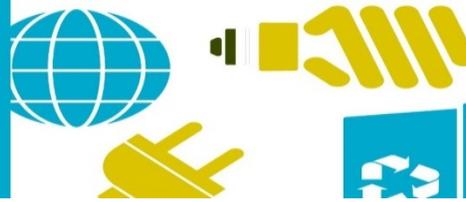


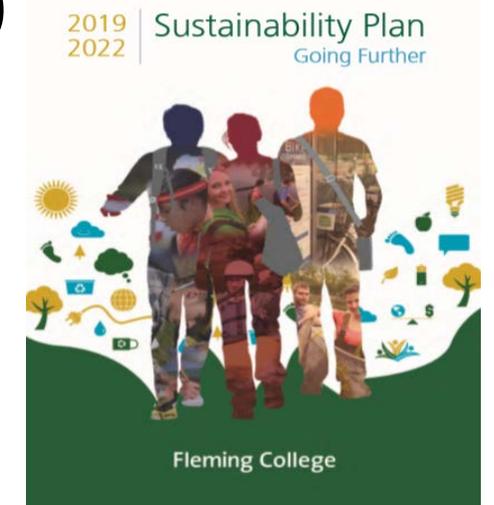
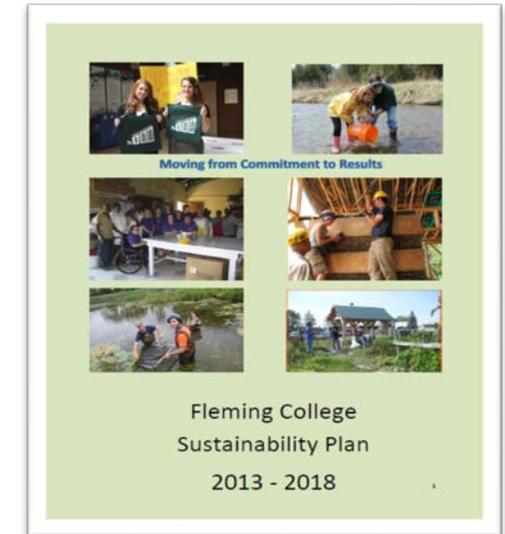


Sustainability Across the Curriculum Step by Step Guide

AGENDA



1. Introduction
2. Personal Reflections of Sustainability
3. UNESCO Framework
4. Fleming and UNESCO
5. Foundational Indigenous Knowledge
6. Sustainability Learning Outcome
7. The 17 Sustainable Development Goals (SDG)
8. Faculty examples
9. Workshop – Embedding sustainability into your course
9. Faculty Resources



The Office of Sustainability

Opening Reflections...

For many faculty, sustainability is about their own stories; childhood experiences in nature, using less energy and water, cycling to work, trying to find work-life balance, fighting for equity & social justice, or being an active community volunteer. Sustainability is often reflected in the principles they teach their students every day.

Teaching sustainability can reflect personal experiences and positive actions.

Broadly speaking, sustainability can relate to ...

- ❖ public health, community development and social justice
- ❖ protecting, and re-connecting with eco-systems
- ❖ sustainable buildings and infrastructure
- ❖ local food and sustainable farming practices
- ❖ corporate social and environmental responsibility
- ❖ organizational and human sustainability
- ❖ consumer patterns, lifestyles and attitudes
- ❖ understanding Indigenous Knowledge concepts as foundational to sustainability

Understanding sustainability issues can help students prepare for future changes in their field of study.

UNESCO



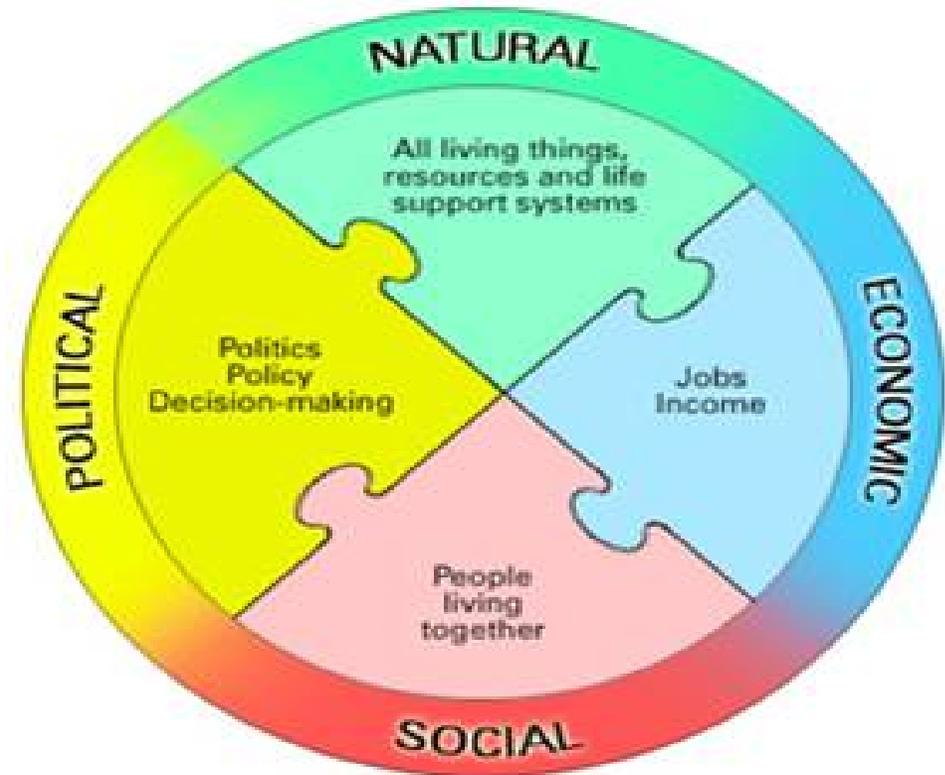
United Nations Educational,
Scientific, and Cultural
Organization

Two of it's key areas of focus:

**Innovation, Sustainability &
Education**

UNESCO helps us define Elements of Sustainability

1. **Natural systems:** provide resources – air, water, soil, food, etc. – that support all life – human and non-human;
2. **Social and cultural systems:** provide family, community and wider support for people to live together in ways that are culturally appropriate.
3. **Economic systems:** provide a means of livelihood (jobs and income) for people.
4. **Political systems:** through which social power is exercised to make policies and decisions about the way social and economic systems use resources in the natural environment. (UNESCO, *Teaching and Learning for Sustainability*, 1997)



... and important Principles of Sustainability

Natural Systems – The Principle of Conservation which is needed to ensure that natural systems can continue to provide life support systems for all living things including the resources that sustain the economic system.

Social/Cultural Systems –The Principles of Peace and Equity which results when people are able to live co-operatively and in harmony with each other and have basic needs satisfied in a fair and equitable way.

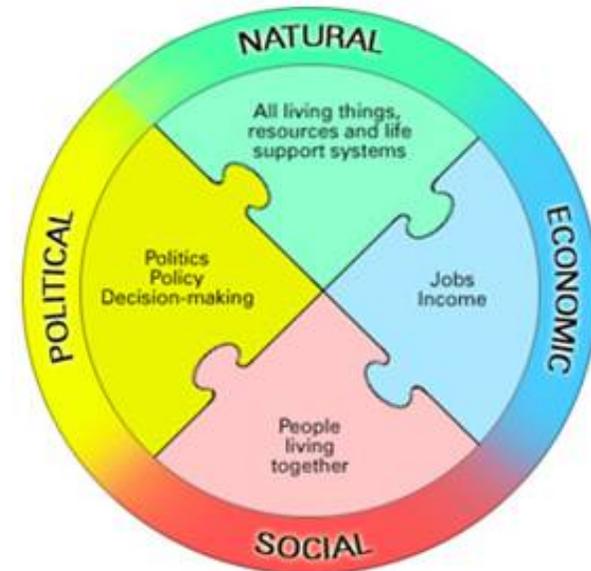
Economic Systems –The Principle of Appropriate Development which is needed for people to be able support themselves in a long-term way. Inappropriate development ignores the links between the economy and the other systems in the environment.

Political Systems – The Principle of Democracy which provides ways for people to be able to have a fair and equal say over how natural, social and economic systems should be managed." (UNESCO, 1997)

How might these elements apply to you?

When we make inter connections between two to four of these elements,
we are teaching the “**systems thinking**” and “problem solving” that students need to understand sustainability.

Interconnections between economic systems and natural and social systems are particularly important.



How Do We “Achieve” Sustainability?

*“ Achieving sustainability will depend ultimately on **changes in behavior and lifestyles**, changes which will need to be motivated by a **shift in values** and rooted in the cultural and moral precepts upon which behavior is predicated.”*

*-Teaching and Learning for A Sustainable Future,
UNESCO, 1997*

Did you know UNESCO?



- Fleming College, Trent University are the post-secondary leads for the Peterborough, Kawartha & Haliburton RCE - designated as **1 of 120 internationally by UNESCO** as:
 - **Regional Centre of Expertise on Education for Sustainable Development (RCE)**
 - Fleming is a partner with 120 other post-secondary institutions internationally in a UNESCO research project: | Indigenous Education for Sustainable Development – Reorienting Education and Training Systems to Improve the Lives of Indigenous Youth

What is AASHE?



- **AASHE =**

The Association for Advancement of Sustainability in Higher Education

- Higher Education in North America; England; EU; Asia, Australia & New Zealand

Did you know AASHE?



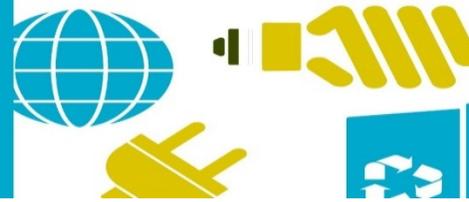
- **Fleming College** is only Canadian Centre for Sustainability across the Curriculum designated by AASHE in 2017
 - 1 of only 13 colleges or universities in North America to have the HHHE
 - [Map of AASHE Centres for Sustainability in Higher Education](#)
- STARS (Sustainability Tracking and Assessment Rating System)
 - Silver Stars rating
 - Fleming was named in the top ten performers category of the AASHE 2017 and 2018 Sustainable Campus Index

Did you know SDSN Canada?

- **Fleming College** is a member of the **SDSN** (Sustainable Development Solutions Network) Canada network hosted by U of Waterloo/Waterloo Global Science Initiative
- Committed to supporting the implementation of the SDGs at local, national, and global scales.
- SDSN mobilizes the academic community to translate the latest expertise in sustainable development into action

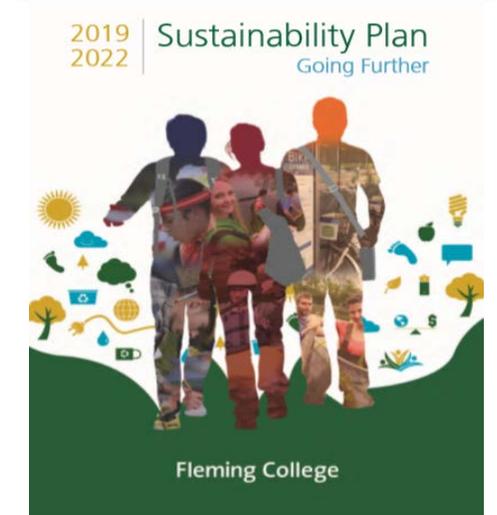
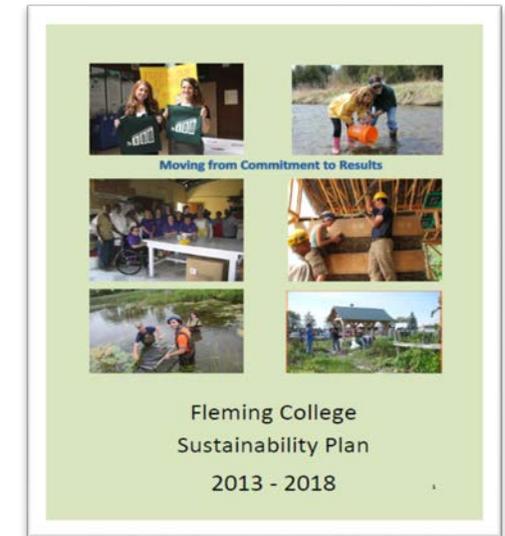


Fleming Goal



Fleming College made a commitment to incorporate sustainability across the curriculum

- ❖ Goal: All Fleming students will be aware of sustainability and take a minimum of one course
- ❖ Fleming developed a sustainable learning outcome and rolled it out 4 years ago
- ❖ The Sustainability Learning Outcome can be found in required courses in the majority of diploma programs across the College.



Sustainability Learning Outcome

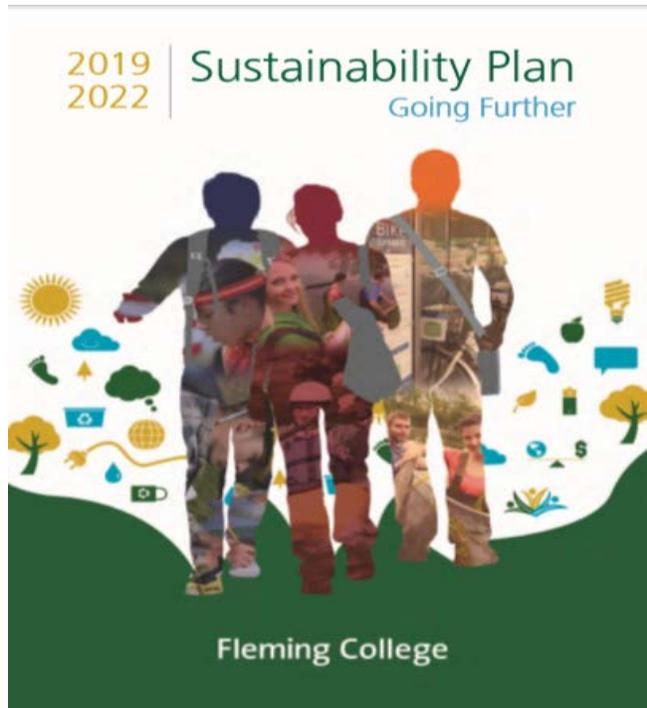
Explain the interconnections between the broad principles of sustainability- which include human health and well-being, ecological health, social issues and secure livelihoods - in order to support a better world for all generations.

Foundational Knowledge for all Programs

- ❖ **Concepts found within Indigenous Knowledge systems** can and should be considered as foundational to sustainability. Fleming College has a number of excellent resources including courses in Indigenous Studies and a new Indigenous Perspectives Designation taught by Indigenous Faculty members and Elders. Many cultural events also occur at the College and in the community. Information on events and protocols for accessing these resources can be found by contacting [Aboriginal Student Services](#).
- ❖ Information on the IP Designation can be viewed at the [Indigenous Studies Department Website](#)

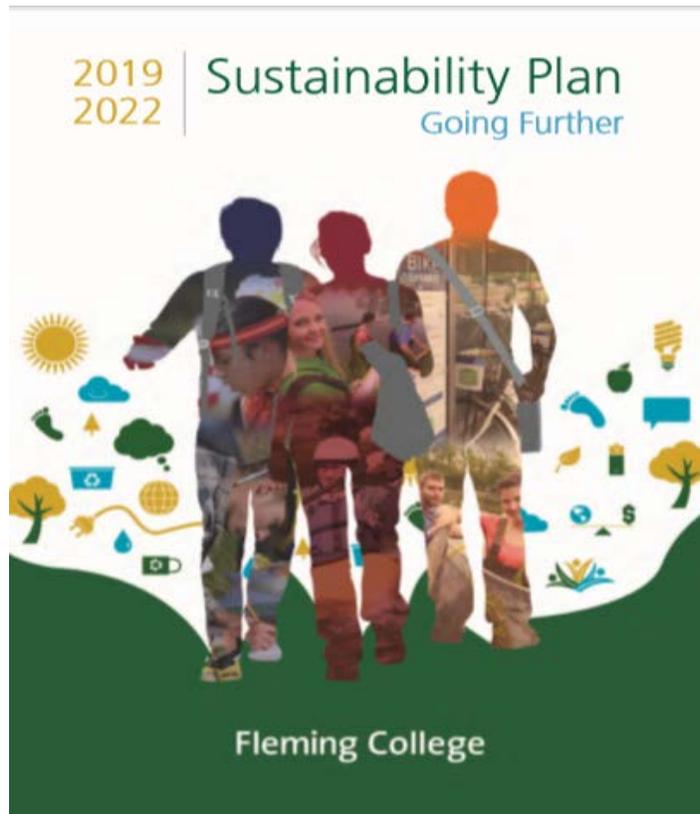
What's Next...

3 Year Sustainability & Climate Action Plan 2019 - 2022



- We will support the **United Nations 17 Sustainable Development goals** while achieving carbon and waste reduction targets identified in the Climate Action Plan
- Establish roadmap to 2022 for Fleming using the **whole institution approach** to sustainability to reach the Sustainable Development Goals (SDG's) through the **five dimensions:**
 - green campus
 - green curriculum
 - green research
 - green community
 - green culture

3 Year Sustainability & Climate Action Plan 2019 - 2022



- Fleming will contribute to a **30% reduction in our greenhouse gas emissions by 2030**
- Fleming will contribute to **80% reduction by 2050**
- We will continue to embed sustainability in our campus, **as a living lab, and through our programs, curriculum and extracurricular offerings.**
- Our graduates are our greatest impact. With our graduates we will go further!

Another Sustainable Development Model for the SDG's





SUSTAINABLE DEVELOPMENT GOALS



1. No Poverty
2. Zero Hunger
3. Good Health and Well-being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry Innovation and Infrastructure
10. Reduced Inequities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals



**GOAL 1: END
POVERTY IN ALL ITS
FORMS EVERYWHERE**



**GOAL 2: END HUNGER,
ACHIEVE FOOD SECURITY
AND IMPROVED NUTRITION
AND PROMOTE SUSTAINABLE
AGRICULTURE**



**GOAL 3: ENSURE
HEALTHY LIVES AND
PROMOTE WELL-BEING
FOR ALL AT ALL AGES**



**GOAL 4: ENSURE
INCLUSIVE AND QUALITY
EDUCATION FOR ALL AND
PROMOTE LIFELONG
LEARNING**



GOAL 5: ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS



GOAL 6: ENSURE ACCESS TO WATER AND SANITATION FOR ALL



GOAL 7: ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL



GOAL 8: PROMOTE INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, EMPLOYMENT AND DECENT WORK FOR ALL



**GOAL 9: BUILD RESILIENT
INFRASTRUCTURE,
PROMOTE SUSTAINABLE
INDUSTRIALIZATION AND
FOSTER INNOVATION**



**GOAL 10: REDUCE
INEQUALITY WITHIN AND
AMONG COUNTRIES**



**GOAL 11: MAKE CITIES
INCLUSIVE, SAFE,
RESILIENT AND
SUSTAINABLE**



**GOAL 12: ENSURE
SUSTAINABLE
CONSUMPTION AND
PRODUCTION PATTERNS**



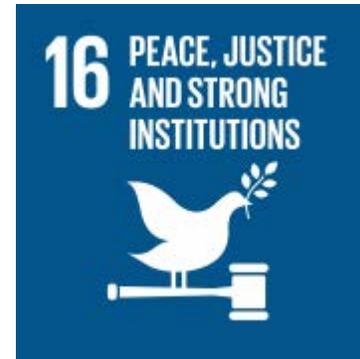
GOAL 13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS



GOAL 14: CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES



GOAL 15: SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, HALT AND REVERSE LAND DEGRADATION, HALT BIODIVERSITY LOSS



GOAL 16: PROMOTE JUST, PEACEFUL AND INCLUSIVE SOCIETIES



GOAL 17: REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

Faulty Resources:

This links you to our website and a [Faculty Web Resource Library](#) that has videos, articles and documents **relevant to all schools and programs** - once you click on the library you can click on your school or area of interest in the table of contents.

Office of Sustainability Faculty Liaison can be reached via e-mail sharon.archibald@flemingcollege.ca

The [UNESCO Sustainability Education Site](#) containing 100s of modules on sustainability topics.

SDSN Case Studies <https://uwaterloo.ca/sustainable-development-solutions-network-canada/news/>

Sustainability Curriculum Consortium Webinars
<http://curriculumforsustainability.org/>



How to Embed Sustainability into your Course

Step One - To assess sustainability in your course or program, please take a moment to reflect on the following ...

1. What elements of sustainability might already be part of your course? (natural social / cultural, economic and political) What connections could be made to other elements?
2. What principals might already be part of your course? (Conservation, Peace and Equity, Appropriate Development, Democracy) What connections could be made to other principles?
3. How might issues of sustainability be relevant to your course/ program?
4. How might course modules be adapted to incorporate sustainability?
5. Which teaching strategies might already be part of your practice? (e.g. Experiential Learning, Problem Solving, etc.) Are there others that would work for your course?

Step Two – Select one or more of the 17 SDG's



1. No Poverty
2. Zero Hunger
3. Good Health and Well-being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry Innovation and Infrastructure
10. Reduced Inequities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals

Step Three

1. Determine which course you want to work with
2. What makes the most sense to you in how to add it to the course:
 - Integrate into a current lecture?
 - Integrate into a seminar?
 - Use a sustainability case?
 - Add a sustainability assignment?
3. Add the SDG goal into your material

Step Four

1. If you would like to discuss or require resources please contact the office of sustainability
2. Faculty Liaison is Sharon Archibald and can be reached at sharon.archibald@flemingcollege.ca

Backup Slides

... and Strategies for Teaching Sustainability

UNESCO 's Teaching and Learning Strategies for a Sustainable Future, 1997

- *Each section below has 3+ activities that you can use for each type of learning*

1. Experiential Learning
2. Storytelling
3. Values education
4. Enquiry learning
5. Appropriate assessment
6. Future Problem Solving
7. Learning outside the classroom
8. Community Problem Solving

Following the UNESCO approach, many faculty already teach sustainability...

...when we make interconnections between two to four sustainability principles, we are teaching the **“systems thinking”** and **“problem solving”** required to understand and act on sustainability issues.

Please take a moment to view this video to see how students, faculty and leadership are making these connections

[Fleming College "Sustainability Lives Here"](#)

Sustainability Lives Here- Fleming College Video, 2015

Examples...School of Business

Tourism and Travel Program:

Students learn about the social and environmental impacts of commercial tourism and ways to promote sustainable tourism. Students in the “SAFE” course travel to Jamaica and work in a “Kitchen of Love” that serves low income persons and persons with disabilities.

Interconnections: Natural, social and economic systems and principles of Conservation, Peace and Equity and Appropriate Development.

Please see interview with [Patti Watson](#) Coordinator, Tourism and Travel Program.

Corporate Social Responsibility ~ Project Management Program:

Most Business students take a Corporate Social Responsibility course. Students in that course and in the Project Management Program learn by doing sustainability projects on campus and in the community.

Interconnections: Natural, social and economic systems using experiential and enquiry learning.

Please see interview with [Jenny Olauson](#) Teacher, Post Grad Certificate in Project Management.

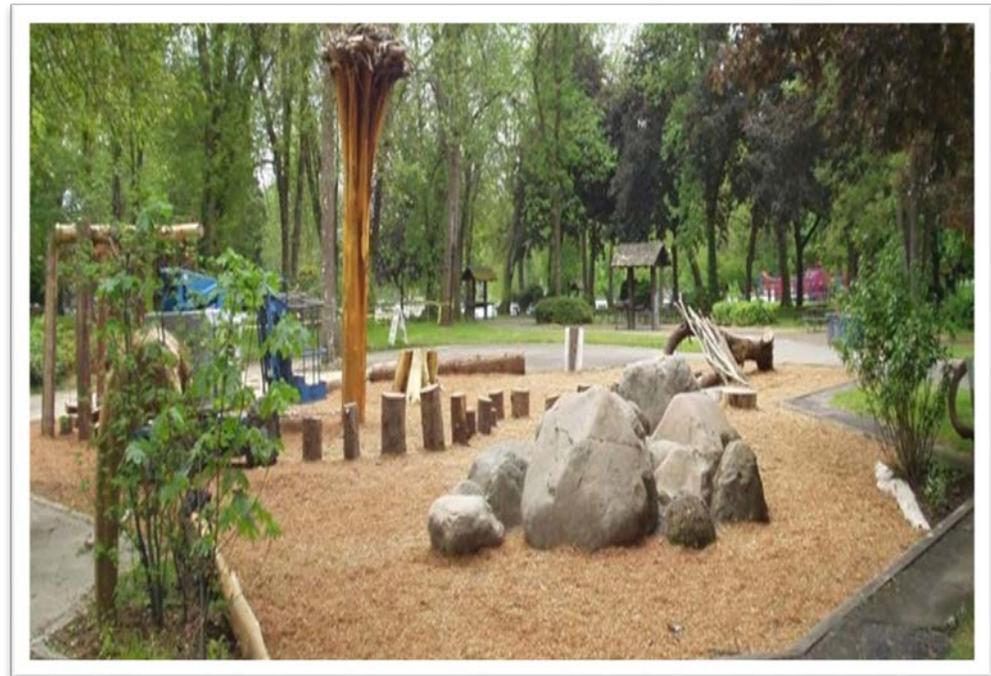


Examples School of Community Development

Early Childhood Education:

Students are taught about the impacts of environmental issues on the health of young children and about the benefits of outdoor play, nature education and natural materials for children's health and well being. Often learning occurs through hands-on projects.

Interconnections: Natural and social systems using values education, experiential learning and learning outside the classroom.



Examples... Skilled Trades

Carpentry Program

Students learn green building standards and how to limit construction waste – including donating projects to the community organizations.

Interconnections: Natural, social and economic systems.

Please see interview with [Scott Fleming](#) Coordinator, Construction Skills and Carpentry Apprenticeship Programs.



Example: Collaboration Across Schools

School of Environment and Natural Resource Sciences (SENRS) and the Culinary Management Program

Culinary Management students in the School of Skills Trades and Technology prepare and serve food that was sustainably grown and raised by students in the Sustainable Agriculture and Aquaculture Program.

Interconnections: natural, social and economic systems using experiential and inter-disciplinary learning.



Vocational and/or discipline based-learning outcomes

Skills for sustainability
(refer to companion handout)

Learning context: learning outside the classroom

- Place-based learning/situated learning; responsive to regional needs; application in multiple settings; reconnecting students to sense of 'place'
- Crosses four domains -personal, professional, organizational and social or community; includes the natural, social and built environments

Teaching strategies and context
'Education for action'

Learning and assessment strategies (what students will be doing, thinking about, engaging with...)
'Learning for action'

College campus as learning laboratory/curriculum
Built environment as case study (Second Nature)
Local/regional/global social communities (including one's home, inter-generational communities, virtual communities)
Workplace communities, communities of practice, learning communities
Urban ecologies: streetscapes, neighbourhoods, cityscapes,
Rural ecologies: farmscapes, landscapes, wilderness
Ecosystems, bioregions, watersheds
Unfamiliar environments

Faculty as 'master learner', facilitator, mentor, coach
Use of diverse teaching styles
Balancing asking significant questions with student dialogue
Engagement/partnerships/networks/relationships across all sectors, with community, organizations, business, government
Using external experts/mentors
Engagement across generations, cultures, heritage, places, disciplines
Making connections between social, economic and natural systems
Team-teaching across disciplines (inter- & trans-disciplinary); examining multiple perspectives, and honoring more than one point of view
Focus on ethics and values (values education)
Learner-centred: students may play active role in defining projects
Mapping to the learner's world/relationships
Use of 'at the same time' principle (i.e. sustainability skills/concepts not isolated as stand alone outcomes or courses)
Engaging the hidden curriculum (campus as curriculum) and leading by example
Promoting the connection between theory and practice
Flexible and responsive course/program design and delivery

Participatory action research/ participative enquiry
Experiential learning (engaging students in their environments, locally relevant projects)
Discovery learning – access to 'tools', but not exact answers
Use of 'critical incidents'
Enquiry-based/real-world problem solving; learning from failure
Case-based learning; scenario-building (solutions-oriented)
Project-based learning, long-term projects, capstone projects, place-based projects
[Digital] story-telling
Systems-thinking (using techniques such as cognitive maps)
Reflective learning (on complex issues); journaling
'Deep thinking' – value of the 'creative pause'
Group, team, collaborative or co-operative project work
'Purposeful' conversation, dialogue, debate, looking for patterns (e.g. world café)
Learning communities (interest groups that cross disciplines)
Charrettes (intensive, collaborative approach to building/ conceptualizing innovative solutions)
Studio-based critiques (peer feedback)
Service learning/volunteer experience
Co-curricular activity
Non-formal & informal learning activity
Field placement, internships,
Cognitive apprenticeship
Field work
Portfolio development

Characteristics of assessment strategies:

Formative <u>and</u> summative (i.e. continuous assessment)
Complex, authentic
Includes multiple inputs – self, peers, faculty, externals
Accommodates needs of diverse groups
Futures oriented; solutions oriented
Inter- or trans-disciplinary/team assessed
Meaningful and with purpose
Combine sustainability 'big picture' concepts with core vocational curriculum
Activity must be sustainable in itself (e.g. reasonable expectation of student performance; faculty support)

Integrating ('at the same time principle')

Skills for sustainability
Sustainability themes, concepts, values
Green 'transversal' technical skills (e.g. energy conservation, waste management, green procurement)
Green specialized 'technical' skills, as needed where needed

Teaching, learning & assessment strategies to support the integration of skills for sustainability across the curriculum

Alignment with Essential Employability Skills & the Ontario Qualifications Framework

Example: Communications Skills

OQF, EES

- ❖ Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfils the purpose and meets the needs of the audience
- ❖ Respond to written, spoken or visual messages in a manner that ensures effective communication.

Sustainability Skills:

- ❖ Developing dialogue; authentic dialogue, skillful discussion, effective listening, candor
- ❖ Capacity to ask the right question; construct good arguments; challenge assumptions
- ❖ The ability to communicate information, arguments and analysis accurately and reliably, orally and in writing, to specialist and non-specialist audiences using structured and coherent arguments, and, where appropriate, informed by key concepts and techniques of the discipline.



Thank you for participating!

Prepared by:
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Updated by Sharon Archibald Fall 2018
Faculty Liaison
Office of Sustainability
2018