient 	<ul style="list-style-type: none"> Instrumentalizes the climate crisis, without necessarily demonstrating its importance Remains sporadic in the course Requires greater use of contextualized, authentic or experiential pedagogical methods for transferability to practice Reduces chances of longevity if based on the will of a single teacher Limits evaluation of learning specific to the FCC
	extracurricular	<ul style="list-style-type: none"> Encourages interdisciplinary collaboration, both within and outside the institution Relies on just a few volunteers: little up-front awareness required Gives good visibility to the issue Promotes student mobilization Supports the development of transversal skills among students involved in the organization 	<ul style="list-style-type: none"> Mobilizes people who are already aware and informed Has a non-structuring effect on initial education May require support from the institution and student life services Requires promotion and communication efforts Tempers transferability to professional practice Limits evaluation of learning
	curricular	<ul style="list-style-type: none"> Develops systemic vision and analytical skills Encourages students' ability to take action Supports the development of transversal skills Helps deepen basic knowledge Helps to address emotions through the relationships built in the class group Evaluates learning specific to the FCC 	<ul style="list-style-type: none"> Often mobilizes people who are already aware and informed Has little structuring effect on initial education Can complicate the logistics of course schedules Requires significant efforts from pedagogical and management teams
Inclusion	<ul style="list-style-type: none"> Reaches all the students in a program Enables peer learning with more knowledgeable students Encourages spiral learning (repeating the challenge over several courses or years) Aims to make concrete connections to practice Demonstrates that the FCC requires multiple practice implications (practice sustainability, patient teaching, leadership, etc.). Allows the issue to be integrated without depending on the revision of ministerial devis or competency frameworks Does not require expertise in climate science; expertise in one's own disciplinary practice is sufficient 	<ul style="list-style-type: none"> Requires raising the awareness of a large number of people Requires a truly program-based approach and a concerted effort by the program team to ensure consistency and non-redundancy of content Presents the risk of providing a unidisciplinary and simplistic vision of the issue Does not change existing disciplinary paradigms and conceptual frameworks, but conforms to them Doesn't allow for visibility of pedagogical teams' efforts to teach the issue 	

Various reflections help to shed light on the choice of approaches best suited to the teaching context, the institutional vision of this issue and one's own pedagogical stance (Bisaillon & Levesque, 2016). Here are some possible questions:

- Should we train as many people as possible or develop student expertise?
- Do we want to encourage discussion and reflection on the topic, or influence the development of appropriate professional practices?
- Do we plan to work alone or in collaboration?
- What institutional support is available: research, teaching, community, operations and campus life? (Bisaillon & Levesque, 2016)
- What allies are available (pedagogical teams, teachers, etc.)?
- Who are the potential partners? Are there opportunities for internships or research?
- How mobilized are student associations? What are their needs?

At the level of an institution, or even a program, the three approaches can be implemented simultaneously or successively. Some individual initiatives have started with exemplification, leading a pedagogical team to develop an integrated program that facilitates the inclusion of climate issues in several courses, thanks to the support of pedagogical counsellors.

Some ideas for developing FCC-related competencies

Treatment: A systemic and dynamic approach to climate change

The development of a systemic and interdisciplinary vision of the issue is recommended, in particular by addressing simultaneously the mitigation of GHG emissions and the adaptation of professional practices. It is also recommended to develop students' critical thinking skills in order to enable them to analyze existing paradigms or conceptual frameworks (e.g.: the biomedical model in health, the Anthropocene,² the place of the economy), as well as their climate impacts.

Content: Acting locally and building on concrete experience and acquired skills

Although the FCC implies international concertation, the articles suggested that teaching should be rooted in a local perspective, to refine the understanding of impacts and solutions in a given territory.

The need for a global and systemic vision is accompanied, according to the articles, by the need for a concrete translation of FCC learning into professional practice. Pedagogical methods and learning activities that are relevant to the climate issue and promote this transferability are already mastered by teaching teams: case studies, scenario or simulation-based learning, group work... Several sources recommend building on learners' existing knowledge, attitudes and competencies, and their usefulness for both the planet and their professional lives.

Communication: Steering away from threat

Climate change is often presented as a threat. However, the natural environment is a key determinant of human well-being and provides important services to people. A positive vision should therefore be presented, based on the co-benefit principle³ (Holguera & Senn, 2021).

It's also important to approach the issue in a way that limits negative eco-emotions and encourages action. In line with the pedagogy of hope (Brouillette, 2010), we can present positive initiatives or achievements related to the climate issue. Several climate communication guides are being developed, and organizations such as the Francophone Eco-motion can be consulted.

² The Anthropocene is a geological epoch characterized by the emergence of humans as the primary force for change on Earth, surpassing geophysical forces.

³ The term *co-benefits* describes structural, community or individual interventions and measures resulting from FCC strategies that also have direct benefits for health, the environment, social inclusion or the economy.

Conclusion

Teaching about climate change in colleges opens the door to a variety of approaches, each with its own benefits and challenges. Whether through exemplification, integration, inclusion or a blend of these methods, it is critical to fully understand the needs and realities of each educational context before embarking. Rather than a standardized approach, a gradual transition adapted to each program facilitates the development of competencies specific to the FCC. By focusing on collective and concerted reflection, members of the college network can play a crucial role in shaping citizens who are aware of and equipped to deal with climate issues. —



Source: iStock/yuda lesmama

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Mon syndicat, bien plus qu'une convention



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