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Big Ecological Ideas by Grade (1-8)

Ontario EcoSchools has updated two TDSB resources: *Energy Conservation by Grade (1-8)* and *Waste Minimization by Grade (1-8)*. These guides offer teachers ideas for integrating the environmental learning expectations within and across strands in the Social Studies and Geography and the revised Science and Technology curriculum

► **Waste Minimization by Grade (1-8)**

This resource is organized around “big ideas” about waste and waste minimization based on identified clusters of learning expectations. These ideas complement the 2007 revised environmental education-enriched Science and Technology curriculum, helping teachers to incorporate ecological thinking into the curriculum. Social Studies and Geography expectations are also included. Annotated Internet resources offer background facts and student learning activities.

► **Energy Conservation by Grade (1-8)**

Like *Waste Minimization by Grade*, this guide is organized around “big ideas” about energy and energy conservation that are based on identified clusters of learning expectations. These ideas complement the 2007 revised environmental education-enriched Science and Technology curriculum, helping the teacher incorporate ecological thinking into the curriculum. Social Studies and Geography expectations are also included. Annotated Internet resources offer background facts and student learning activities.

The “big ecological ideas” are organized into the chart below for easy reference

Grade	Waste	Energy
1	Practicing the 3Rs keeps materials useful, reduces waste and helps the environment.	We rely on the constant flow of energy from the sun to live. Controlling the devices we use allows us to conserve energy.
2	Clean air and clean water are very important for the health of all living things...	The sun is the source of wind and water energy. People can use water and wind power to produce electricity that is non-polluting. There are significant advantages and challenges to using renewable energy sources such as wind and water energy.
3	Waste from a community affects that community's natural environment. Early Canadian settlers' communities had a much smaller effect on the environment... Composting is a way to...nourish the soil	Plants...perform the important (but often overlooked) “service” of moderating outdoor temperatures. This directly affects the amount of energy we use!
4	Materials used in the production and construction of the things we use (inputs) and their disposal (outputs) alter the landscape.	The high consumption of energy in North America has an effect on plant and animal habitats and communities.
5	The Earth is a closed system in terms of matter. Recycling and composting help redirect waste materials to appropriate new uses. Choosing household products with care can ensure that their use or disposal does not put toxic ingredients into the environment.	The extraction, transportation and processing of natural resources use a lot of energy. Different energy sources have different impacts on the environment. Devices and systems can be designed to minimize energy use and thus reduce our impact on the environment.
6	International trade had advantages for people—but comes with harmful environmental impacts.	The use of electricity improves our lives, but has many different kinds of impacts on the environment. Conserving energy at home and in school reduces negative impacts on the environment.
7	In nature there is no waste. Composting can help us recycle our organic waste the way nature does—and improve the health of the soil. Our production and disposal of waste materials affect the balance of local ecosystems by affecting air, water and land. Sustainability means living our lives within the tolerances of the Earth's ecosystems... Life cycle analysis examines the environmental impacts of goods... Mixtures and solutions can have an impact on the environment... Sustainable development...“meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”	Heat is a form of energy. This energy is becoming more costly both economically and environmentally. To save energy in buildings one needs to check the heating system for inefficiencies and the building for “heat leaks”—and fix them.
8	Informed consumers can have a positive impact on the environment by making wise purchasing choices. Our economy and society are dependent upon a healthy environment...	Efficiency in human mechanisms and structures reduces costs and environmental impacts. Ecological/environmental factors are increasingly included in manufacturer and consumer decisions.