

"The Atomic Weight of Happiness"- Curriculum Connections (Ontario Curriculum Doc.- Revised 2007)

Grade 7 Science (Examples from the play can support the following expectations)

Units of Study: Life Systems - Interactions in the Environment

Overall Expectations: 1. Students assess the impacts of human activities and technologies on the environment and evaluate ways of controlling these impacts

Specific Expectations: By the end of Grade 7, students will:

1.1 assess the impact of selected technologies on the environment

Sample issue: The use of technologies such as cars and computers has many impacts on the environment. What are some of these impacts and how do they affect the ability of the environment to support life?

1.2 analyse the costs and benefits of selected strategies for protecting the environment

Sample issue: Many people recycle because it makes them feel that they are doing something good for the environment. But the focus on recycling takes the emphasis away from strategies like reducing or reusing.

2.4 use appropriate science and technology vocabulary, including *sustainability, biotic, ecosystem, community, population, and producer*, in oral and written communication

2.5 use a variety of forms (*e.g., oral, written, graphic, multimedia*) to communicate with different audiences and for a variety of purposes (*e.g., design a multimedia presentation explaining the interrelationships between biotic and abiotic components in a specific ecosystem*)

3.5 describe how matter is cycled within the environment and explain how it promotes sustainability (*e.g., bears carry salmon into the forest, where the remains decompose and add nutrients to the soil, thus supporting plant growth; through crop rotation, nutrients for future crops are created from the decomposition of the waste matter of previous crops*)

3.8 describe ways in which human activities and technologies alter balances and interactions in the environment (*e.g., clear-cutting a forest, overusing motorized water vehicles, managing wolf-killings in Yukon*)

Unit of Study- Earth and Space Systems- Heat in the Environment

Overall Expectations: 1. Students assess the costs and benefits of technologies that reduce heat loss or heat-related impacts on the environment.

Specific Expectations:

1.1 assess the social and environmental benefits of technologies that reduce heat loss or transfer (*e.g., insulated clothing, building insulation, green roofs, energy-efficient buildings*)

1.2 assess the environmental and economic impacts of using conventional (*e.g., fossil fuel, nuclear*) and alternative forms of energy (*e.g., geothermal, solar, wind, wave, biofuel*)

3.7 describe the role of radiation in heating and cooling the earth, and explain how greenhouse gases affect the transmission of radiated heat through the atmosphere
(*e.g., The earth is warmed by absorbing radiation from the sun. It cools by radiating thermal energy back to space. Greenhouse gases absorb some of the radiation that the earth emits to space and reradiate it back to the earth's surface. If the quantity of greenhouse gases in the atmosphere increases, they absorb more outgoing radiation, and the earth becomes warmer.*)

3.8 identify common sources of greenhouse gases (*e.g., carbon dioxide comes from plant and animal respiration and the burning of fossil fuels; methane comes from wetlands, grazing livestock, termites, fossil fuel extraction, and landfills; nitrous oxide comes from soils and nitrogen fertilizers*), and describe ways of reducing emissions of these gases

Grade 8 Science (Examples from the play can support the following expectations) Unit of Study- Life Systems: Cells

Overall Expectations: 1. assess the impact of cell biology on individuals, society, and the environment

Specific Expectations:

By the end of Grade 8, students will:

1.1 assess the role of selected technologies (*e.g., the development of the electron microscope, the ability to infuse dyes into cells, in vitro fertilization*) in enhancing our understanding of cells and cellular processes

1.2 assess the potential that our understanding of cells and cell processes has for both beneficial and harmful effects on human health and the environment, taking different perspectives into account (*e.g., the perspectives of farmers, pesticide manufacturers, people with lifethreatening illnesses*)

Unit of Study: Structures and Mechanisms-Systems in Action

Overall Expectations: 1. assess the personal, social, and/or environmental impacts of a system, and evaluate improvements to a system and/or alternative ways of meeting the same needs;

Specific Expectations:

1.1 assess the social, economic, and environmental impacts of automating systems (See examples in Ont. Curriculum Document)

1.2 assess the impact on individuals, society, and the environment of alternative ways of meeting needs that are currently met by existing systems, taking different points of view into consideration **Sample issues:** (a) A large city decides that it will put in more bicycle lanes and bikeways instead of expanding its existing public transit system.

3.1 identify various types of systems (*e.g., mechanical systems, body systems, optical systems, mass transit systems, Aboriginal clan systems, healthcare systems*)

3.2 identify the purpose, inputs, and outputs of various systems (*e.g., a garden – purpose: to grow things; input: seeds, water, fertilizer; output: flowers, food*)

3.9 identify social factors that influence the evolution of a system (*e.g., growing concern over the amount of waste creates a need for recycling centres, and the recycling centres must grow as population and waste increase; the desire to make tasks easier creates a need for pulley systems, gear systems, and hydraulic and pneumatic systems; changes in traditional work hours created by technological advances can influence changes in a child care system*)

Unit of Study: Earth and Space Systems- Water

Overall Expectations: 1. assess the impact of human activities and technologies on the sustainability of water resources;

Specific Expectations:

1.1 evaluate personal water consumption, compare it with personal water consumption in other countries, and propose a plan of action to reduce personal water consumption to help address water sustainability issues

1.2 assess how various media sources (*e.g., Canadian Geographic; the science section in newspapers; Internet websites; local, national, and international news on television and radio*) address issues related to the impact of human activities on the long-term sustainability of local, national, or international water systems

1.3 assess the impact on local and global water systems of a scientific discovery or technological innovation