



INDICATOR: Biodiversity in Ontario's elementary and secondary school curricula

Strategic Direction: Empower People

Target: 2. By 2025, the capacity for people to conserve biodiversity is increased and by 2030 people are taking action to protect and care for biodiversity in their daily lives.

Theme: Conservation Response – Education and Awareness

Previous versions:

- [Biodiversity in Ontario's elementary and secondary school curricula - 2015](#)
- [Biodiversity in Ontario's elementary and secondary school curricula - 2021](#)

Background Information

As nations worldwide tackle complex environmental and societal challenges, there's a growing awareness of education's vital role. Schools play a critical role in helping students understand how our individual and collective behaviour affects the environment, and how environmentally responsible lifestyles can contribute to healthy, sustainable ecosystems (Ontario Ministry of Education 2009). Education prepares students to take their place as informed, engaged and empowered citizens who will be pivotal in shaping the future of our communities, our province, our country, and our global environment (Ontario Ministry of Education 2007).

A recent survey on awareness of biodiversity in Ontario shows that the younger generation (18-24 year olds) are more aware of what biodiversity is than any other age group. Of this age group 69% said they learned it at school (OraclePoll 2024).

In Ontario, the curriculum is developed by the Ministry of Education in consultation with education stakeholders and partners. It has mandatory learning expectations (what students must learn) and optional teaching supports (tools and information that teachers may use to help students learn). *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools* outlines an approach to environmental education that would be part of every child's learning and that responsible environmental practices would be fostered across Ontario's education system (Ontario Ministry of Education 2009).

Ontario's Ministry of Education defines environmental education as education about the environment, for the environment, and in the environment that promotes an understanding of, rich and active experience in, and an appreciation for the dynamic interactions of (1) the Earth's physical and biological systems, (2) the dependency of our social and economic systems on these natural systems, (3) the scientific and human dimensions of environmental issues, and (4) the positive and negative consequences, both intended and unintended, of the interactions between human-created and natural systems (Ontario Ministry of Education 2009).

Since its introduction in 2009, environmental education has been included in all grades and subjects of the Ontario curriculum. Specifically, environmental education information is part of the [Program Planning](#) section for all curricula, and supports educators to incorporate environment-related learning across all curriculum. Ontario's curriculum is developed by



educators and informed by research and experts in pedagogy, industry, the labour market and academia, as well as feedback from stakeholders and partners with expertise in environmental education. This ensures that the curriculum remains current, relevant, developmentally appropriate, and supportive of the strengths, interests and needs of all learners.

This indicator provides a narrative assessment of the integration of biodiversity into Ontario's elementary and secondary curricula.

Data Analysis

Information about the integration of biodiversity into elementary and secondary school curricula was provided by the Ontario Ministry of Education. The Ontario curriculum consists of 8 elementary subjects and 19 secondary subjects in the English-language school system and 11 elementary subjects and 21 secondary subjects in the French-language school system. Elementary curriculum is standard from Grades 1-8. In secondary school, students generally work towards an Ontario Secondary School Diploma, which requires a combination of compulsory and optional credits from a variety of disciplines including at least two credits in science and one credit in geography.

Results

Trend: Improvement

Data Confidence: High

Geographic Extent: Provincial

Status

- Ontario's curriculum is updated regularly to reflect new concepts, theories, and relevant environmental and societal issues. For example, in 2022, the Ministry of Education implemented a revised Science and Technology, Grades 1-8 curriculum. This revised curriculum includes learning expectations related to environmental education, such as understanding how climate change contributes to biodiversity loss and its consequences, recognizing the importance of biodiversity in supporting agriculture, and exploring the impacts of harvesting food from natural environments along with strategies to maintain or restore ecosystems.
- Biodiversity has been integrated into elementary and secondary school curricula and opportunities to learn about biodiversity have increased in revised curriculum. Since 2019, elementary curriculum, including Science and Technology, Social Studies, History and Geography, and Health and Physical Education have been revised and include opportunities to learn about biodiversity. In secondary schools, students have opportunities to learn about biodiversity in the mandatory Gr. 9 Geography and Gr. 9-10 Science courses. Other opportunities to learn about biodiversity exist in optional Gr. 9-12 Canadian World Studies, Science, Computer Studies, First Nations, Métis, and Inuit Studies, Technological Education, Health and Physical Education, and Social Sciences and Humanities courses.
- The Ministry of Education continues to include environmental education as part of the considerations for curriculum revision, resulting in an increased focus on environmental issues such as biodiversity and related issues including habitat loss, invasive and endangered species, climate change, sustainability, and ecosystems.



Biodiversity in elementary (1-8) and secondary (9-12) curriculum:

- In Social Studies, Grades 1-6; History and Geography, Grades 7 and 8, students learn about the human-created and natural world and gradually delve into impacts of human activities on the natural world. As students mature, they learn about how they can make choices that minimize the negative impacts of their actions, and they learn how environmental stewardship can take place at the personal, national and international level. In this curriculum, concepts and issues such as respect for natural systems, land use, pollution, habitat loss, resource extraction/harvesting and use, and action plans to reduce environmental impacts are introduced and students' learning deepens and expands as they progress through the grades.
- In Science, Grades 1-8, the curriculum includes a strand on Life Systems where students begin learning about the needs and characteristics of living things and progress to learning about habitats and communities, and interactions in the environment. In Grade 6, biodiversity is the focus of the Life Systems strand. In this strand students learn to:
 - Assess the importance of biodiversity, and describe ways of protecting biodiversity; and
 - Demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans.
- In Health and Physical Education, Grades 1-8, and Grades 9-12, students learn to:
 - Respect and appreciate the environment including the value of fresh air and outdoor spaces;
 - Understand the environmental benefits of healthy practices such as active transportation and the environmental implications of various food choices, being aware of the impact of using trails, and understanding the health risks associated with environmental factors such as sun exposure and air pollution; and
 - Become environmentally responsible citizens by making connections between themselves and the world around them.
- In Grade 9 Science, the biology strand focuses on sustainable ecosystems and human activity. Students learn to:
 - assess impacts of climate change on ecosystem sustainability and on various communities, and describe ways to mitigate these impacts
 - demonstrate an understanding of the dynamic and interconnected nature of ecosystems, including how matter cycles and energy flows through ecosystems
- Canadian and World Studies, Grades 9-12 contains curricula for Gr. 9 Geography, Gr. 10 History and Gr. 10 Civics and Citizenship. These courses are a mandatory component of the Ontario Secondary School Diploma. In these courses, students develop the skills they need to solve problems and communicate ideas and decisions about significant developments, events, and issues. Biodiversity and related issues such as pollution, climate change, impacts of consumption, land use and issues of civic importance such as environmental responsibility are explored extensively. There continues to be learning opportunities in the optional Gr 11 – 12 courses found within this curriculum.



- First Nations, Métis, and Inuit Studies, Grades 9-12 encourages students to engage in learning related to land and the environment. For example, students learn to:
 - ◊ Explore various ways in which Indigenous artists analyse the relationship between humanity and the natural environment and reclaim a personal connection to the land through their art;
 - ◊ Investigate how First Nations communities put the principles of environmental sustainability and stewardship into practice, and make connections between environmental protection and responsible use of the natural environment; and
 - ◊ Analyse various perspectives on the role of humanity within the natural world, as expressed in oral, written, media, and cultural text forms.
- In Grades 11-12, Computer Studies courses teach students environmental stewardship and sustainability. Students are given the opportunity to explore the safe handling and disposal of computers, materials and substances and engage in developing and implementing strategies to reduce, reuse, and recycle computers, their products and associated technologies. The Grade 10 Digital Technology and Innovations in the Changing World course provides opportunities for students to examine the use of computer modelling and simulations to help address climate change.
- In Social Sciences and Humanities, students in Grades 10-12 come to understand the environmental impact of their choices and those of the broader society with respect to the use or overuse of resources including clothing, food, housing, etc. In the General Social Sciences and Equity Studies suite of courses students can examine the impact of climate change on individuals and diverse groups and communities. Finally, in World Religions courses, students explore the ways in which environmental stewardship and responsible environmental practices are woven into the tenets of a number of religions and belief traditions.
- In Technological Education, students in Grades 9-12 develop an understanding of the fundamental technological concepts, one of which is environmental sustainability. The new Grades 9 and 10 Technological Education curriculum, issued in May 2024, includes two new courses: Technology and the Skilled Trades, Grade 9, Open (TAS10) and Technology and the Skilled Trades, Grade 10, Open (TAS20). In these courses, students learn to:
 - ◊ assess local and global impacts of various technological innovations on the environment
 - ◊ analyze how the development and application of technologies are impacted by environmental considerations
- Along with a new Grade 9 and 10 Technological Education curriculum, the Ontario government is implementing a new Technological Education high school graduation requirement. Starting with students entering Grade 9 in the 2024-25 school year, all students will be required to earn a Grade 9 or 10 Technological Education credit as part of their Ontario Secondary School Diploma. This graduation requirement will expose Ontario's students to at least one Technological Education course. As part of the new graduation requirement, students may choose to take a broad-based technology focused course on Green Industries (if offered by their school) where they may be further exposed to learning on biodiversity.



Links

Related Targets: N/A

Related Themes: N/A

Web Links

Ontario Ministry of Education. High school graduation requirements. [High school graduation requirements.](#)

Ontario Ministry of Education. Cross-curricular and integrated learning. [Program Planning \(gov.on.ca\).](#)

Ontario Ministry of Education. Curriculum and Resources. [Curriculum \(gov.on.ca\)](#)

Ontario Ministry of Education. [What is curriculum? \(gov.on.ca\)](#)

References

Elsevier, B.V. 2014. IPBS The IPBES Conceptual Framework – connecting nature and people. Open issue: Sustainability — from concept to practice, Current Opinion in Environmental Sustainability, Volume 14, Pages v-vii <https://doi.org/10.1016/j.cosust.2015.10.001>.

Ontario Ministry of Education. 2009. Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools. Queens Printer for Ontario, Toronto, Ontario.

Ontario Ministry of Education , Shaping our schools, shaping our future (2007)

Ministry of Education. 2007. Shaping Our Schools Shaping Our Future Environmental Education in Ontario Schools. A Report of the Working Group on Environmental Education. Queens Printer for Ontario, Toronto, Ontario. <https://www.ontario.ca/page/policy-environmental-education-schools>

Citation

Ontario Biodiversity Council. 2024. State of Ontario's Biodiversity [web application]. Ontario Biodiversity Council, Peterborough, Ontario. [Available at: <http://ontariobiodiversitycouncil.ca/sobr> (Updated: November 13, 2024)]